

GENERAL



CATALOG

UNIVERSITY OF
CALIFORNIA

1969-1970 ISSUE

MAY 1969

LOS ANGELES

UCLA

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Changes in the list of Officers of Administration and
Instruction may be made subsequent to
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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.

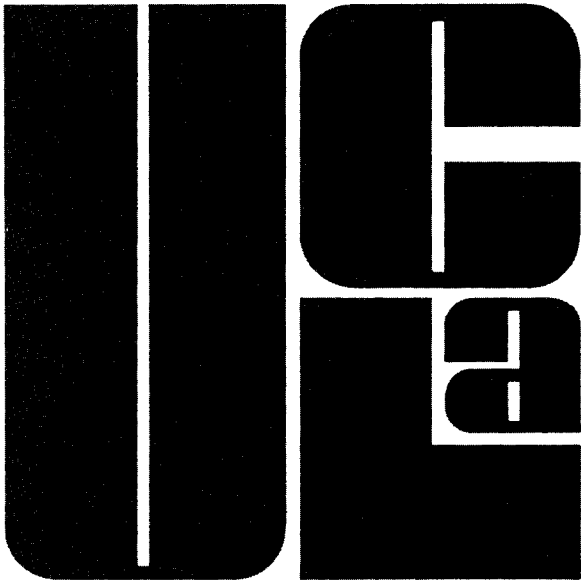
Letters of inquiry concerning the University in general should be addressed to the
Registrar, University of California, Berkeley, California 94720.

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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PRICE: ONE DOLLAR

Golden Anniversary

UCLA this year will celebrate its Golden Anniversary—starting out in 1919 as a combined two-year teachers college and junior college, and by 1969 becoming one of America's most distinguished universities.

It has been a period of continuous growth, of experimentation and innovation, of dynamic change. The administration, the faculty, the non-academic staff and the student body have all shared in shaping the UCLA we know today.

Moreover, the future promises to be as exciting and dynamic as the past. We do not fear change for it is often both inevitable and desirable. But change will not be undertaken merely for the sake of change itself, nor will it be dictated by intimidation. Change must always be academically sound and morally right.

Charles E. Young
UCLA Chancellor

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Calendar

	Summer '69	Fall '69	Winter '70	Spring '70
Application for admission to undergraduate standing, with complete credentials and the application fee, must be filed with the Admissions Officer on or before this date.	May 1 Thursday	Mar. 1 Saturday	Nov. 1 Saturday	Feb. 1 Sunday
*Application for admission to graduate standing, with complete credentials and the application fee, must be filed with the Admissions Section of the Graduate Division on or before this date.	Apr. 15 Tuesday	May 15 Thursday	Oct. 15 Wednesday	Jan. 15 Thursday
Last day to file applications with the Registrar for readmission in undergraduate standing or with the Graduate Division for readmission in graduate standing.	May 15 Thursday	Aug. 15 Friday	Nov. 22 Saturday	Feb. 15 Sunday
Counseling of students by appointment.	June 16- June 18 Monday- Wednesday	Sept. 17- Sept. 24 Wednesday- Wednesday	Dec. 29- Dec. 30 Monday- Tuesday	Mar. 23- Mar. 26 Monday- Thursday
Entrance Examination in English as a Second Language.	June 16 Monday	Sept. 24 Wednesday	Jan. 5 Monday	Mar. 26 Thursday
Examination in Subject A.	June 16 Monday	-----	-----	-----
Physical Evaluation dates for new and re-entering students.	June 19-20 Thursday- Friday	Sept. 24-26 Wednesday- Friday	Jan. 5-6 Monday- Tuesday	Mar. 31- Apr. 1 Tuesday- Wednesday
		Sept. 29- Oct. 3 Monday- Friday		
Quarter begins.	June 19 Thursday	Sept. 29 Monday	Jan. 5 Monday	Mar. 31 Tuesday
†Late Registration begins. Fee \$10.	June 19 Thursday	Sept. 29 Monday	Jan. 5 Monday	Mar. 31 Tuesday
Special examination in Subject A.	June 19 Thursday	-----	-----	-----
Instruction begins.	June 23 Monday	Oct. 6 Monday	Jan. 7 Wednesday	Apr. 3 Friday
Last day to file applications for advancement to candidacy for the master's degree to be conferred 1969-1970.	June 30 Monday	Oct. 13 Monday	Jan. 14 Wednesday	Apr. 10 Friday
‡Last day to file registration packets or to change study lists <i>without fee</i> .	July 7 Monday	Oct. 17 Friday	Jan. 20 Tuesday	Apr. 16 Thursday
Last day to add courses to study lists. Normally, no registration packet will be accepted after this date. Before 3:50 p.m.	July 10 Thursday	Oct. 22 Wednesday	Jan. 23 Friday	Apr. 21 Tuesday

*Apr. 3
Monday*

* Also last date for renewal of applications to be submitted by graduate students who have applied but who did not previously register for a regular quarter.
 † For details, see Registration Circular and official bulletin boards.
 ‡ Last day for late registrations. Before 2:00 p.m.

	Summer '69	Fall '69	Winter '70	Spring '70
Last day to pay course Subject A fee without lapse of status. Before 3:50 p.m.	July 10 Thursday	Oct. 22 Wednesday	Jan. 23 Friday	Apr. 21 Tuesday
Last day for undergraduate students to drop courses from study lists without penalty of grade F (failure). Before 3:50 p.m.	July 25 Friday	Nov. 7 Friday	Feb. 10 Tuesday	May 7 Thursday
‡Last day to file notice of candidacy for the bachelor's degree to be conferred 1969-1970.	July 25 Friday	Nov. 7 Friday	Feb. 10 Tuesday	May 7 Thursday
Last day to submit final drafts of dissertations to doctoral committees for degrees to be conferred 1969-1970.	July 30 Wednesday	Nov. 12 Wednesday	Feb. 16 Monday	May 12 Tuesday
Last day for graduate students to drop courses from study lists without penalty of grade F (failure). Before 3:50 p.m.	Aug. 4 Monday	Nov. 17 Monday	Feb. 18 Wednesday	May 15 Friday
Last day to submit final drafts of theses to master's committees for degrees to be conferred 1969-1970.	Aug. 18 Monday	Dec. 1 Monday	Mar. 6 Friday	May 27 Wednesday
Last day to file with the Dean of the Graduate Division completed copies of theses for the master's degree and dissertation for the doctor's degree to be conferred 1969-1970.	Aug. 29 Friday	Dec. 12 Friday	Mar. 17 Tuesday	June 9 Tuesday
Instruction ends.	Aug. 27 Wednesday	Dec. 13 Saturday	Mar. 14 Saturday	June 6 Saturday
Final examinations.	Aug. 30- Sept. 6 Saturday- Saturday	Dec. 15-20 Monday- Saturday	Mar. 18-24 Wednesday- Tuesday	June 10-16 Wednesday- Tuesday
Quarter ends.	Sept. 6 Saturday	Dec. 20 Saturday	Mar. 24 Tuesday	June 16 Tuesday
Last day for continuing students to file applications for undergraduate scholarships for 1970-1971.			Jan. 15 Thursday	
Last day to file applications for fellowships and graduate scholarships tenable at Los Angeles for 1970-1971.			Jan. 31 Saturday	
Academic and Administrative Holidays	July 4 Friday	Nov. 27-28 Thursday- Friday	Feb. 23 Monday	Mar. 27 Friday
	Sept. 1 Monday	Dec. 25-26 Thursday- Friday		May 30 Saturday
		Jan. 1-2 Thursday- Friday		

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

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

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

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

Survey of Curricula

The scope of the undergraduate and graduate programs of instruction offered in the colleges and schools of the University on the Los Angeles campus is briefly indicated below. For more details see pages 66 through 145 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, preengineering, premedical, prenursing, prenutritional science, preoptometry, prepharmacy, prephysical therapy, prepublic health, and presocial welfare.

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

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

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

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

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

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

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

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

Study and Research Facilities

THE UNIVERSITY LIBRARY

The University Library on the Los Angeles campus consists of the University Research Library, the College Library, and a number of specialized libraries. Its collections contain nearly three million volumes, and extensive holdings of government publications, pamphlets, manuscripts, maps, microtext editions, music scores, recordings, and slides. The Library regularly receives about 40,000 serial publications.

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

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

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

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

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

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

The Social Sciences Materials Service, in the University Research Library, has reference and pamphlet materials principally on industrial relations and social welfare.

Libraries for Architecture and Urban Planning, Art, Biomedical Sciences, Business Administration, Chemistry, Education and Psychology, Engineering and Mathematical Sciences, English, Geology-Geophysics, Law, Maps, Music, Oriental Languages, Physics, Theater Arts, and the University Elementary

School are housed in the departments which they primarily serve.

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

The Photographic Department, in the Powell Library Building, offers complete documentary photographic service, where photostats, microfilms, slides, ozalid prints, and other photographic work are done. 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 Law Library, and the Business Administration Library. Self-service copiers are available for use in several Library units.

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. The Clark Library sponsors an annual program of summer postdoctoral fellowships. The areas of study are based on the particular strengths of the Library's holdings. Each year a Clark Library Fellowship is granted to a UCLA graduate student working toward a doctorate within one of the Library's fields of interest and each year also an eminent scholar is brought to the Library as its Senior Research Fellow. This library is not on the University campus, but is situated at 2520 Cimarron Street, at West Adams Boulevard.

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

SPECIAL RESEARCH FACILITIES

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

ties. The more specialized activities in focal fields are described as programs, laboratories, and projects.

Institutes

The **Institute of Geophysics and Planetary Physics** was established to encourage research in geophysics and space physics and to provide advanced training for qualified personnel. Members of the Institute staff on several campuses and members of associated departments are prepared to supervise graduate work in a variety of fields.

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

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

W. F. Libby, Director

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

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

Harry W. Case, Associate Director

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

J. D. French, Director

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

J. J. Stein, Director

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

Director To Be Appointed

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

B. R. Straatsma, Director

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

P. D. Boyer, Director

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

George Tarjan, Acting Medical Director

The **Institute of Rehabilitation and Chronic Disease**, located on the West Medical Campus, was established to develop basic theory and clinical techniques relevant to chronic disabling disease. Investigative areas include arthritis, audiology, bone and hard tissue metabolism, cardiology, cerebral palsy, endocrinology, kidney function and disease, neurology, physical therapy, prosthetics, and pulmonary function. Fellowships are available through the participating divisions. Much of the work involves participation by basic as well as medical scientists.

R. Goldman, Acting 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, the public, and other groups interested in industrial relations activities. The programs consist of public lectures, conferences, symposia and institutes of varying duration, and include a series of courses through University Extension leading to a Certificate in Industrial Relations.

B. Aaron, Director

The Western Management Science Institute, established in 1959 to foster research and advanced education in the management sciences, has two divisions: an Operations Research Division, which emphasizes mathematical investigations of decision making, information economics, organization theory, production systems, and mathematical programming; and a Socio-Technical Systems Division, which stresses research in interactions among technological, social, personal, and ecological variables in organizations.

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

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

J. Marschak, Director

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

personnel. The Institute invites the participation of students, faculty members, and research personnel of all departments of the University, since information and the university library system are of almost universal interest.

Robert M. Hayes, Director

The main objectives of the **Institute of Government and Public Affairs** are to add to the understanding of major public issues and to develop intellectual talent equipped to meet the challenges of a highly scientific urban society. The Institute is an interdisciplinary research unit involving the cooperative efforts of such disciplines as sociology, economics, law, medicine, political science, engineering, social welfare, and psychology. Current and recent studies include: Los Angeles Riot Study, Design of a Regional Information System, Survey of Hallucinogenic Drug Use, Decision Making in Los Angeles, Impact of Federal Programs on Intergovernmental Reorganization, Program Budgeting for State and Local Governments, Educational Innovations, State and Federal Fiscal Policy, and Municipal Boundary Standards. The Institute also administers the Compton-UCLA Urban Research and Development Program; this is primarily an urban action rather than a study program and involves services by UCLA to a predominantly black community.

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

W. Z. Hirsch, Director

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

M. Hood, Director

Centers

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

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

Arthur F. Pillsbury, Director

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

The Center for African Studies provides a framework for furthering study and research on Africa involving social sciences, education, linguistics and the humanities. The Center participates in graduate and undergraduate degree programs of African studies taken in conjunction with degrees in social sciences or African languages. Through its Research Committee, the Center makes grants for research on Africa on all campuses of the University of California. Its Fellowship Committee each year awards full stipends or supplementary grants-in-aid to students concentrating upon Africa in graduate degree programs. The Center provides information to faculty and students on extramural sources of research support. Other Center activities include public education programs in Africa, training programs for specialist personnel such as Peace Corps Volunteers, the bringing of Africanist scholars and leading African personalities to the University as short-term lecturers or as research associates, the sponsorship of an interdisciplinary colloquium each quarter focused on an integrating theme, and a publications program. **Leo Kuper, Acting Director**

The Center for Latin American Studies serves individual and cooperative research of faculty and graduate students in the social sciences, education, humanities, art, law, engineering, and the health sciences. In addition to cooperating with seven colleges and professional schools of the University, the Center conducts systematic multidisciplinary research, implemented by the faculty and graduate students involved in the interdisciplinary seminar, on the UCLA campus as well as in the Center's regional research and training centers in Brazil, Venezuela, and Mexico. The Center facilitates the exchange of personnel between UCLA and Latin America, and awards stipends and grants-in-aid to students in the graduate degree program. Through the Deans' Advisory Committees for Latin American Studies which function in colleges and schools throughout the campus, the Center provides channels for academic intercommunication among

the University's Latin Americanists. The Latin American Center publishes a series of documentary publications, e.g., *STATISTICAL ABSTRACT OF LATIN AMERICA*, *COMMUNISM IN LATIN AMERICA*, *PERIODICALS FOR LATIN AMERICAN ECONOMIC DEVELOPMENT TRADE AND FINANCE*, *MASTER DIRECTORY FOR LATIN AMERICA*, and *GUIDE TO LATIN AMERICAN STUDIES*, and also sponsors a monograph series, "Latin American Studies." **J. Wilbert, Director**

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

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

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

G. E. von Grunebaum, Director

The Center for Russian and East European Studies was established to promote, assist and coordinate research and training on the countries of Eastern Europe. It furthers the research of individual faculty members and graduate students, sponsors colloquia, seminars and lectures, organizes conferences, and participates, with other universities, in academic exchange programs with the countries of Eastern Europe.

Henrik Birnbaum, Director

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

W. D. Hand, Director

Museums and Special Collections

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

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

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

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

F. S. Wight, Director

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

Jay D. Frierman, Acting Curator

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

Mildred E. Mathias, Director

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

Laboratories

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

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

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 about 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, Director**

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

Wilfried F. H. M. Mommaerts, Director

Special Resources

The **Campus Computing Network** is the general computing facility on the UCLA campus. It maintains a large array of computing machinery, including two IBM S/360 Model 75 in the Mathematical Sciences Building, an IBM 7094-1401 System in Boelter Hall, and an IBM 1130 computer in the Western Data Processing Center. These facilities are made available to students, faculty, and research staff members at UCLA and at participating four-year colleges throughout the western United States. Hundreds of projects are currently using them for research, education, and computer development. Besides the standard batch processing of jobs, CCN offers a comprehensive system of computing

services on its interactive remote console network. Programming documentations and consultations are available from CCN's staff members.

William B. Kehl, Director

Other Research Activities

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

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

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

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

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

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

Dance concerts are presented regularly under the auspices of the Dance Department. Well-known dance artists and companies are brought from all parts of the world by the Concert Series Section of the Committee on Fine Arts Productions. Performances range from ballet and folk to ethnic and modern. Students of dance present their original works in evening concert. Members of the dance faculty also perform their own choreography. Free noon lecture-demonstrations are presented regularly.

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

In addition to its intramural, experimental production program, the Department of Theater Arts produces a varied selection of significant new and old plays from Aristophanes to Bernard Shaw, Shakespeare to Eugene O'Neill, as

well as plays never produced before. These are presented in an annual season of six or more plays for the campus and community.

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

Education Abroad Program

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

In 1969-1970 the University will continue the operation of its study centers in France, Germany, Hong Kong, Italy, Japan, Spain, Sweden, the United Kingdom, Ireland, Israel, Lebanon and Mexico. The Study Centers' primary purpose is to provide a sound academic experience in a different educational system. They also enable the University of California students to become deeply involved in the language and culture of the host country.

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

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

The program in Mexico City is for two 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 1970-1971 will be accepted from September 1, 1969, through January 10, 1970. (Applications for Ireland, and the United Kingdom must be filed no later than November 15, 1969.)

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 Bunche Hall, UCLA.

Summer Session

The University conducts at Los Angeles one six-week summer session. In 1969 the Summer Session will begin on Monday, June 30. The Summer Session bulletin is obtainable after April 1 from the Office of the Summer Sessions, Murphy Hall, 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, consult the Language Examination Coordinator, Student and Academic Affairs Section, Graduate Division. 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 Extension classes, provided the classes are part of their prescribed and recognized objectives approved by the Veterans Administration.

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

Admission to the University

IN UNDERGRADUATE STATUS

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

Application for Admission

An application form may be obtained at the Office of Admissions, 1147 Murphy Hall, University of California, Los Angeles 90024. Application filing periods for the year 1969-1970 are: Fall Quarter, 1969—October 1, 1968 through March 1, 1969. Winter Quarter, 1970—May 1, 1969 through November 1, 1969. Spring Quarter, 1970—August 1, 1969 through February 1, 1970. Summer Quarter, 1970—December 1, 1969 through May 1, 1970.

A fee of \$10 must accompany each application.

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

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

Subject A: English Composition

Every undergraduate entrant must demonstrate an acceptable ability in English composition. There are several ways in which this requirement may be met before the first quarter in residence (see page 39). But students who have not already fulfilled the requirement must, during their first quarter, enroll in the course in Subject A, a noncredit course for which a fee is charged.

Requirements for Admission to Freshman Standing

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

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

Graduation from High School

Subject Requirements

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

California but is regionally accredited, appropriate courses will be considered acceptable.

A. HISTORY—1 YEAR

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 YEARS

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

C. MATHEMATICS—2 YEARS

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

D. LABORATORY SCIENCE—1 YEAR

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

E. FOREIGN LANGUAGE—2 YEARS

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

F. ADVANCED COURSE—1 OR 2 YEARS

This must be chosen from one of the following:

Mathematics. A total of 1 year of mathematics beyond the 2 years offered toward the mathematics requirement.

Foreign language. Either an additional year in the same language offered toward the foreign language requirement or 2 units of another foreign language.

Science. A year of either chemistry or physics in addition to the science offered toward the laboratory science requirement.

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

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

Scholarship Requirements

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

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

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

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

Examination Requirement

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

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

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

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

For arrangements to take the tests, see below.

ADMISSION BY EXAMINATION ALONE

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

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

To obtain information about the tests or to make arrangements for taking them, apply to Educational Testing Service, P. O. Box 1025, Berkeley, California 94701, or P. O. Box 592, Princeton, New Jersey 08540. Scores will be regarded as official only if they are received by the Admissions Office directly from Educational Testing Service.

Admission to Advanced Standing

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

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

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

HIGH SCHOOL SUBJECT REQUIREMENTS

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

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

MINIMUM SCHOLARSHIP REQUIREMENTS

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

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

In addition, every applicant must present from the last accredited college or university attended a statement of good standing and an academic record with an average of at least 2.0. If the record at any institution previously attended shows an average below 2.0, further requirements may be imposed to insure that the subsequent program offsets the deficit.

Credit for Work Taken in Other Colleges

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

As an integral part of the system of public education in California, the University accepts, usually at full unit value, approved transfer courses completed with satisfactory grades in the public junior colleges of the State. After a student

has earned 70 semester units or 105 quarter units acceptable toward a degree no further unit credit will be granted for courses completed at a junior college.

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

Special Requirements for Nonresident Applicants

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

ADMISSION TO FRESHMAN STANDING

Graduation from High School

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

Subject Requirements

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

Scholarship Requirements

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

Examination Requirement

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

ADMISSION BY EXAMINATION ALONE

A nonresident applicant who is not thus eligible for admission and who has not registered in any college-level institution (except for a summer session immediately following high school graduation) may qualify for admission by examination alone. The requirements for a nonresident applicant are the same as those for a resident except that the scores on the three Achievement Tests must total at least 1725 (see page 24).

ADMISSION TO ADVANCED STANDING

In addition to the regular admission requirements (see page 24), a nonresident applicant for admission to advanced standing must have earned a grade-point average of 2.8 or higher in college subjects attempted and acceptable for transfer credit.

If the applicant did not have at the time of high school graduation an average

of 3.4 or higher in courses satisfying the required subject pattern, he must present a minimum of 84 acceptable quarter units or 56 acceptable semester units with a grade-point average of 2.8 or higher.

Admission to Limited Status

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

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

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

Applicants with Bachelor's Degrees

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

Applicants From Other Countries

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

Compulsory Health Insurance

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

Proficiency in English

An applicant from another country whose native language is not English may be admitted only after demonstrating that his command of English is sufficient

to permit him to profit by instruction in the University. His knowledge of English will be tested by an examination upon his arrival at the University or by the scores he has attained on the Test of English as a Foreign Language (TOEFL). Admission of an applicant who fails to pass one of these examinations will be deferred until he has acquired the necessary proficiency in the use of English. Each applicant from a non-English speaking country is urged to take the Test of English as a Foreign Language approximately six months in advance of the term for which he is applying. Arrangements to take the test may be made by writing directly to TOEFL, Educational Testing Service, P. O. Box 592, Princeton, New Jersey 08540, U.S.A. Results of the test should be forwarded to the University.

Language Credit

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

Engineering

A beginning or intermediate student seeking a bachelor's degree in 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 pre-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 School of Engineering and Applied Science who is outside the United States, must pass a special qualifying examination. Arrangements to take this test may be made by writing directly to the Universitywide Director of Admissions, Room 570 University Hall, Berkeley, California 94720, U.S.A.

IN GRADUATE STATUS

An applicant for graduate status should hold a bachelor's degree from an institution of recognized standing. His academic preparation should be equivalent to that required for a comparable degree at the University of California. His record of achievement for the junior and senior years and especially in the major field should be strong. For whatever graduate study he may have undertaken at any other college or university he should present at least a B average. In addition, honors, awards, and experience related to his proposed field of study are important credentials. Individual departments may specify additional requirements and standards for admission, however, including such special examinations as the Graduate Record Examination or the Miller Analogies Test.

Application

The prospective student may obtain application forms in person or by mail from the Admissions Section, Graduate Division, Murphy Hall, University of California, Los Angeles, California 90024, or from the department in which he wishes to study. With the application form will be enclosed a list of admission requirements which individual departments specify in addition to general UCLA requirements. An application form for University fellowships or other financial assistance will also be sent on request.

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

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

The following materials should accompany the application:

1. Application fee of \$10 (nonrefundable), by check or money order payable to The Regents of the University of California. A foreign student applying from abroad or an American student temporarily living abroad may find that his location or the difference in foreign exchange makes it impossible to send this fee with his application. In such a case, he is required to pay the fee on arrival at UCLA.

2. Official transcripts of record, *in duplicate*, from *each* junior college, college, or university at which the applicant has completed work. (Transcripts should accompany or immediately follow the application.) One set of transcripts will become a part of his permanent UCLA file, and the other set will go to his major department to help it evaluate his past record and to advise him about his future studies. If the student has graduated from UCLA or from another University of California campus and has there completed his last two years of study, he will need to submit transcripts for only that campus.

If a student is requesting a fellowship or other financial assistance, his application for admission, with transcripts and examination scores, will need to be submitted to the Admissions Section on or before the published deadlines for competition for these awards. For further information, consult the Fellowship and Assistantship Section of the Graduate Division.

FOREIGN APPLICATIONS

The requirements and final application dates are the same for foreign applicants and U.S. applicants (see above). Because the evaluation of foreign credentials may take considerable time, however, applicants with credentials from institutions in other countries are advised to submit applications at least four to six months before the quarter in which they wish to register.

Foreign applicants should submit an official certificate or diploma showing completion of secondary school, as well as official transcripts of record, *in duplicate*, for all college and university work. College and university transcripts must show subjects studied, examination grades achieved, and award of degrees.

If photocopies are submitted rather than original documents, they must bear the seal of the issuing institution and the actual (not photographed) signature of the college or university registrar.

Foreign applicants are advised not to come to UCLA until they receive formal notice of admission to the Graduate Division. They are notified by air-mail as soon as a decision has been reached, and the I-20 form necessary to secure the student visa is enclosed with the notification of admission. Foreign applicants who have been accepted are encouraged to report to the Admissions Section, Graduate Division, as soon as possible after they arrive at UCLA in order to receive help in completing admission procedures.

FOREIGN STUDENTS' ENGLISH EXAMINATION

Since English is the language of instruction at UCLA and success in graduate study depends largely on facility in its use, foreign students whose first language is not English are strongly urged to take the Test of English as a Foreign Language (TOEFL). The TOEFL is administered in more than ninety testing centers throughout the world by the Educational Testing Service, Princeton,



New Jersey 08540, U.S.A. If a foreign student is unable to take the TOEFL, he will be required to take a proficiency examination in English at UCLA immediately before the term in which he is to register. His achievement on the TOEFL or the UCLA examination determines whether he will be permitted to carry a full or a moderate graduate program or will be required to study English further.

APPLICATION REVIEW AND NOTICE OF ADMISSION

The Graduate Division and the department concerned review each application and its supporting papers to evaluate the applicant's qualifications and promise for success in graduate study. The departmental graduate adviser will notify the applicant of any special entrance examinations.

The Graduate Division sends formal notice of admission to the applicant and also instructs him about required registration procedures and the physical examination. The student then completes and files with the Graduate Admissions Section a notice of intention to register.

Admission in Summer Session

If any applicant wishes to begin graduate study in the Summer Session (rather than in the regular Summer Quarter), he must first be admitted to graduate status and obtain the approval of his major department to include Summer Session courses in his graduate program.

Separate applications for Summer Session should be obtained from the Office of Summer Sessions, Murphy Hall, University of California, Los Angeles, California 90024.

Renewal of Application

Applicants who failed to register in the quarter for which they were accepted in graduate status but who wish to register in a later quarter should file a Renewal of Application form. Such forms are obtained from the Admissions Section, Graduate Division, and should be submitted to that office. Filing dates are the same as those for original applications. The Renewal of Application should be accompanied by official transcripts, in duplicate, of any college or university work (including University Extension courses) completed since the former application. Acceptance for admission at any earlier date does not guarantee approval of the Renewal of Application.

Applicants seeking admission more than three years after their original application file new applications rather than Renewal of Application forms.

For applicants who have been offered admission but must enter military service before their first registration, the Graduate Division will extend admission to a later date. Such applicants should notify the Admissions Section immediately that they will not be able to register. Within the year after completing military service, the prospective student should inform the Admissions Section when he expects to enroll, and his admission will be arranged with the department. In these cases formal renewal of application is not necessary. After this one-year period, however, the normal pattern of formal renewal of application is followed.

General Regulations

READMISSION

A student who wishes to return to the University after an absence of more than one quarter must file an Application for Readmission. For the academic year 1969-1970, the schedule for application is:

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

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

For Winter Quarter 1970: All students returning in the same status (graduate or undergraduate) who neither completed the Summer Quarter, 1969, nor were registered in the Fall Quarter, 1969.

For Spring Quarter 1970: All students returning in the same status (graduate or undergraduate) who neither completed the Fall Quarter, 1969, nor were registered for the Winter Quarter, 1970.

In Undergraduate Status

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

In Graduate Status

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

INTERCAMPUS TRANSFER

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

REGISTRATION AND ENROLLMENT

Registration is the means by which one becomes a student at the University. It includes the payment of Registration and other fees (described on page 45), and the completion and filing of informational forms for various purposes. All students are required to register by mail. Continuing students may pick up material and instructions for registering by mail at the time (approximately the fifth week of instruction of the preceding quarter) and place announced on Official Bulletin Boards and *Daily Bruin*. 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.

Registration consists of the payment of fees, enrollment in classes, and filing of an Official Study List and other forms. A student's name is not entered on class rolls unless he completes registration according to instructions.

Registration of Candidates for Higher Degrees

Students enrolled in programs for advanced degrees, certificates, credentials, or other graduate objectives must be registered for and complete a minimum of any three of the four quarters of each year (Summer, Fall, Winter, Spring), until all requirements for their particular objectives are completed. Only students entering in the Summer Quarter are eligible for an "off quarter" during their first academic year.

Unless granted an official leave of absence, all graduate students who do not register for a minimum of three quarters each year will be considered to have left the University. In order to reenter the University, students must apply formally and compete with other applicants for readmission.

During the "off quarter," the one quarter per year in which the student may choose not to register, he is eligible for the following: (1) library privileges; (2) continued housing in married student quarters; (3) visa certification; (4) student health services at reasonable fees; (5) recreation center privileges. During the "off quarter" students are not eligible to attend classes, take University examinations, or place demands upon the faculty, except in the event the student is eligible for and wishes to pay the filing fee.

Students are required to register in the final quarter in which they expect their graduate degrees or certificates to be awarded.

If a student has completed all requirements for the degree except the filing of the thesis or dissertation and/or formal final examination (master's comprehensive examination or doctoral final oral examination), he may pay the filing fee of \$50 instead of registering.

Physical Evaluation

Each student who enters the University of California, Los Angeles, for the first time, or re-enters after an absence of more than one quarter, is required to report for a physical evaluation prior to the beginning of instruction (see Calendar, page 5, for date—"Instruction Begins").

Accepted students shall be mailed appointments. Should one not be received within 7 days of the beginning of the quarter (See Calendar, page 5, for date—"Quarter Begins"), the student shall call Student Health Service Physical Evaluations Division (825-2251) immediately for an appointment. A late fee will be imposed upon all those who fail to make and/or keep the appointment. Status may lapse with the University if this requirement is not fulfilled as described.

The student must report at his appointed time and it shall be decided whether or not he need be examined. In most cases, only an evaluation of the Medical History by a nurse and/or physician and a valid chest X-Ray are necessary. The latter requirement may be satisfied by producing a valid chest X-Ray dated within 13 months of the appointment date. Standards of reporting of chest films have been so variable that a mere report without an accompanying film cannot be considered satisfactory unless it is from a Federal, State, County, or City Public Health agency. Although optional, it would be to the student's advantage to have a chest X-Ray performed before appearing for the appointment since this is the most time-consuming part of the procedure. If desired, the local County Health Department may do it at no charge. The results will be mailed to the student and may be brought in at the appointed time.

Regardless of which course is followed, the student's appearance at Student Health Service at the appointed time is required. There is no charge for any procedure performed during this time. Under no circumstances should anything be mailed to Student Health Service in advance of the appointment.

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 in the same status without filing applications for readmission) will have the opportunity to enroll in classes by mail. Materials and instructions for enrolling by mail may be obtained at the Office of the Registrar on dates to be announced on Official Bulletin Boards and in the DAILY BRUIN.

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

Filing the Registration Packet

During the registration process a student will receive various forms which must be completed and filed in order to complete registration. Some of the forms will be filed (by mail or in person) when paying fees and enrolling in classes. Others will remain in the student's possession after paying fees and enrolling in classes. These must be filed during the first two weeks of instruction as follows: undergraduate students normally file their Study List Packets at the offices of the deans of their respective colleges or schools; graduate students at the offices of their major departments. Variations from these usual practices will be announced on Official Bulletin Boards.

Failure to complete and file all the forms according to instructions may delay or even prevent the student from receiving credit for work undertaken.

THE STUDY LIST

A student's Official Study List is the list of courses in which he is officially enrolled at the end of the second week of classes. This is the official record of work to be undertaken during the quarter indicated. The student is responsible for every course listed, and can receive no credit for courses not entered on it. Unapproved withdrawal from or neglect of a course entered on the study list will result in a failing grade.

Changes in the Official Study List require approval of the Dean of the student's college, school or Graduate Division. Forms for this purpose may be obtained at the office of the student's dean. The approved petition must be filed at the Office of the Registrar.

Study-List Limits

The minimal program for an undergraduate student is three courses (12 units). Exception to this regulation requires the approval of the dean of a student's college or school. Senate Regulations limits the undergraduate student to one-and-one-fourth courses (5 units) of credit per quarter in special study courses.

The normal program for an undergraduate student is four courses. However, a student on scholastic probation, except in the School of Engineering and Applied Science, 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.

School of Engineering and Applied Science: 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 140 of this bulletin.

Concurrent Enrollment

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

GRADES AND SCHOLARSHIP REQUIREMENTS

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

reporting satisfactory and unsatisfactory work by graduate students taking courses on this basis.

Grades A, B, C, D, F, P, NP, S, U are final when filed by an instructor in his end-of-quarter course report, except for the correction of a clerical error. No change of grade may be made on the basis of reassessment of the quality of a student's work. No term grade except incomplete may be revised by re-examination.

Repetition of courses is subject to the following conditions: (1) A student may repeat only those courses in which he received a grade D, F, NP, or U; however, the appropriate dean may authorize repetition of courses graded Incomplete. (2) Repetition of a course more than once requires approval by the appropriate dean in all instances. (3) Degree credit for a course will be given only once, but the grade assigned at each enrollment shall be permanently recorded.

The grade Incomplete may be assigned when a student's work is of passing quality, but is incomplete. The student is entitled to replace this grade by a passing grade and to receive unit credit provided he completes the work of the course in a way authorized by the instructor.

Courses Taken Passed/Not Passed

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

(A) Except as provided in (C), (D), and (E) below, a student in good standing may enroll in one course each quarter on a passed/not passed basis. Courses thus passed shall be counted in satisfaction of degree requirements.

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

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

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

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

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

GRADE POINTS

For purposes of computing scholarship standing, a full course is counted as equivalent to 4 quarter units. Partial or multiple courses are counted proportionally.

Grade points per unit are assigned as follows: A-4, B-3, C-2, D-1, F and Incomplete (I) none. Upon removal of a grade I, the student is entitled to receive

grade points only upon approval of the appropriate dean. The *grade-point average* is determined by dividing the number of grade points earned by the number of units attempted. A 2.0 (C) grade-point average on all work undertaken in the University—all campuses—is required for satisfactory standing as an undergraduate; a 3.0 (B) average for graduate.

Courses taken on a passed/not passed or satisfactory/unsatisfactory basis are disregarded in determining a student's grade-point average. In computing the grade-point average of an undergraduate who repeats courses in which grades of D or F were assigned, only the most recently earned grade and grade points shall be used for the first 16 units repeated. In the case of further repetitions, the grade-point average shall be based on all grades assigned and total units attempted.

MINIMUM SCHOLARSHIP REQUIREMENTS

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

Probation

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

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

Dismissal

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

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

A student who fails to meet minimum scholarship requirements is subject to such supervision as the faculty of his college or school may determine. The faculty or its designated representative may dismiss a student subject to 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 are approved by the Committee on Courses. 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. Re-examinations are permitted only for the purpose of raising grade I to passing.

Degree Requirements

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

SCHOLARSHIP

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

SUBJECT A: ENGLISH COMPOSITION

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

1. Achieving a grade of 5, 4, or 3 in the College Entrance Examination Board (CEEB) Advanced Placement Examination in English, *or*
2. Achieving a score above 574 in the CEEB Achievement Test in English, *or*
3. Achieving a score above 564 in the CEEB College-Level General Examination in English Composition, *or*
4. Completing an acceptable college-level course in English composition with a grade of C or better.

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

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

fee and the charge will be repeated each time he takes the course. The fee must be paid before the study list is filed.

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

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

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

AMERICAN HISTORY AND INSTITUTIONS

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

1. By satisfactory completion of one course chosen from the following list: Economics 10; History 7A, 7B, 171A, 171B, 172A, 172B, 173A, 173B, 174A, 174B, 175A, 175B, 176A, 176B, 177A, 177B, 178A, 178B, 179A, 179B, 180A, 180B, 188; Political Science 1, 114, 143, 144, 145, 171, 172A, 172B, 180, 186.

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

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

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

Candidates for a teaching credential, but not for a degree, need take only the optional examination in American Institutions or one of the courses listed above under 1.

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

Further information regarding the requirement and the optional examinations may be obtained from the Committee on American History and Institutions, Room 6248, Ralph Bunche Hall.

SENIOR RESIDENCE

Of the last* 45 units which a student offers for a bachelor's degree 35 must be earned in residence in the college or school of the University of California in which the degree is to be taken. When translated to the course structure at

* 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.

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

CANDIDACY FOR A DEGREE

A student should announce his candidacy for the bachelor's degree at least three 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 Registration 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 will result in nonpassing grades in all courses, thus jeopardizing his eligibility to re-enter the University of California or his admission by transfer to another institution. Forms containing complete instructions are issued at the office of the dean of the student's college, school or Graduate Division or Window A, Office of the Registrar. The completed form must be filed at the Registrar's Office Information Window after necessary clearances are obtained. Current Registration Card, UCLA Student Identification Card, and tuition and incidental fee receipts must be turned in with the completed Notice of Withdrawal.

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

Transcript of Record

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

STUDENT CONDUCT AND DISCIPLINE

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

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

Expenses, Financial Aids, Housing

GENERAL EXPENSES AND FEES*

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

An estimated budget for the academic year is given on page 46.

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

Registration Fee

The registration fee for all undergraduate and graduate students is \$100.† This fee, which must be paid each quarter at the time of registration, covers certain expenses of students for counseling service, for library books, for athletic and gymnasium facilities and equipment, for lockers and washroom,‡ for registration and graduation, for such consultation, medical advice, and hospital care or dispensary treatment as can be furnished on the campus by the Student Health Service, and for all laboratory and course fees. A Student Union fee of \$4 each quarter is required of all undergraduate and graduate students. Membership in the Associated Students (fee \$3.50 for all rights and privileges) is required of all undergraduate students; see page 62. Membership in the Graduate Students Association (fee \$1.50 for all rights and privileges) is required of all graduate students; see page 62. No part of these fees is remitted to those students who may not desire to make use of any or all of these privileges. If a student withdraws from the University within the first five weeks of the quarter, a part of these fees will be refunded.

Nonresident Tuition Fee

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

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

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

‡ The Registration Fee for the Summer Quarter is \$80.

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 within the first five weeks of the 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 \$136 per course or the proportionate part for a fractional course. For graduate students the tuition is \$400 per quarter regardless of the number of courses undertaken. There is no reduction in Registration, Student Union or ASUCLA fees.

Other Fees

Application fee, \$10. This nonrefundable fee is charged every undergraduate applicant for admission, readmission, or intercampus transfer to the University and every graduate applicant for admission and readmission to the University.

Acceptance of admission fee, \$50. For undergraduates only. The fee is non-refundable, but is applied toward the University Registration Fee.

Public Health entrance examination, \$2.25.

Subject A examination fee, \$5.

Returned check collection, \$5.

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

Late registration, \$10. When permitted.

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

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

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

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

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

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

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

Special course Subject A, \$45.

Duplicate diploma, \$20. 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.

Transcript of Record, \$1 each.

Master's thesis and doctoral dissertation filing fee, \$50. For the graduate student who is not registered and who has completed all formal requirements for the degree except the filing of a thesis or dissertation and/or the completion of a formal final examination.

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

Principal Items of Expense

Estimated for a college year (three quarters)

EXPENSE ITEM	COST	REMARKS
Registration Fee	\$ 300.00	Actual cost.
Student Union Fee.....	12.00	Actual cost.
ASUCLA Membership Fee	10.50	Membership required of undergraduates; optional for graduate students; however, \$4.50 Graduate Students Association Membership is required.
Books and Supplies.....	150.00	Approximate cost.
Board and Room.....	1,059.00	Room and Board (20 meals/week) for three quarters in a University residence hall costs, on the average, \$964. In addition there is a \$23 telephone service fee and a \$12 residence hall association membership fee. An additional sum should be budgeted to cover the one meal a week not provided in the University residence halls or in other residence facilities. The cost of remaining on campus during school recesses is not included in the basic residence hall contract. These supplementary board costs may amount to \$60 a year. (A refundable deposit of \$30 for breakage is also required.)
Miscellaneous	469.00	An average allowance for variable items such as clothing, transportation and parking, medicine and drugs, laundry and dry cleaning, recreation, and the cost of a round trip from home to campus is suggested.
Total	\$2000.50§	An average budget for a student who is a California resident and who lives in a University residence hall. However, since residence hall space is limited, many students must obtain other accommodations. A reasonable budget for those not housed in a University dormitory will be approximately \$2,250 for three quarters. Students classified as nonresidents of the State must also add to their estimated budgets the tuition fee of \$1,200 to the above budget.

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

FINANCIAL AIDS FOR STUDENTS

Financial aids offered by UCLA include scholarships, loans, grants, and Federal Work-Study eligibility certification. Application may be made for one or more types of aid and *one basic application* suffices for all available financial aid. If the student applies for all types of aid, a suitable combination of aids for which he qualifies may be offered. Awards are based on financial need as determined by College Scholarship Service criteria. **ALL APPLICANTS MUST SUBMIT A PARENTS' CONFIDENTIAL STATEMENT.** Entering students may obtain this form from their high school counselor or from the College Scholarship Service, Box 1025, Berkeley, California, 94701. Continuing students should obtain this form from the UCLA Financial Aids Office. If the applicant is married or self-supporting, an Applicant's Confidential Statement (which may be obtained from the Financial Aids Office) must **ALSO** be submitted. Foreign students are to submit a Non-Immigrant Foreign Student Application 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 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 \$350 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 \$400 to \$1,500. Awards are based on grade-point average, financial need, leadership and promise.

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

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.

MINIMUM REQUIREMENTS FOR APPLICATION

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

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

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

Scholarship stipends are based on the recipient's financial need. All students must submit the Parents' Confidential Statement to the College Scholarship Service by December 15. When applicable, the Applicant's Confidential Statement or Non-Immigrant Foreign Student Application should be submitted directly to the Scholarship and Grant Office by January 15.

SCHOLARSHIP APPLICATION PROCEDURE

Both continuing and entering students may obtain the necessary application forms after October 15 by mail or in person from the Scholarship and Grant Office. Entering students may also obtain forms from high school and junior college counselors.

Continuing students should ask for the continuing student application. Entering students should ask for an entering student application. The completed application should be submitted to the Scholarship and Grant Office by January 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 Fellowship and Assistantship 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 and Grant Office, 2240 Murphy Hall.

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

Loans

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.

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

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

EMERGENCY LOANS

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

NATIONAL DEFENSE STUDENT LOANS

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

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

GUARANTEED LOAN PROGRAM

These Federally Insured Loans are made available to students from middle- or upper-income families by local banks and other financial institutions at interest

rates similar to NDEA student loan programs. Full-time students may obtain an application from their local bank, their designated State Agency or Regional Health, Education and Welfare Office, or from the UCLA Student Loan Office (if they are a California resident). Applicants are required to be interviewed by a UCLA Financial Aids Counselor in order to be recommended for such loans. The Application must be approved by the student's bank and by the designated State Agency or Regional HEW Office.

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

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

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

LIVING ACCOMMODATIONS*

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

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

University Residence Halls—(Single Students)

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

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

Present rate for room and board (exclusive of recesses) is \$1009 for the academic year (Fall, Winter and Spring Quarters), plus a \$23 telephone charge and \$12 membership fee in the residence hall student association required to cover social events within the halls. The rate for the Summer Quarter (separate contract) is \$343 room and board, plus telephone and association fees, \$8 and \$4 respectively. Three meals are served daily except Sundays and University holidays when two meals are served. Room and board may be paid in installments as authorized by the University.

Undergraduates

Residence hall applications will be mailed only to students who have applied to UCLA for admission. Attached to the application for admission will be

* Rates and information subject to change.

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 Academic Year (Fall, Winter and Spring Quarters) will be mailed between March 15 and April 30; for the Winter and Spring Quarters, after October 1; the Spring Quarter, January 10; and the Summer Quarter, March 15–April 30.

Readmits

Re-entering students will find a Housing Card with the re-entrance application. Return it to the Registrar's Office with the reapplication.

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.

INTER CAMPUS TRANSFER STUDENTS

A Housing Card marked "Transfer" must be attached to the application for transfer to UCLA to obtain a residence hall application.

ASSIGNMENTS TO RESIDENCE HALLS

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

MIRA HERSHEY HALL, located on the east side of the campus, is the only all woman residence hall. It accommodates 326 women.

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

University Married Student Apartments

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

The basic monthly rates range from \$90 to \$145 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 upon receipt of the Housing Card which 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 will find a Housing Card with the re-entrance application.

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

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

Privately Operated Residences

COOPERATIVES

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

PRIVATE RESIDENCE HALL

Weyburn Hall accommodates both men and women and is operated in a manner similar to the University residence halls. The rate for room and board for the academic year (Fall, Winter and Spring Quarters) is approximately \$1281.

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 \$125 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 Murphy Hall, 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 \$130 per month. Rooms in private homes cost from \$45—\$70 per month. Single and bachelor apartments, usually furnished, rent for \$85 and up. Depending upon whether the apartment is furnished or unfurnished, as well as the location, rental prices for 1-bedroom apartments are approximately \$115 and up; for 2-bedroom apartments, \$150 and up. Rental prices for houses are appreciably higher.

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

MOTELS AND TRAILER COURTS

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

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

TRANSPORTATION TO CAMPUS AND PARKING

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

Automobile

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

Bicycle, Motor Scooter and Motorcycle

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

Student Services and Activities

STUDENT HEALTH SERVICE

This facility provides complete medical, surgical, and hospital care for short-term illnesses and injuries, diagnosis and emergency treatment for dental conditions, and guidance and limited treatment for chronic diseases. This care is given in the Student Dispensary and Student Hospital Ward, located in the Center for the Health Sciences, and in the Emergency Station in the Pauley Pavilion. Arrangements have been made whereby the resources of other facilities in the Health Sciences Center and the associated Neuropsychiatric Institute can be utilized in the care of student patients, with a minimum of formality and loss of time, and without any additional expense to the student. With these unexcelled resources practically any condition can be treated provided it is one which is eligible for care under Student Health Service auspices.

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, or emergency dental treatment. 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, however, 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 by virtue of paying 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. It is especially staffed and equipped to provide prompt expert care for athletic injuries.) When these facilities are closed, students in need of emergency care are treated at Student Health Service expense in the UCLA Hospital Emergency Room; ambulance and other serious cases in need of immediate specialized emergency treatment are treated at any time. The Student Health Service is not responsible for ambulance fees, except when previously authorized in connection with on-campus emergencies.

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

Limitations

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

dent be transferred to our care while attending the University; (9) Ambulance or other transportation; (10) Wheelchairs or special orthopedic apparatus; (11) Filling of prescriptions for drugs, 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 treatment of an acute illness or injury 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 (Murphy Hall 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 (Murphy Hall 3337) 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. Two and four year scholarships are offered in the four year program. See page 366 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 379 for details of the program.

Air Force Reserve Officers' Training Corps

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

ROTC Draft Deferment

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

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

OFFICE OF SPECIAL SERVICES

Selective Service (Draft)

Selective Service information and counseling on draft matters are available at the Office of Special Services, A-255 Murphy Hall. Students subject to Selective Service should keep their local boards informed of all situations which might affect their draft classifications.

Verification of enrollment in full-time programs will be submitted to the Selective Service Boards from forms included in the registration packets issued by the Registrar. Students who wish notification sent to their Selective Service Boards 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. The official University requirement for minimum progression from one class level to the next is: completion of 40.5 units at the end of the first year; 84 units at the end of the second year; and 135 units at the end of the third year. Unless these minimum requirements are maintained, the Selective Service boards may not grant the 2-S deferment. 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 who are also on the State Program are eligible for fee waivers for the registration 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 Murphy Hall, as soon as possible. These students must be prepared to pay all fees and educational costs at the time of registration, as education and training allowances are paid to the student by the Veterans Administration. The first monthly payments will normally be received 60 days after compliance with the above instructions. All students registered under a veteran's or dependent's subsidy program are required to file an official study list in the Office of Special Services during the first week of classes of each quarter.

Social Security Benefits for Students

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

Vocational Rehabilitation Service

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

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

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

Work-Study Program

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

THE ASSOCIATED STUDENTS

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

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

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

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

UNIVERSITY STUDENT ACTIVITIES OFFICE

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

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

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

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

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

OFFICE OF CULTURAL AND RECREATIONAL AFFAIRS

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

RECREATION SERVICES AND FACILITIES

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

INTRAMURAL SPORTS

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

THE UNIVERSITY RECREATION ASSOCIATION

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

Sunset Canyon Recreation Center

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

PHYSICAL EDUCATION

A limited number of regularly scheduled classes are available on the beginning, intermediate and advanced levels in a variety of individual and dual

sports, team sports, conditioning activities and social dance. Students may specialize in one area of interest or choose a different activity each quarter.

Regularly scheduled classes are available on the beginning, intermediate and advanced levels in a 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

PLACEMENT AND CAREER PLANNING CENTER

Full-Time Career Planning and Placement. A staff of professional placement representatives is available for consultation about specific career opportunities, planning a job search, as well as more general counsel to assist in the formulation of career directions. This service is available to all regularly enrolled students of the University, their spouses, and alumni.

Included in the service is the Campus Interview Visit Program. Representatives from hundreds of organizations visit the campus each year to interview students of all disciplines and degree levels and to discuss a diversity of employment opportunities with interested students. To participate in this program, contact should be made with the Placement and Career Planning Center, preferably a year prior to completion of studies.

In addition, the Center receives numerous listings of full-time career opportunities from many organizations that do not participate in the Campus Interview Visit Program. In the case of such listings, students and alumni are referred directly to the employers' offices.

Part-Time and Temporary Employment. Currently enrolled students and their spouses seeking employment during the regular quarters and vacation periods may register with the Center. A job listing and referral service is provided to assist the student in finding suitable employment. Opportunities range from temporary, on call, or part-time jobs during the school year to full-time jobs during quarter-length vacations.

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

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

OFFICE OF EDUCATIONAL CAREER SERVICES

The Office of Educational Career Services refers graduates, students, and former students to teaching and administrative 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 Career Services, 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 instance the aim is to recommend the best available persons, considering 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 at least four courses on a grade basis, 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. An honors student may, by petition to the Dean of Honors Programs, and after consultation with an Honors Counselor, be permitted to satisfy the College E-I requirements by the following alternative method: (a) seven courses in a division of the College other than the division of his major, (b) one course in each of the other two divisions of the College other than the division of his major, and (c) one course in a department listed under the (I) Requirement: Limited Electives. Lower-division courses in a foreign language and courses in another division required as preparation for the major or as part of the major may not be used to meet these requirements.

3. Honors students receive stack passes to the University Research Library.

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

5. 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.

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

HONORS WITH THE BACHELOR'S DEGREE

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

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

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

Requirements for the Bachelor's Degree

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

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

2. The candidate shall have completed the general University and College requirements (A) to (I) inclusive (see pages 69-72 of this bulletin).

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

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

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

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

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

General University and College Requirements

It is advisable that each of the requirements be completed as early as possible in the student's progress toward the degree, normally all of them within the

first 24 quarter courses (96 units) of college work. In majors requiring unusually heavy lower division preparation, some postponements may be advisable.

A. Subject A

An examination in Subject A (English Composition) is required of all entrants at the time of their first registration in the University. For further regulations concerning Subject A, see page 39 of this bulletin.

B. American History and Institutions. See page 40 of this bulletin.

C. Foreign Language

Five quarter courses in one or two languages or their equivalent. Each year of high-school language (grade C or better) is equivalent to one University course.

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

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

D. English Composition

One course in English composition (English 1) with a grade of C or better. This requirement may also be satisfied with a score of 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 675 on the CEEB Scholastic Aptitude Test. Transfer students who have completed with grade C or better a college composition course that has not satisfied the College of Letters and Science requirement in English composition may be eligible for the proficiency examination after an interview by the department. Eligible students must register for the examination in the English Department office prior to the day of enrollment in each quarter. A bona fide student from abroad, who has learned English as a foreign language and in whose secondary education English was not the medium of instruction, may satisfy this requirement by completing English 33C with a grade of C or better when that course is required.

Breadth Requirements (E-I)

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

An optional plan for satisfying the E-I requirements is open to students in Honors Status. See page 67.

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

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

Humanities

Ancient Near Eastern Civilizations
Arabic
Classics
English
French
German
Greek
Hebrew
Indo-European Studies
Italian
Latin
Linguistics
Music
Near Eastern Studies
Oriental Languages
Philosophy
Portuguese
Scandinavian Languages

Slavic Languages

Spanish
Speech

Life Sciences

Bacteriology
Botany
Physical Education
Premedical Studies
Psychology
Psychology-Mathematics
Zoology

Physical Sciences

Astronomy
Chemistry
Earth Physics and Exploration Geophysics

Geology

Mathematics
Meteorology
Physical Sciences-Mathematics
Physics

Social Sciences

Anthropology
Business-Economics
Economics
Geography
History
Latin American Studies
Political Science
Presocial Welfare
Public Service
Social Sciences for Elementary Teachers
Sociology

* 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.

E. Physical Sciences

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

- (1) Physical Sciences 1;
- (2) Physical Sciences 2;
- (3) One of the following: Physical Sciences 3A, Physical Sciences 3G, Physical Sciences 3M.

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

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

F. Life Sciences

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

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

Students in the Humanities and Social Sciences will take:

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

This requirement may also be satisfied by Biology 1A-1B, and one course in biological science other than Biology 2, or, for transfer students, by three quarter courses (two semester courses, totaling at least eight semester units) in biology, bacteriology, botany, or zoology.

G. Social Sciences

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

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

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

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

H. Humanities

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

Philosophy. Students may select either of the following sequences:

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

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

Literature. Students may select courses from the following list:

Humanities 1A, 1B. (Students completing Humanities 1A–1B may elect one additional course from Humanities 101, 102, 103, 104, 105.)

English 10A, 10B, 10C, 100, 101, 102, 103, 104, 110, 113, 115, 116, 117.

Any of the courses in foreign literature, either in the original language or in translation offered by the departments of Classics, French, Germanic Languages, Italian, Linguistics (African Languages), Near Eastern Languages, Oriental Languages, Slavic Languages, and Spanish and Portuguese (see page 281 of this bulletin for a list of such courses) apply on this requirement.¶

I. Limited Electives

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

Credit For Advanced Placement Tests

Students may fulfill a part of the College requirements with credit allowed at the time of admission for College Entrance Examination Board Advanced Placement Tests with scores of 5, 4, or 3. Advanced Placement Test credit will fulfill requirements in the College of Letters and Science as follows:

TEST	CREDIT ALLOWED ON COLLEGE REQUIREMENTS
Biology	Biology 2 and one elective on the <i>F</i> requirement.
Chemistry	Physical Sciences 2 on the <i>E</i> requirement.
English	Fulfills the <i>D</i> requirement (Grades 4 and 5 only).
Foreign Language	Fulfills the <i>C</i> requirement.
History—American	History 7A on the <i>G</i> requirement.
History—European	History 1C on the <i>G</i> requirement.
Mathematics	Fulfills third course on the <i>E</i> requirement, if student takes chemistry and physics other than Physical Sciences 1 and 2.
Physics	Physical Sciences 1 on the <i>E</i> requirement.

Students should be aware that portions of Advanced Placement Test credit may be evaluated by corresponding UCLA course number; e.g. History 7A. If a

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

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

† Only courses offered by a department of history may apply.

student takes the equivalent UCLA course, a deduction of unit credit for such duplication will be made prior to graduation.

Regulations Governing the Major

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

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

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

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

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

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

Each sophomore and upper division student, and each freshman student who has chosen his major, must designate his major on his study-list card; he must register with the department or committee in charge of his major; and he shall be advised by a representative of the department or committee before filing his registration packet.

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

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

Organized Majors in the College of Letters and Science

DEPARTMENTAL MAJORS LEADING TO THE BACHELOR'S DEGREE

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

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

INTERDEPARTMENTAL MAJORS LEADING TO THE BACHELOR'S DEGREE

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

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

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

Special Program in African Studies

Committee in Charge. C. S. Whitaker (chairman), E. A. Alpers, Mrs. H. Kuper, J. F. Povey, W. E. Welmers.

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

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

* Leading to the degree of Bachelor of Science.

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-125C; Political Science 130, 166; Sociology 130.

Special Program in International Relations

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

This program can only be taken jointly with a major in political science. The student completing this special program will receive a degree with a major in political science and specialization in international relations. The program is designed to serve the needs of: (1) students desiring a general education focused on international affairs; and (2) students preparing for graduate work in international affairs, whether in a social science, in area study, or in a school of foreign service.

The program also partially serves the needs of: (1) students planning careers (in business, law, journalism, or library service) with an international emphasis; and (2) students preparing to teach social science in the secondary schools. These students should govern their programs primarily by the preparation requirements of the professional school or teaching credential of their choice.

Preparation. Political Science 1 and 2, History 1A-1B-1C, or any three courses selected from History 8, 9A-9B-9C-9D. Economics 1 and 2, or 100. Sociology 1 or 101. Anthropology 22 or 100. One course selected from Geography 1B, 10A-10B-10C, 101.

Upper division. The political science major should be completed as follows: Political Science 110, 120, 121, 141, 150 are required. Select two additional courses from Group II, International Relations (courses 123 to 139); one course from Group IV, Comparative Government (152 to 169); one course from 115, 146, 188A.

Other social-science courses required: Anthropology 125; Economics 180, 190; Geography 140; History 141F-141G, 178A-178B; Sociology 140.

Language requirement: completion of the sixth quarter course (or its equivalent, as prescribed by the language department), with a grade of C or better, of any modern foreign language. French 6, German 6, Spanish 25, Russian 6 or 14, are most frequently offered in fulfillment of this requirement, but see also the offerings listed under Portuguese, Italian, Germanic Languages, Near Eastern and African Languages, and Oriental Languages. Chinese, French, German, Russian and Spanish, are the languages of widest career utility in international affairs.

Recommended Courses: Geography 180 through 190; History 125 through 169, 191 through 196; Sociology 120, 126; Economics 110, 111, 112; Anthropology 122, 161, 165.

Area Focus. Students are advised but not required to concentrate their political science, geography, history and language courses so as to achieve broad

familiarity with one area such as Latin America, Africa, the Atlantic area, the Soviet sphere, East Asia, Southeast Asia, South Asia, or the Middle East.

Major in Earth Physics and Exploration Geophysics

Committee in Charge. R. L. Shreve (chairman), L. Knopoff, 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 7A-7B-7C-7D.

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

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

OPTION II. EARTH PHYSICS

Preparation for the Major. Chemistry 1A-1B-1C; Mathematics 11A-11B-11C, 12A-12B-12C; Physics 7A-7B-7C-7D.

The Major. Physics 105A-105B, 110A-110B, 112A, 114A, 115A-115B-115C, 131; Planetary and Space Science 101; and either Mathematics 130A-130B or 131A-131B.

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

Major in Latin American Studies

Committee in Charge. C. F. Bennett (chairman), E. Gonzalez, C. L. Hulet, J. M. Lockhart, A. Machado da Rosa, C. W. Meighan.

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 8, Portuguese 3, and Spanish 5, 25.

The Major. Required: Anthropology 107; Geography 181, 182; History 162A-162B; Political Science 168A-168B; Spanish 121A-121B or Portuguese 121A-121B; *Major Electives:* Five courses with Latin American content chosen from the following list (199 courses must have Latin American content): Anthropology 109, 117, 121, 133A, 133B, 134, 199; Art 118B, 199; Dance 146, 171J, 199; Economics 110, 111, 112, 199; Geography 199; History 163A-163B, 166, 168A-168B, 169, 199; Linguistics 118A, 118B, 118C, 119A, 119B, 119C; Music 131, 171J, 199; Political Science 131, and when concerned with Latin American, 139, 169, 198, 199; Sociology 131 (same as Anthropology 121), 199; Spanish American Literature 118, 121A-121B (when not counted as part of the major requirement), 137, 139, 143, 149, 151, 160B, 199; Brazilian Literature 101A, 118, 121A-121B (when not counted as part of the major requirement), 131, 133, 199. *Additional Electives:* Four upper division courses to be approved by the curriculum adviser.

Major in Near Eastern Studies

Committee in Charge. A. Tietze (chairman), M. H. Kerr, G. Sabagh, A. K. Sanjian, S. J. Shaw.

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

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

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

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

Preparation for the Major. Chemistry 1A-1B-1C, 4A-4B, 6A-6B; Mathematics 11A-11B-11C and 12A-12B or 13A-13B; Physical Sciences 3G, 3M; Physics 7A-7B-7C-7D.

The Major. Astronomy 101; Chemistry 110A; Education 130 and either 100 or 108 or 112; Mathematics, three upper division courses, preferably 103A-103B and 106, or 101A-101B and 102A; Physical Sciences 370 (or Mathematics 370); Physics 105A and 121; and three other upper division courses from the physical sciences, life sciences or History (History of Science).

Major in Presocial Welfare

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

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

Major in Psychology-Mathematics

Committee in Charge. T. R. Trabasso (chairman), A. L. Comrey, B. O'Neill, S. Port, M. Seeman.

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

Preparation for the Major. Biology 2, or Biology 1A-1B; 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. E. A. Engelbert (chairman), L. S. Burns, J. Cohen.

The Public Service Major is presently being revised to more adequately reflect social and urban problems. Please consult the College of Letters and Science for information.

This major, which combines work of several departments, prepares students for careers in government. The major is of value also for students who are interested in positions with quasi-governmental and 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. Under approved arrangements academic credit may be given for internships and related field-work assignments. Academic credit for field assignments will normally be granted through Special Study Courses in appropriate Departments.

Major in Social Sciences for Elementary Teachers

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

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

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

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

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

The Major. The major consists of 11 upper division courses distributed as follows: (1) three courses from History 121A, 121B, 141A-141B, 141C, 162A-162B, 166, 176A-176B, 177A-177B, 178A, 178B, 179A, 179B, 180A-180B, 181, 188; (2) four courses from Geography 110, 120, 122, 124, 130, 132, 134, 140, 150, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 191; (3) two courses in two

of the following departments: (a) *Anthropology*: two courses from the following: 100, 102, 105, 106, 107, 110, 124, 125, 127, 130A-130B, 167; (b) *Economics*: two courses from the following: 100, 105, 107, 108, 110, 111, 120, 130, 178, 180, 181, 190; (c) *Political Science*: two courses from the following: 112, 113, 114, 115, 120, 121, 123, 141, 142, 143, 144, 145, 171, 173, 174, 180, 181, 182, 186; (d) *Psychology*: two courses from the following: 110, 122, 125, 130, 132A-132B, 135; (e) *Sociology*: two courses from the following: 101, 120, 121, 122, 123, 124, 125, 130, 132, 133, 141, 142, 145, 146, 150, 151, 152, 153, 154, 155.

The Allied Field. The allied field in English consists of 3 upper division English courses, including two chosen from the following: 102, 103, 104, 110, 111, 112, 113, 115, 116, 117, 142A-142B, 157, 164, 165, 170, 171, 172, 173 and 174.

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

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

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

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

Preparation for Various Professional Curricula

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

Precriminology Curricula: Two Years

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

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

Basic Program (all students). English 1, 2; Foreign Language (modern), equivalent of course 3; Psychology 10; Sociology 1 and another sociology course.

Criminology (Social Science Emphasis). Mathematics 50 or Sociology 18; Political Science 1, 2; Psychology 70, or 125 or 130; 18 units of natural science including at least one of the following: Biology 1A, 1B, 2; Humanities courses, 18 units.

Criminalistics (Natural Science Emphasis). Biology 2; Chemistry 1A-1B-1C, 4A-4B, 6A-6B; Mathematics 3A or 11A; Physics 2A-2B-2C; Psychology 10; Humanities courses, 5 units. (Statistics 20 will be taken at Berkeley.)

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

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

Predental Curriculum: Two Years

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

Adviser for Applicants to Dental Schools. Nancy Laurie, School of Dentistry.

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

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

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

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

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

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

Predental Hygiene Curriculum: Two Years§

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

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

The 90 quarter units of work required for admission to the School of Dentistry include general University requirements and additional specific requirements,

* School of Dentistry, page 102.

† Other dental schools may have different requirements.

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

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; (6) Psychology 10, and one additional course; (7) Electives: Courses in Social Sciences and humanities (including foreign language).

Preengineering Curriculum: Two Years

Program Adviser. E. H. Taylor and staff. Appointments may be made at 6412 Boelter Hall.

Students may transfer to the School of Engineering and Applied Science at the upper division level from a variety of majors. A Pre-Engineering Curriculum has been planned to assist students who envision an engineering major early in their college years.

UCLA offers a three-part 5-year program in engineering leading to the degree of Master of Science. The first part of the program, the Pre-Engineering Curriculum, is given at the University of California in the College of Letters and Science. Parts II and III of the program, the upper division and graduate years, are given in the School of Engineering and Applied Science.

Three courses in chemistry, six courses in mathematics, and four courses in physics constitute the minimum requirements for acceptance to the School (see page 116). In addition to this minimal preparation students undertaking the Pre-Engineering Curriculum are advised to include one course each in English composition, computer science, and life science. If taken elsewhere, the courses selected to meet the minimum requirements must be equivalent to those offered at the University of California for physical science majors.

Students who are enrolled in the Pre-Engineering Program in the College of Letters and Science will take the following courses:

Mathematics 11A-11B-11C, 12A-12B-12C

Physics 7A-7B-7C-7D

Chemistry 1A-1B-1C

English 1 (with grade of C or better)

1 course in computer science

1 course in the Life Sciences

4 courses in the Humanities, Social Sciences, and Fine Arts

3 courses of free electives

In selecting courses to meet the above requirements in the Life Sciences, Humanities, Social Sciences, and Fine Arts, students are advised to choose courses listed under the F, G, H, and I requirements of the College of Letters and Science.

Further information concerning the program of the School of Engineering and Applied Science leading to the degree of Master of Science may be found on page 122.

Premedical Studies: Four Years‡

Program Adviser. See major department.

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

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

Premedical Curriculum: Three Years‡

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

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

Students who fulfill the following curriculum requirements in the College of Letters and Science at Los Angeles and who are then admitted to the School of Medicine at Los Angeles without the bachelor's degree may, by petition, upon satisfactory completion of the first year medical curriculum, be eligible for award of the degree Bachelor of Science in Premedical Studies by the College of Letters and Science. Only students who have taken all of their course work at Los Angeles are eligible for this degree. *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; 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

‡ 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; 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 71 and 72 of this catalog.

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.

Prenursing Curriculum: Two Years

Committee in Charge. M. M. McCaffery (chairman), E. Hartigan, 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 4, or four years of one language in high school); (4) Elementary algebra and plane geometry; (5) English 1; (6) Physical sciences: Chemistry 1A-1B-1C, 4A/6A, 4B/6B; Physical Sciences 1 (or a high school course in physics with laboratory); (7) Life sciences: Bacteriology 100A; Biology 1A-1B; Psychology 12; (8) Social sciences: Anthropology 22 or 5A; Psychology 10; Sociology 1 or 101; (9) Humanities: two courses in literature or Philosophy 6, 7 or 20, 21 or 31, 32; (10) Limited electives: two courses in art, history, literature, music or philosophy.

Preoptometry Curriculum: Two Years

Adviser: Frederick Crescitelli, Department of Zoology.

A two-year program designed to prepare students for admission to optometric schools may be completed in the College of Letters and Science. Students planning to transfer to the School of Optometry at Berkeley are advised to contact the Dean of the School of Optometry, University of California, Berkeley, California 94720 as early in their preprofessional studies as possible.

The student will be adequately prepared for preoptometric studies 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 Optometry, Berkeley, include the following:

General University Requirements—(1) Subject A, (2) American History and Institutions

Specific UCB School of Optometry Requirements—(1) English 1 and 2; (2) Chemistry 1A-1B-1C, 4A-4B, 6A-6B; (3) Physics 2A-2B-2C; (4) Biology 1A-1B; Psychology 10; (5) Mathematics 3A-3B-3C or Mathematics 11A-11B-11C.

The balance of the 90 quarter units required for admission may be selected from the social sciences, foreign languages and the humanities.

Prepharmacy Curriculum: Two Years

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

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

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

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

Prephysical Therapy Curriculum: Three or Four Years

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

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

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

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

§ Students who have completed the two-year prepharmacy curriculum at Los Angeles cannot be assured of admission to the School of Pharmacy of the San Francisco campus. When the number of qualified applicants for the Doctor of Pharmacy curriculum exceeds the available facilities, selection will be made on the basis of scholarship as determined from the College record. A personal interview may be required. Applications for admission to the School of Pharmacy, San Francisco campus, must be filed between October 1 and February 1 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.

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

Other Professional Curricula in the University

JOURNALISM

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

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

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

LIBRARY SERVICE

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

Undergraduate students in the University who are primarily interested in entering a graduate library school should select a major from the list of majors. This major and the appropriate college should be indicated on the undergraduate Application for Admission, with Library Service in parentheses: e.g., *Letters and Science, English (Library Service)*. This will make it possible for the College to assign the student to the proper adviser who will help the student plan a program in his selected major with electives recommended by the School of Library Service. This procedure will also assure that the admission requirements, such

as a reading knowledge of two modern foreign languages, of the School of Library Service are known to the student. Neither library service nor librarianship should be listed as a major.

RELIGION

Advisory Committee. K. W. Bolle (chairman), E. Ashikaga, A. Funkenstein, P. E. Hockings, C. W. Savage.

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 74 of this bulletin (recommended majors are English, history, philosophy) and indicate this major on the undergraduate Application for Admission, with the word "religion" in parentheses, e.g., *Letters and Science, History (Religion)*.

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

The attention of students interested in religion is directed to the following specific courses: Anthropology 124 (Comparative Religion); Arabic 150A-150B (Survey of Arabic Literature in English); Art 105A (Early Christian and Byzantine Art); Classics 161 (Introduction to Classical Mythology); English 113 (The English Bible as Literature); Hebrew 120A-120B-120C-120D-120E-120F (Biblical Texts), Hebrew 150A-150B (Survey of Hebrew Literature in English); History 121A (The Early Middle Ages), History of 121B (The Later Middle Ages), History 124A-124B (History of Religions), History 131A-131B (Armenian History), History 135 (Introduction to Islamic Culture), History 138A-138B (Jewish History), History 141B (The Reformation), History 177A-177B (Intellectual History of the United States); History 196A (Early History of India), History 204A-204B (History of the Church in the Middle Ages), History 207 (Armenian Intellectual History); Italian 113A-113B-113C (Dante's "Divina Commedia"); 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).

THE COLLEGE OF FINE ARTS

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

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

Requirements for the Bachelor's Degree

UNIT REQUIREMENTS

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

SCHOLARSHIP REQUIREMENTS

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

RESIDENCE REQUIREMENTS

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

Students transferring from other institutions or from University Extension with senior standing must complete while enrolled in the College of Fine Arts at least 28 units in upper division courses, including 16 units in the major department. This regulation does not apply to students transferring from other colleges within the University.

Concurrent enrollment in resident courses and in courses at another institution or in University Extension is permitted only when the entire combined program has been approved in advance by the Dean.

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.

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 39.

American History and Institutions. See page 40.

General College Requirements*

The general requirements of the College of Fine Arts provide for breadth in the student's education, and are planned to insure a degree of basic skill in communication—both in English and in at least one foreign language, and to give the student an introduction to each of the broad fields of human learning: natural science, social science, and the humanities. It is intended that these requirements will be spread over the entire undergraduate program, and students are encouraged to take both lower and upper division courses for the completion of these requirements. *Any course applied on one of the five general requirements may not also be applied on another of these requirements.*

English Composition

At least two courses (8 units) in English composition (English 1–2), with grades of C or better. This requirement may be met in part by passing a proficiency examination in English 1, administered by the Department of English (see page 69).

A foreign student whose entire secondary school work was completed in his native tongue, excluding English, may satisfy this requirement with English 33C and 106J if completed with grades of C or better.

* Credit earned through the C.E.E.B. Advanced Placement Examinations may be applied on these requirements as follows: all credit in science and mathematics will apply on the natural science requirement; all foreign language credit will apply on the language requirement; credit for English 1 and 2 will apply on the English composition requirement; credit for History 7A will satisfy the American History and Institutions requirement, and additional history credit will apply on the western civilization part of the social science requirement.

Foreign Language

At least four courses (16 units) in one language, or five courses (20 units) in two languages.

Without reducing the total number of units required for the bachelor's degree, high school work with grades of C or better and not duplicated by college work will count as follows: the first two years together equal two college courses, and the third and fourth years each equal one college course. Also, students possessing an unaccredited skill in a foreign language may validate it for the purpose of this requirement by passing a proficiency examination.

Courses in foreign literature in English translation may not be applied on this requirement.

A foreign student whose entire secondary school work was completed in his native tongue, excluding English, may *upon petition* be considered as having fulfilled the foreign language requirement.

Natural Science

At least three courses (12 units) in natural science, including one course (4 units) in physical science and one course (4 units) in biological science.

Physical Science. All courses in astronomy, chemistry, geology, mathematics, meteorology, physical science, and physics (see Mathematics 1, 2A, 38, 50, 100, Physical Sciences 1, 2, Physics 121). Also, Geography 1A, Philosophy 31.

Biological Science. All courses in bacteriology, biology, botany, paleontology, and zoology (see Bacteriology 6, Biology 2, Botany 12). Also, Anthropology 1A, 1B, 11, Geology 115, Medical History 107B, Physical Education 15, 111A-111B, Psychology 12.

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 141, 142, 143, 144, 146, 161, 162, Folklore 101, 105, and Humanities 1A, 1B, 1C-1G.

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

Departmental Requirements

THE MAJOR

Each candidate for the bachelor's degree is required to complete a major in the College of Fine Arts with a scholarship average of at least two grade points per unit (C average) in all upper division courses, and must be recommended by the chairman of his major department.

A *major* is composed of not less than 14 courses (56 units), including at least nine upper division courses (36 units). The major includes both lower and upper division courses, arranged and supervised by the department and approved by the Executive Committee of the College.

Special attention is directed to the courses listed as *preparation for the major*. In general, it is essential that these courses be completed before upper division major work is undertaken. In any event, they are essential requirements for the completion of the major.

As changes in major requirements occur, students are expected to satisfy the new requirements insofar as possible. Hardship cases should be discussed with the departmental adviser, and petitions for adjustment submitted to the Dean of the College when necessary.

Any student failing to attain a scholarship average of at least two grade points per unit in his major department may, at the option of the department, be denied the privilege of a major in that department.

A department may submit to the Dean of the College the name of any student who, in the opinion of the department, cannot profitably continue in the major, together with a statement of the basis for this opinion and the probable cause of the lack of success. The Dean may permit a change of major, or may, with the approval of the President, require the student to withdraw from the College.

Any department offering a major in the College of Fine Arts may require from candidates for the degree a general final examination in the department.

ORGANIZED MAJORS AND CURRICULA IN THE COLLEGE OF FINE ARTS

Departmental majors leading to the degree of Bachelor of Arts, with opportunities for specialization as indicated, are offered in the following areas:

Art. Art History, Design,* Pictorial Arts.*

Dance.*

Music. Composition and Theory, Ethnomusicology, History and Literature, Performance, Music Education.*

Theater Arts. Theater, Motion Pictures, Television-Radio, Secondary Teaching Curriculum.*

With the proper selection of courses, including those designated by the Graduate School of Education, teaching credentials are available in the majors and specializations marked with an asterisk (*).

Honors in the College of Fine Arts

DEAN'S HONORS

Dean's Honors will be awarded each quarter to students completing the previous quarter's program with distinction according to criteria established by the Dean of the College.

DEPARTMENTAL HONORS PROGRAMS

Each department offering an undergraduate major may establish an Honors Program including special courses, or supplementary and advanced directed study, or both.

COLLEGE HONORS WITH THE BACHELOR'S DEGREE

College Honors are awarded at graduation to students with a superior overall grade-point average. The honor designations and the requirements for each are Cum laude, an overall average of 3.25; Magna cum laude, 3.6; Summa cum laude, 3.8. To be eligible for College Honors, a 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 School of Architecture and Urban Planning at the University of California, Los Angeles, currently offers a two-year program of graduate study in Urban Design.

The Urban Design Program

The UCLA Urban Design program leads to the degree of Master of Architecture (Urban Design). Graduates of the program will be prepared to perform professional services in urban design, a discipline which bridges the normal concerns of the architect and city planner. The Urban Design program is open to applicants of demonstrated design ability who have completed the Bachelor of Architecture degree, or its equivalent, and now desire training in Urban Design. Applicants from fields related to urban problems may be considered for admission as degree candidates in individually adjusted programs. The student in the two-year Urban Design curriculum will undertake a comprehensive program of design-oriented studio work based strongly on the social and technological sciences to foster the highest standard of professional competence and understanding of the nature of urban design.

Description of Program

The Urban Design program at UCLA is based on the conviction that urban design education is closely linked to a number of interrelated disciplines. The curriculum is organized to respond sensitively to the creative and experimental ideas of those disciplines to permit the dynamic interaction of contrasting approaches. The UCLA program incorporates related scientific and technological disciplines into the design studio as an integral part of the design process. The Urban Design studio is conducted by a multidisciplinary staff. When appropriate, the studio is expressly devoted to new technologies and methodologies: an urban system planning model and the utilization of the film and television media for urban design purposes are two recent examples. These projects indi-

cate the effort of the program to utilize the resources of specialist groups on and off campus.

Multidisciplinary faculty have been appointed to the Urban Design program from the disciplines of Sociology, Economics, Political Science, Engineering, Law, and Business Administration, as well as specialists from private firms and technologists from the aerospace industries in the Los Angeles area. Working relationships with such on-campus centers as the Institute of Government and Public Affairs, etc., are proving to be advantageous to all participants.

The studio is supplemented by seminars on the development of theory and practice of urban design, on the one hand, and by a survey of the frontier of research in the disciplines related to urban design, on the other. A report of a summer of professional experience between the first and second year with an approved organization is part of the program requirements. The aerospace industries and research centers located in the Southern California region provide unique intellectual and technological resources. Students in the UCLA Urban Design program visit and interact personally with the staffs of these establishments. In addition, visits to local professional firms and government agencies are frequently scheduled.

The Urban Design program is active in research to enrich the teaching program, expand theory and knowledge of urban design, contribute to public service, and to provide training and support for qualified graduate students with assistantships.

Admission

Entrance prerequisites to the Urban Design Program:

1. A Bachelor of Architecture degree from a professional curriculum of an accredited school or its equivalent degree.

2. Admission to graduate standing by the University.

3. Outstanding design ability evidenced by exhibits of past work.

4. Completion of the following courses at college level or its equivalent:

Principles of Economics

Principles of Sociology

Introduction to American Government

Economics 1 and 2

Sociology 101

Political Science 1

5. Ability to devote full time in residence to meet the requirements of the program.

A period of practical experience is desirable but not mandatory.

There is no foreign language requirement for completion of the program.

Application forms should be obtained from the School of Architecture and Urban Planning. They should be submitted to the Admissions Section of the Graduate Division with supporting papers, including official transcripts in duplicate for all college and university work completed. In addition, the following materials should be submitted directly to the School of Architecture and Urban Planning: one official transcript from each professional school attended; at least

three letters of recommendation, two of which must be from professionals in architecture or planning; and a brochure of the student's work, representative of his design ability.

Fellowships and Assistantships

Graduate fellowships and assistantships are available to qualified students in the Urban Design program. These generally carry a stipend of \$2,000 per academic year, plus tuition waivers in certain cases for out-of-state students. Address inquiries to: Admissions, School of Architecture and Urban Planning, University of California, Los Angeles, California 90024.

The Curriculum

The first half of the two-year program is designed to develop the student's capability to deal with the complex urban environment in an organized way, with an understanding of the social and political context in which the urban development occurs. Students are exposed to related fields in the social and technological sciences. The second year is less formally structured, and the student is encouraged to pursue inventive interests in special areas. *First year:* Fall quarter—401 Urban Design Studio I, 411 Seminar; Winter quarter—402 Urban Design Studio II, 412 Seminar; Spring quarter—403 Urban Design Studio III, 413 Seminar. *Second year:* Fall quarter—404 Urban Design Studio IV, Elective; Winter quarter—405 Urban Design Studio V, Elective; Spring quarter—406 Urban Design Studio VI, Elective.

GRADUATE SCHOOL OF BUSINESS ADMINISTRATION

The Graduate School of Business Administration offers curricula leading to the graduate degrees of Master of Business Administration, Master of Science, and Doctor of Philosophy in Business Administration. The School also offers a Certificate of Resident Study for foreign scholars. The Department of Business Administration offers certain courses which may be elected by undergraduate students.

Preparation for Graduate Study

Students in other schools or colleges may elect a limited number of undergraduate courses in the School, particularly if taken as preparation for graduate study in business administration. Economics majors may, without petition, apply two of the following courses toward the requirement for nine upper division Economics courses.

Business Statistics,	BA 115A
Intermediate Accounting,	BA 120A
Intermediate Accounting,	BA 120B
Managerial Accounting,	BA 120M
Business Finance,	BA 130

Students with an interest in graduate study in business administration may pursue any undergraduate major. For example, a student planning to enter the M.S. degree program in computer methods, mathematical methods or statistics may wish to choose an undergraduate major in mathematics; or a student inter-

ested in the field of marketing or socio-technical systems may prepare through a major in one of the behavioral sciences or in engineering.

Detailed information about preparation for graduate programs in Business Administration may be obtained from the Graduate Student Affairs Office, the Graduate School of Business Administration.

The Graduate Program

The Graduate School is a professional division of the Graduate Division of the University of California. Its objectives are as follows:

To prepare exceptionally qualified students for careers as teachers and research scholars in the areas of management, organizational behavior and the traditional fields of business administration.

To provide professional education that will develop in qualified students the intellectual and personal attributes that are needed for successful careers in management or as staff specialists in public or private enterprises.

To enlarge through research the body of systematic knowledge about business administration, the management process, and the environment in which the enterprise functions, and to disseminate this knowledge through publications and improved teaching materials.

To offer management development programs for experienced businessmen.

ADMISSION

Applicants to the Graduate School of Business Administration must meet the requirements for admission to the Graduate Division of the University as well as those of the School. Application forms must be filed by each student for both the Graduate Division and the Graduate School of Business Administration.

Applications. Early application *with complete documentation** is advisable because the number of applicants may exceed the number of students who may be accommodated in any degree program. Inquiries should be directed to the Graduate Student Affairs Office, Graduate School of Business Administration. Application deadlines are as follows:

Quarter	Masters	Ph.D.	All Foreign
Summer	March 15	No admissions	January 15
Fall	April 15	March 15	March 15
Winter	October 15	October 15	July 1
Spring	January 15	January 15	October 15

NOTE: Students may apply for the Unified 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.

* 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*.

To be admitted to graduate status in the School, a student is required to have an undergraduate scholarship average of grade B in all courses taken in the junior and senior years and at least a B average in all postbaccalaureate course work completed. Admission to the Ph.D. program is limited and is based on a scholarly record of distinction in both undergraduate and any completed postgraduate work. Three 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 500 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, P.O. Box 966, 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 Assistant Dean of the Graduate Student Affairs Office, 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 560 to be admitted. Information concerning this test is also available at the Educational Testing Service.

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 of Graduate Student Affairs for fulfilling the requirement by taking courses offered by the Mathematics Department.

All graduate programs are full time. Employment, other than research and teaching assistantships, is not permitted for students in the Ph.D. program. Graduate students in all programs are required to enroll for at least two courses per quarter.

MASTER OF BUSINESS ADMINISTRATION DEGREE

The student may choose between two programs leading to the MBA degree: the *Curriculum* and the *Unified Program*. Both 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 stress the spirit of inquiry as a basis for lifelong learning and growth.

The following table summarizes certain features of the two programs, indicating their similarities and differences.

The Master of Business Administration Curriculum

The MBA Curriculum is a two-year program, whose first-year course requirements may be satisfied in whole or in part by the completion of equivalent courses prior to admission or by passing placement examinations. Students who have fulfilled part of the first-year requirements may, with the approval of the

Director of the MBA Curriculum, take second-year courses concurrently with the completion of their first-year work.

	MBA Curriculum	Unified MBA Program
Eligibility	Recognized bachelor's degree in business or non-business field	Recognized bachelor's degree in any non-business field
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	Varies, usually involves Monday, Tuesday, Thursday and Friday classes
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)

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

* X 400 courses offered in University Extension do not apply on these requirements.

Mathematics 2A–2B may be substituted for Mathematics for Management 402, and is normally taken in the first and second quarter.

SECOND YEAR PROGRAM

At least nine courses must be completed, including the following required courses: Business, Labor and Government 421, Business Economic Policy 422, Advanced Management Theory 423, Business and Society 424, and Business Policy 425A–425B (a double course, which must be taken in the last quarter, and which includes the Comprehensive Examination).

Each student also elects at least three courses from within or outside the School, in the 100, 200, 400, and 500 series (limit of two 500 courses for credit for minimum course requirement).

GENERAL REQUIREMENTS

Residence 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*, subject to a total time limitation of three calendar years for completion of all requirements. There is no foreign language nor thesis requirement.

The Unified Master of Business Administration Program

The Unified 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 (limit of two 500 courses for credit for minimum course requirement).

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

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 the certified public accountant examination.

The M.S. program requires one to two years of study depending upon the student's advance preparation and choice of a major field.

PREREQUISITES

The following basic courses or their equivalents, which may be completed before or after admission, are formally required as prerequisites in all areas: Business Economics 401, Accounting 403 (with computing laboratory), and Business Fluctuations 406. The following courses or their equivalents are required in all areas *except* Statistics and Mathematical Methods: Mathematics for Management 402 and Business Statistics 407.* Additional prerequisites are also specified by the faculty in each major field.

The fulfillment of prerequisite requirements by previous course work may be subject to validation by examination. Such examinations are required for 402 and 407 and are given during Registration week each quarter.

* X 400 courses offered in University Extension do not apply on these requirements.

ADVANCED WORK: THE MAJOR FIELD

The faculty in each major field specifies course requirements for the major, which may include individual courses or minor concentrations in other fields. The student's entire program of advanced work must comprise at least nine courses, beyond the prerequisites (including those specified for his major field). The program must include at least five courses in the 200 series. It may include one course 597, *Preparation for Examinations in Business Administration*, four courses in the 596-series, *Research in Business Administration*, and one or two 598-series courses, *Thesis Research in Business Administration*, provided that prior approval is obtained and that no more than four 500-series courses may be applied to the University minimum requirements for the M.S. degree.

Each student must complete a master's thesis or pass a comprehensive examination in his major field. A master's thesis is required in marketing. A comprehensive examination is required for majors in accounting. In all other fields, a student may choose, with faculty approval, either a comprehensive examination or a thesis.

GENERAL REQUIREMENTS

Residence 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* 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 Assistant Dean of the Graduate Student Affairs Office, Graduate School of Business Administration.

DOCTOR OF PHILOSOPHY DEGREE**BASIC UNIVERSITY REQUIREMENTS**

See pages 143-145.

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 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 145 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. Those not wishing to earn a specific degree may apply for the Certificate of Residence Study after having completed at least three quarters of full-time study with an acceptable 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 is automatically transferred to a degree program, after completion of one quarter. When a student transfers to a degree program, credit and grades earned in the Certificate Program will apply toward the degree.

SCHOOL OF DENTISTRY

The UCLA School of Dentistry occupies facilities in the Center for the Health Sciences. It enrolls classes of 96 students each year in a four-year course of study leading to the degree of Doctor of Dental Surgery. Students undertake a comprehensive program in the biological and technological sciences to foster the highest standards of clinical competence in the practice of dentistry.

Predental Requirements

Modern dentistry provides exciting opportunities for blending art and science, technology and biology. The predental student will therefore wish to test his abilities in handling both biological and physical sciences. In addition, there are many other aspects in the broadening scope of dentistry which contribute to preparation for a career in private practice, in academic dentistry, and in the Armed Forces and Public Health Service.

It is desirable, however, for the predental student to prepare himself for broad professional activities. He should take advantage of the opportunity at the college level to extend his cultural background, his knowledge of languages and the behavioral sciences. Many predental students now avail themselves of advanced educational opportunities so as to qualify for admission to graduate divisions, in which case the student may find it important to have completed more than two years of college work prior to admission to a school of dentistry.

The basic educational requirement for admission to the School of Dentistry is a minimum of two years of college work (60 semester or 90 quarter units including the courses listed under the College of Letters and Science on page 81 of this bulletin).

APTITUDE TEST

The School requires satisfactory performance on 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 required to take this examination no later than October of the calendar year prior to the one for which they are applying.

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 1970, should be submitted as early as possible, but no later than December 31, 1969. 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 by December 31, 1969.

Further information is provided in the UCLA ANNOUNCEMENT OF THE SCHOOL OF DENTISTRY, which will be mailed upon request.

GRADUATE SCHOOL OF EDUCATION

Four advanced degrees are offered by the Graduate School of Education: Master of Arts in Education, Master of Education, Doctor of Education, and the Doctor of Philosophy in Education. The degree programs are designed for the development of leadership in various educational fields.*

The Graduate School of Education offers curricula leading to state credentials in the following fields: elementary; secondary; junior college teaching; pupil personnel services; supervision; and school administration.

THE DEPARTMENT

The Department of Education is organized into six areas. The Area of Cultural Foundations offers instruction in philosophy of education, educational sociology, history of education, and comparative education. The Area of Educational Psychology offers programs in development and learning, statistics and measurement, and pupil personnel services. The Area of Curriculum and Instruction offers work in curriculum at the various levels in specific subject fields, and in

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

special educational programs. The Area of Administrative Studies offers programs in supervision and school administration. The Area of Higher Education offers facilities for studying various aspects of junior college, senior college, and adult education. The Area of Special Education offers instruction and research facilities in the education of exceptional children, emphasizing programs for the mentally retarded, educationally handicapped, and gifted. All areas cooperate in maintaining basic courses for the credential and degree programs.

The School is administered by a Dean, an Associate Dean for Academic Affairs, who is also Chairman of the Department; a Vice-Chairman; and Assistant Deans in charge of Financial Affairs, Student Affairs, Teacher Education and Urban Affairs.

Credential Programs†

To assure eligibility for a credential, the student must meet certain requirements *during his first quarter* of enrollment in courses in Education. Only students meeting the following requirements may enroll for a second quarter:

Communication Skills

During the first quarter the student must pass standardized tests given by the Office of Student Services in English. The student must also demonstrate that he is free from gross speech defects.

Academic Achievement

An undergraduate's transcripts must indicate at least a 2.0 overall grade point average. A graduate student must meet the admission requirements of the Graduate Division including a 3.0 grade point average. In order to remain in a teaching program after admission, undergraduate students must satisfy the scholarship requirements of the respective colleges. Graduate students must remain in good standing with the Graduate Division and must maintain at least a 3.0 grade point average.

Physical and Mental Health

The student must secure from the Student Health Service preliminary approval for the study of education prior to enrollment in the program in order to certify that he can perform the duties normally expected of teachers on the academic level he plans to teach. He must secure similar approval prior to his first student teaching assignment.

Personal Fitness

An individual with a criminal record, or one incapable of normal personal-social relationships, is barred by law from teaching in California.

University Elementary School

The University Elementary School serves as a center for research, inquiry and experimentation in education as well as providing a research laboratory for more than twenty other departments in the University. Thousands of visitors from all

† For additional information, consult an adviser in the Graduate School of Education.

parts of the world visit the University Elementary School every year. Demonstrations are planned for these visitors as well as university classes in education, psychology, pediatrics, psychiatry, art, music, physical education and many other departments on request. Closed-circuit television provides classroom and other specialized demonstrations for University students at many points on campus. Opportunities for internship are available to a limited number of teachers and education students.

The staff of the School includes a director, principal, master teachers, teachers temporarily assigned from public school districts, teachers engaged in residency training, and students learning to teach. Some are generalists, other specialize in a subject field. Auxiliary personnel include a nurse, social worker, guidance specialist, and consultants from medicine, psychology and psychiatry.

A heterogeneous population of approximately fifty children at each age level from three to twelve are educated in this nongraded school. Whether they are assigned to a self-contained or team taught classroom, each student is individually diagnosed and his educational program is custom tailored to his needs.

The School plant is designed to utilize fully a beautiful setting combining indoor and outdoor work areas. With minimum architectural change, it has been adapted to house an innovative educational program. The plant includes 17 classrooms, a community hall, art studio, children's library, conference rooms, film and observation room, office facilities and a playground designed to facilitate an innovative instructional program in movement.

Neuropsychiatric Institute School

The Neuropsychiatric Institute School serves as a demonstration, training and research setting for the Department of Education and offers observation, classroom participation and graduate research opportunities for the Area of Special Education. The School is located in the Neuropsychiatric Institute, a California State Department of Mental Hygiene facility, in the UCLA Center for Health Sciences.

The NPI School provides schooling for some 55 emotionally disturbed and 60 mentally retarded inpatients. The staff includes a principal, a special education program development director, and ten teachers who conduct programs at the preschool, elementary, intermediate, secondary, and young adult levels. The staff also participates in research and service activities in conjunction with the newly established Mental Retardation Institute. NPI staff members hold demonstration teacher appointments in the Graduate School of Education, and a faculty member in the area of special education holds a joint appointment in the Department of Psychiatry.

Office of Student Services

The Office of Student Services helps prospective students in Education explore and choose appropriate fields and levels of school service; advises them concerning courses and procedures to follow in qualifying for graduate degrees, credentials, and certification for public school service; and counsels them on professional matters during their stay at the University. Students may request

interpretation of test results, assistance in programing to meet specific credential and degree requirements, and counseling on personal and professional matters.

In addition, the Office serves as a selection agency to determine eligibility for professional programs under the supervision of the Committee on Professional Fitness; handles details of enrollment in classes; refers candidates for graduate programs to appropriate faculty advisers; makes recommendations for scholarships and fellowships; conducts research on student and professional problems; and formulates periodic reports on student personnel.

The staff consists of a Head who coordinates the work of the Office, a graduate adviser who handles advising of all candidates for graduate degrees, and counselors who advise candidates for credentials.

It is important that each student establish contact with the Office of Student Services so that he may determine his eligibility for the program he wishes to enter, receive assistance in the selection of courses, and fulfill all requirements for admission. Enrollment for a second quarter is contingent upon his having completed all necessary steps satisfactorily during the first quarter.

Teacher Training Facilities

Internship and supervised teaching are carried on in selected elementary and secondary schools in the greater Los Angeles area. Opportunities for working with pupils from a range of socio-economic environments are offered. Student teachers are assigned to work in classrooms under the supervision of highly competent, experienced teachers. One or more supervisors is assigned to each training school to help both student teachers and supervising teachers. Certain classes taught by superior teachers are designated as demonstration classes and are open to visitation by University students and others. The Head of Supervised Teaching is responsible for the assignment, supervision and evaluation of student teaching. School classroom observation and participation are included in several courses which precede or parallel student teaching.

Admission to Graduate Degree Programs

In order to qualify for graduate status in Education, the student must (1) hold a degree of Bachelor of Arts or Bachelor of Science from the University of California, or its equivalent; and (2) have earned a grade point average of at least 3.0 in all 100 series courses.

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, Murphy Hall, 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 Summer Quarter, 1969, is April 15, 1969; the Fall Quarter, 1969, is May 15, 1969; the Winter Quarter, 1970, is October 15, 1969; the Spring Quarter, 1970, is January 15, 1970.

The Dean of the Graduate Division may deny admission if the record of scholarship is not sufficiently distinguished, or if the undergraduate program has not been of such a character as to furnish an adequate foundation for advanced academic study. Applications for advanced study in Education are referred by the Dean of the Graduate Division to the School of Education for recommendation before admission is approved.

Summer Sessions

In order to have graduate courses taken in Summer Sessions accepted as partial fulfillment of the requirements of graduate courses for higher degrees or credentials, the student must be admitted in graduate status.

Transfer Credit

Credit from another accredited college or university which can be applied to the master's degree programs at UCLA is limited to no more than two quarter courses or five semester hours. Only those courses which are accepted by the other institution toward meeting its master's degree requirements may be considered for transfer purposes. Requests for such transfer are made by the student through the Office of Student Services at the time of Advancement to Candidacy. Such courses may not be used to reduce the minimum residence requirement or the minimum requirement for strictly graduate Education courses. No transfer credit is allowed for either the Ed.D. or Ph.D. degree.

Extension Courses

Upon the recommendation of the School of Education and approval of the Graduate Council, no more than two courses taken in University Extension may be accepted toward the course requirement for the M.A. or M.Ed. degree. None may be used in meeting requirements for doctoral degrees. Credit will be accepted only for those XL-100 series courses prefixed by an asterisk(*) in the announcement of University Extension course offerings, LIFELONG LEARNING. Only Extension courses taken prior to July, 1969, may be applied toward degrees. 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.

† 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.

Arrangements for taking the Graduate Record Examination may be made by contacting: (1) Office of Student Services, Graduate School of Education, University of California, Los Angeles, California 90024, for those residing in the Los Angeles area; or (2) a local college or university; or (3) Educational Testing Service, at either 20 Nassau Street, Princeton, New Jersey, or 1947 Center Street, Berkeley, California 94720.

The results of this examination should be sent to the Office of Student Services, Graduate School of Education, University of California, Los Angeles, California 90024.

Scholarship Requirement

Only courses in which the student is assigned grades A, B, or C are counted in satisfaction of the requirements for graduate degrees. Furthermore, the student must maintain at least a 3.0 grade point average in all courses elected at any campus of the University of California subsequent to the bachelor's degree; this includes all courses in the student's program.

Continuous Registration

All graduate students are required to register for at least three quarters every year until completion of all requirements for the degrees for which they are working, unless they are granted a formal leave of absence. No more than one year of leave is permitted. Failure to register or to take a leave of absence will constitute presumptive evidence that the student has withdrawn from the University.

See announcement of the Graduate Division.

Credit by Examination

A limited amount of credit in courses in the 100 series may be obtained by examination. For general regulations governing credit by examination, consult the pamphlet, STANDARDS AND PROCEDURES FOR GRADUATE STUDY AT UCLA.

Master of Arts in Education

The Master of Arts degree is designed to permit flexibility and concentration around the candidate's thesis problem.

Amount and Distribution of Work

At least nine courses and a thesis must be completed in graduate status, and at least five of the nine courses must be in the 200 and/or 500 series in Education. With the permission of the candidate's chairman, advanced courses in departments other than Education may be accepted in partial fulfillment of the degree requirement.

All students are required to complete a research course chosen from 200A, 200B, 200C, 210A, 210B, 210C. In addition to this general requirement, the candidate selects, with the aid of the graduate adviser, courses from one or more of the following fields of specialization.

Area I. Cultural Foundations of Education. (See courses 100, 108, 200A-208B)

Area II. Educational Psychology. (See courses 112, 210A–214C, 217A–217C, 415A–415B, 418A–419B)

Area III. Curriculum and Instruction. (See courses 124A–124C, 130–137C, 420A–424E, 430, 433A–439B)

Area IV. Administrative Studies. (Not available at the master's level)

Area V. Higher Education. (See courses 209A–209B, 431) (Available at the master's level by special permission only)

Area VI. Special Education. (See courses 116, 128A–128E, 228A–228D, 416A–416B)

Residence

The minimum requirement for the master's degree is one year of work. The candidate must maintain residence by taking a minimum of one course in each of three quarters unless granted a formal leave of absence. The total period of time from the beginning of course work to the completion of requirements for the degree may not exceed four years unless a petition to the Committee on Graduate Degrees for extension of time is granted.

Language Requirement

The student must pass an examination in a foreign language appropriate to his field of study and acceptable to the Deans of the Graduate School of Education and the Graduate Division. The examination is administered by the Graduate Division and should be completed prior to advancement to candidacy.

Application for Advancement to Candidacy

The application must be filed not later than one quarter prior to completion of course requirements for the degree.

Thesis

Though limited in scope, the master's thesis must attack a problem in a systematic and scholarly way. Before beginning work on a thesis, the student must receive from his chairman approval of the subject and general plan of investigation. Ultimately it must be approved by the student's thesis committee. The committee is selected by the chairman and the candidate and officially appointed by the Dean of the Graduate Division. One of the three members must be from a department other than Education.

Advising

Information on step-by-step progress in the program is available from the graduate adviser in the Office of Student Services. Advice on initial course selection, faculty members to be consulted, consent for substitutions, forms to be filed at various stages, information on fellowships and subsidies, and general advising may also be requested.

Master of Education Degree

The Master of Education degree is designed to provide a comprehensive background in the fields basic to teaching, combined with an application of that knowledge in a specific field. It is a professional degree, and carries the addi-

tional requirement that the candidate must be working toward an elementary, secondary or junior college teaching credential.

Amount and Distribution of Work

At least nine courses must be completed in graduate status, at least six of which are graduate level. With the permission of the Committee on Graduate Degrees, advanced courses in departments other than Education may be accepted in partial fulfillment of the degree requirement.

The candidate must complete such course work as he may need to qualify for the comprehensive examinations.

Residence

The minimum requirement for the master's degree is one year of work. The candidate must maintain residence by taking a minimum of one course in each of three quarters unless granted a formal leave of absence. The total period of time from the beginning of course work to the completion of requirements for the degree may not exceed four years, unless a petition to the Committee on Graduate Degrees for extension of time is granted.

Application for Advancement to Candidacy

The application must be filed not later than one quarter prior to completion of course requirements for the degree.

Advising

Information on step-by-step progress in the program is available from the graduate adviser in the Office of Student Services. Advice on course selection, consent for substitutions, application for the comprehensive examinations, forms to be filed at various stages, information on fellowships and subsidies, and general advising may also be requested.

Doctor of Education Degree

The Doctor of Education degree is designed to provide breadth in the increasingly complex field of Education, and to aid in the development of leadership in a number of fields.

Admission

After adequate work to establish an academic record, the candidate's qualifications are presented to the Committee on Graduate Degrees for admission. To be admitted, the student must: (1) have completed the equivalent of a master's degree in Education; (2) have passed such examinations as may be specified by the Committee on Graduate Degrees; (3) have maintained at least a 3.0 grade point average in all work completed since the bachelor's degree, including that at UCLA; (4) have secured agreement of a resident graduate faculty member of the Department of Education to serve as sponsor and chairman of his dissertation committee; (5) be recommended for admission by at least two additional resident graduate faculty members of the Department of Education, with whom ordinarily he will have had course work.

Amount and Distribution of Work

The student must complete such course work in a major and two minor areas as his dissertation committee may specify, ordinarily at least two full years (six quarters of at least 1 course each) prior to advancement to candidacy. The course work is followed by three written comprehensive examinations, an oral qualifying examination, a dissertation and by a final oral examination.

With the permission of the candidate's chairman, advanced courses in departments other than Education may be accepted in partial fulfillment of the requirement.

Once admitted, the candidate's program of study is individually designed by his sponsor to prepare him for examinations in a major and a minor field in education and in a related field either in education or in another department.

Residence

All doctoral candidates will be required to engage in six or more quarters of full-time resident study. Full-time resident study consists of enrollment in one or more courses during a quarter. Three of these full-time resident quarters must be taken consecutively.

Continuous enrollment is required of all doctoral candidates. The student is allowed no more than one year's formal leave of absence during his program. If he is compelled to extend his leave, he must withdraw from the program and apply to the Committee on Graduate Degrees for formal reinstatement when he is ready to proceed.

Candidates for the Ed.D. degree are allowed a period of time not to exceed four years from the beginning of course work to advancement to candidacy, and four additional years from advancement to candidacy to completion of the dissertation. Petitions for extension of time must be approved by the candidate's sponsor and by the Committee on Graduate Degrees.

Qualifying Examinations

When the candidate has completed the course work recommended by his chairman, he applies for the written qualifying examinations in his major and minor fields. The examinations are given under the direction of the Committee on Graduate Degrees of the Graduate School of Education.

Upon successful completion of the written qualifying examinations, the candidate formulates a dissertation proposal with the aid of his chairman and a dissertation committee. The committee consists of three faculty members in Education and one each from two related departments and is nominated by the candidate's chairman and appointed by the Dean of the Graduate Division. The dissertation committee conducts an oral examination covering his research plan and the candidate's qualifications to conduct meaningful research in the field.

Advancement to Candidacy

The candidate who has passed both the written and oral qualifying examinations files an application for advancement to candidacy. Thereafter he enrolls each quarter in Education 599, or for such course/courses as his chairman may direct, or until the dissertation is completed.

Dissertation

The dissertation embodies the results of the candidate's independent work. It must constitute a professional contribution to education. In preparing the dissertation, the candidate is guided by his dissertation committee. Approval of the dissertation by the committee and the Graduate Council is required before he is recommended for the degree.

A manual of instruction for the preparation and submission of the dissertation may be secured from the Graduate Division or from the Office of the University Archivist. The manuscript adviser in the Office of the University Archivist must approve the format of each dissertation before it is accepted by the Graduate Division. Before preparing the final document, candidates are urged to attend an orientation meeting conducted by the manuscript adviser in the Office of the University Archivist. Meetings are held during the second week of classes each quarter.*

Two official Library copies of the dissertation must be submitted to the Graduate Division on or before the date listed in the UCLA General Catalog. A third copy must be submitted to the Office of the Dean of the Graduate School of Education, to be bound at the student's expense.

Final Examination

The candidate's final examination is conducted by his dissertation committee. It is oral, and consists of a defense of the dissertation. Admission to the final examination is restricted to committee members, members of the Academic Senate, and guests of equivalent academic rank from other institutions. The outcome of the final examination is reported to the Graduate Division.

Check List and Advising

A check list indicating step-by-step progress in the program is available from the graduate adviser in the Office of Student Services. Advice on initial course selection, faculty members to be consulted, forms to be filed at various stages, information on fellowships and subsidies, and general advising may be requested.

Doctor of Philosophy in Education

The Doctor of Philosophy degree in Education is designed to provide preparation for a career of scholarly research in a field of Education. It emphasizes preparation both in a cognate field and in Education, and requires a theoretical dissertation encompassing both fields.

After adequate work to establish an academic record, the candidate's qualifications for admission to the program are presented to the Committee on Graduate Degrees. To be admitted, the student must: (1) have completed a master's degree 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 3.0 grade point average in all work completed since the bachelor's degree,

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

including that at UCLA; (4) have secured agreement of a resident graduate faculty member of the Department of Education to serve as sponsor and chairman of his dissertation committee; (5) be recommended for admission by at least two additional resident graduate faculty members of the Department of Education, with whom ordinarily he will have had course work; (6) present evidence of acceptance by the proposed cognate department (in which the Ph.D. is offered); and (7) 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 chairman in cooperation with the cognate department.

Residence

All doctoral candidates will be required to engage in six or more quarters of full-time resident study. Full-time resident study consists of enrollment in one or more courses during a quarter. Three of these full-time resident quarters must be taken consecutively.

Continuous enrollment is required of all doctoral candidates. The student is allowed no more than one year's formal leave of absence during his program. If he is compelled to extend his leave, he must withdraw from the program and apply to the Committee on Graduate Degrees for formal reinstatement when he is ready to proceed.

Candidates for the Ph.D. degree are allowed a period of time not to exceed four years from the beginning of course work to advancement to candidacy, and four additional years from advancement to candidacy to completion of the dissertation. Petitions for extension of time must be approved by the candidate's sponsor and by the Committee on Graduate Degrees.

Qualifying Examinations

When the candidate has completed the course work recommended by his guidance committee, he applies for the written qualifying examinations in his field in education and in his cognate department. The examinations are given under the direction of the Committee on Graduate Degrees of the School of Education.

Upon successful completion of the written qualifying examinations, the candidate formulates a dissertation proposal with the aid of his chairman and a dissertation committee. The committee consists of three members of the faculty

in education, two in the cognate department, and one from the University at large. The committee is nominated by the Department of Education and appointed by the Dean of the Graduate Division. The dissertation committee conducts an oral examination on topics from both education and the cognate discipline related to the candidate's research proposal, designed to determine the candidate's qualifications to conduct meaningful research in the field.

Advancement to Candidacy

The candidate who has passed both the written and oral qualifying examinations, as well as the language examination, files an application for advancement to candidacy. Thereafter he enrolls each quarter in Education 599, or for such course/courses as his chairman may direct, or until the dissertation is completed.

Dissertation

The dissertation embodies the results of the candidate's independent investigation. It must contribute to the body of theoretical knowledge in education, and must draw upon the interrelations of education and the cognate discipline. In preparing the dissertation, the candidate is guided by his dissertation committee. Approval of the dissertation by the committee and the Graduate Council is required before he is recommended for the degree.

A manual of instruction for the preparation and submission of the dissertation may be secured from the Graduate Division or from the Office of the University Archivist. The manuscript adviser in the Office of the University Archivist must approve the format of each dissertation before it is accepted by the Graduate Division. Before preparing the final document, candidates are urged to attend an orientation meeting conducted by the manuscript adviser in the Office of the University Archivist. Meetings are held during the second week of classes each quarter.*

Two official Library copies of the dissertation must be submitted to the Graduate Division on or before the date listed in the UCLA GENERAL CATALOG. A third copy, to be bound at the student's expense, must be submitted to the Office of the Dean, Graduate 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 from the graduate adviser in the Office of Student Services. Advice on initial course selection, faculty members to be consulted, forms to be filed at various stages, information on fellowships and subsidies, and general advising may be requested.

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

SCHOOL OF ENGINEERING AND APPLIED SCIENCE

The School of Engineering and Applied Science, established in the academic year 1968-69, is the outgrowth of the College of Engineering.

The educational program of the School of Engineering and Applied Science is comprised of three parts:

Part I is the two year pre-engineering curriculum which, for University of California students, is completed in the College of Letters and Science.

Part II is the two year Bachelor of Science degree program to which students are accepted upon completion of Part I.

Part III is the graduate program which may terminate with the Master of Science degree or may be extended to the degree of Doctor of Philosophy for qualified students.

The pre-engineering curriculum of Part I consists primarily of instruction in mathematics, the basic physical sciences, social sciences, and humanities. Transfer to the School of Engineering and Applied Science will not in the future be restricted only to those students with lower division preparation in pre-engineering subjects. Rather, it is expected that many students will find the transfer greatly facilitated.

The Bachelor's degree program is designed to give each student a thorough grounding in the fundamentals of engineering, mathematics and the applied sciences which are relevant to all branches of engineering and thus provide a permanently useful core of knowledge. Provision is made for a limited amount of specialization through elective courses in a major field. The core courses together with the major electives thus provide a base for the more advanced and specialized curriculum at the Master's degree level.

Admission Requirements

Applicants for admission to the School of Engineering and Applied Science should have completed 23 courses in good standing, including the following minimum subject requirements:

1. Three courses in chemistry, equivalent to UCLA's Chemistry 1A-1B-1C;
2. six courses in mathematics, equivalent to UCLA's Mathematics 11A-11B-11C and 12A-12B-12C;
3. four courses in physics, equivalent to UCLA's Physics 7A-7B-7C-7D.

Students transferring to the School from institutions which offer instruction in engineering subjects in the first two years, in particular, California public junior colleges, will be given credit for certain of the requirements of Part II. Details regarding transfer of such credit are published in the ANNOUNCEMENT OF THE SCHOOL OF ENGINEERING AND APPLIED SCIENCE.

Students who wish to enter the school at the graduate level are referred to page 28 of this bulletin and to the ANNOUNCEMENT OF THE GRADUATE DIVISION.

The Engineering and Applied Science Curriculum (55 Courses, 220 Units)**Part I. Pre-Engineering. Lower Division in the College of Letters and Science (23 Courses, 92 Units)**

(See page 242)

	<i>Units First Quarter</i>	<i>Units Second Quarter</i>	<i>Units Third Quarter</i>
Freshman Year			
Chemistry 1A-1B-1C	4	4	4
Mathematics 11A-11B-11C	4	4	4
Physics 7A-7B	—	4	4
Electives*	4	4	4
	—	—	—
	12	16	16
Sophomore Year			
Mathematics 12A-12B-12C	4	4	4
Physics 7C-7D	4	4	—
Electives*	8	8	12
	—	—	—
	16	16	16

Part II. Upper Division in the School of Engineering and Applied Science (23 Courses, 92 Units)

Prerequisite for junior status: admission to the School of Engineering and Applied Science and satisfactory completion of the minimum subject requirements specified on page 115.

	<i>Units First Quarter</i>	<i>Units Second Quarter</i>	<i>Units Third Quarter</i>
Junior Year			
Engineering 101A	4	—	—
Engineering 107	6	—	—
Engineering 108	4	—	—
Engineering 100-100B	—	6	4
Engineering 102A	—	4	—
Engineering 103A	—	—	4
Engineering 105A	—	—	4
Electives†	—	4	4
	—	—	—
	14	14	16

* The elective courses shall include the following: English 1; Engineering 10; one course in the life sciences; four courses in the humanities, social science, and/or fine arts. Three courses may be free electives. The free electives may be postponed until the third or fourth year for those students who may wish to take certain junior engineering courses for which they have the prerequisites.

† The elective courses shall include the following: 1. Two courses in mathematics, chosen from the approved list. 2. three courses in the humanities, social sciences, and/or fine arts; 3. seven courses in the major field.

Senior Year

Engineering 100D	4	-	-
Engineering 105D	4	-	-
Electives†	8	16	16
	—	—	—
	16	16	16

Part III. First Graduate Year in the School of Engineering and Applied Science (Nine Courses, 36 Units, and a thesis or comprehensive examination)

Prerequisite for graduate status: admission to the Graduate Division (see page 28).

Students beginning the work of Part III of the five-year curriculum are required to qualify for admission to the Graduate Division.

At least nine courses and a thesis or comprehensive examination are required. The courses must be graduate or upper-division undergraduate work not required for the Bachelor's degree. A majority of the total course requirement, both graduate and upper division undergraduate work, must consist of courses in Engineering. The student is alerted to the possibility that some of these courses may be in the humanities, social sciences or fine arts.

Thesis Plan. At least five of the nine courses must be strictly graduate work. Two of the five graduate courses may be individual study courses involving work on the student's thesis. This option normally is the one followed by students planning to continue for the Ph.D. degree.

Comprehensive Examination Plan. Five of the nine courses must be strictly graduate courses in the major subject. A comprehensive examination in the major subject is required.

Constraints on the electives of Parts II and III. The electives shall include:

1. The equivalent of at least a one-course experience in design, to be satisfied by one course or by parts of not more than two courses in the 100 or 200 series.
2. One course in economics chosen from an approved list of courses given in the Economics and Engineering Departments in the 100 series.
3. One course in the 100, 200, or 596 series dealing primarily with engineering and science in society.
4. The equivalent of at least one course in laboratory, to be satisfied either by a full laboratory course or two courses that include laboratory.
5. At least two courses in a senior level (104CD) or graduate level (598) individual or group project or thesis project.

Students obtaining only the Bachelor of Science degree must satisfy Parts I and II above and elective constraints 1, 2, and 3. Also, of the seven sociohumanistic elective courses required under Parts I and II, at least three courses must be in the same academic department or must otherwise reflect coherence in respect to subject matter. In the latter group, upper division courses should predominate.

† The elective courses shall include the following: 1. Two courses in mathematics, chosen from the approved list; 2. three courses in the humanities, social sciences, and/or fine arts; 3. seven courses in the major field.

The curricular requirements for the Bachelor of Science degree consist of Parts I and II, elective constraints 1 and 2, the University requirement in American History and Institutions and the senior residence requirement.

Students admitted to the Master of Science program from other institutions or departments will be required to satisfy only Part III, Master of Science degree requirements, and need not satisfy the elective constraints.

GENERAL INFORMATION

Honors. Students who have achieved scholastic distinction in upper division studies will be awarded the Bachelor's degree with the appropriate honors designation: *Cum Laude*, *Magna Cum Laude*, or *Summa Cum Laude*.

R.O.T.C. Programs. Students who enroll in one of the three Reserve Officer Training Corps programs offered at UCLA will find it necessary to extend their period of study to accommodate the requirements of the military departments. Students may not substitute required military science courses for required courses in the Engineering and Applied Science Curriculum; however, the three free electives of Part I may be used for this purpose.

Advising. It is mandatory for all freshmen entering the pre-engineering program to have their courses of study approved by an Engineering Department adviser. After the first quarter, curricular and career advising may be accomplished on an informal basis. Students in Part II of the curriculum will be assigned to an adviser and must have their programs approved each quarter.

Transfer from a Technical Institute. A student who wishes to transfer to the School of Engineering and Applied Science from a technical institute or junior college technical education program will be expected to meet the University requirements for admission. Upon consultation with a faculty counselor, he will be placed in courses at a level deemed appropriate. After he has established a satisfactory University record, the School may recommend transfer credit for his previous work to the extent it has been found to have served as preparation for the University work undertaken.

Passed/Not Passed. Engineering undergraduate 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 courses 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 and Applied Science Curriculum as published in this catalog.

Evening Information Center. The School of Engineering and Applied Science 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.

Library Facilities. 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.

Student Activities. The abundance and variety of extracurricular activities at UCLA provide many opportunities for valuable experiences in leadership, service, recreation, and personal satisfaction. The Faculty of the School strongly encourages students to participate in such activities, especially those of most relevance to engineering. Among the latter are the student engineering societies such as the Engineering Society, University of California and Engineering Graduate Student Association; the student publications, 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."

Graduate Study in Engineering

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

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

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

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

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

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

Although graduate students are not required to limit their studies to the area of a particular Division, the Divisions are expected to serve as centers of activity for graduate studies. The Divisions are as follows:

APPLIED MECHANICS

Mechanics of fluids, aerodynamics, flight mechanics, aircraft stability, control and performance, aeroelasticity, elasticity and plasticity, micromechanics, vibration theory, rigid body dynamics, aeroacoustics, wave propagation in solids, non-

linear theory of continuous media, bio-mechanics, hypersonics, hydrodynamics, engineering magnetohydrodynamics.

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

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

COMPUTER SCIENCE

The School of Engineering and Applied Science, through its Computer Science Division, offers M.S. and Ph.D. degrees in Computer Science as well as major and minor fields for graduate students seeking Engineering degrees. The program includes three basic areas:

Information Structure and Processes. Structure for data representation, programming languages; automata theory, formal grammars; syntactic analysis and queueing theory.

Information Processing Systems. Computer organization, digital systems, logic design, computer design, memory, arithmetic, control and input-output systems; computer programming and operating systems, compiler theory, systems programming, on-line and graphical systems; analogue and hybrid computers.

Applications. Numerical analysis and applications; file management and information retrieval; symbol manipulations; interactive systems; simulation; artificial intelligence, biomathematics and other areas of computer application.

Computer Science students are expected to carry a balanced program including courses in all three areas.

ELECTRICAL SCIENCES AND ENGINEERING

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

ENERGY AND KINETICS

Thermodynamics; aerothermochemistry; heat and mass transfer; molecular dynamics; nuclear, chemical, and electrochemical processes; cryogenics; energy conversion and utilization including propulsion; analysis and design of chemical, nuclear and thermodynamic systems.

ENGINEERING SYSTEMS

Theory and methodology of systems engineering with emphasis on economic evaluation and optimization in relation to the broader problems of the design and management of engineering projects.

Programs dealing with the conservation and utilization of natural and human resources. Ongoing efforts in biotechnology, water resources, air resource, ecological and environmental systems, geoengineering, sanitary engineering, traffic and transportation, ocean engineering, and the resource aspects of urban and regional planning.

INFORMATION 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. General systems theory and optimization including automata theory.

MATERIALS

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

REQUIREMENTS FOR ADMISSION TO GRADUATE STATUS

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

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

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

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

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 for Graduate Studies, School of Engineering and Applied Science.

There is a fee of \$9 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 School. 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 is selected each year to enroll in the Engineering Executive Program and to study toward the Master of Engineering degree.

The Engineering Executive Program is a two-year work-study program designed for those engineers who will fill high-level executive positions in industry and government within the next decade. It consists of sequences of graduate-level professional courses (of the 400-series) covering significant aspects and new concepts in management of technological enterprises.

To be considered for the program, applicants must qualify for regular graduate status in engineering at UCLA. They must have had five years of responsible full-time professional experience in engineering and must have completed some formal study in statistics. Every applicant who meets these requirements will be interviewed by a panel of faculty members. Approximately thirty-five of the applicants will be selected to enter the program. Criteria for selection are educational background, professional experience and potential for a managerial career.

A new group of students is admitted to the Program each fall. They form a class and remain together for two years, taking the same courses and participating in writing two or more group reports. Classes meet between 3:00 and 9:30 p.m. one day a week during the fall, winter, and spring quarters. Special individual and group problems are assigned for the summer quarters.

Applications, including official transcripts of college records, must be received by the UCLA Graduate Division by March 15. There is a fee of \$275 each quarter. Further information may be obtained from the Office of the Engineering Executive Program, School of Engineering and Applied Science, UCLA, Los Angeles, California 90024. The office is located in Boelter Hall 6288. The telephone number is (213) 825-4628 or 825-4471.

REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

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

A student who expects to complete all the requirements for the M.S. degree at UCLA during the current term, and who desires to proceed toward the Ph.D. degree is required to file Form 1, Notice of Intention to Proceed to Candidacy for the Degree, Doctor of Philosophy, before the end of the current quarter 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 one major field and two minor fields. Certain fields of study have been established as follows:

Atomic Properties of Materials	Nuclear Engineering
Biotechnology	Physical Metallurgy and/or
Communication Systems	Ceramics
Computers	Soil Mechanics
Control Systems	Solid State Electronics
Deformable Solids	Structural Analysis
Dynamics	Thermodynamics
Electromagnetics	Water Systems Engineering
Electronic Systems	
Fluid Mechanics	<i>MINOR FIELD ONLY</i>
Heat and Mass Transfer	Applied Mathematics
Large Scale Engineering Systems	Nuclear Reactor Control
Mathematical Theory of Systems	Quantum Mechanics
Molecular Dynamics	Spectroscopy

However, the School 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 for 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 for 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 for Graduate Studies.

After completion of the study for the major field and the two minor fields as outlined by the members of the field committees, the student should take the preliminary examinations which include 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 for 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 for Graduate Studies will notify the Graduate Division of his readiness for the qualifying examination and will recommend the committee for this examination, generally as follows: staff member directing research, chairman; members of the guidance committee; two staff members from other departments.

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

Dissertation

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

Continuing Engineering Studies

Continuing education of the practicing engineer is a growing concern of the profession. Engineering/Physical Sciences Extension brings to this field the

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

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.

Admission 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. In 1968 a Post-M.L.S. program, leading to a Certificate of Specialization in Library Science, was also approved.

The M.L.S. degree is accepted in the United States and in many other countries as the basic preparation for professional positions in municipal, county, regional, college, university, school, children's and special library service. The degree is also widely regarded as valuable preparation for careers in literature searching, editing, and in publishing or the book trade. The course of study and preparation for the comprehensive examination normally require four quarters of full-time enrollment. Only under special circumstances are part-time students admitted to the course of study.

The Master of Science degree program is open to persons who hold appropriate B.A. or B.S. degrees in other fields such as one of the physical or biological sciences, business administration, engineering, or mathematics. The purpose of the degree is to prepare information scientists. The degree program comprises an integrated course of study and research in the theoretical and practical foundations of information handling. The program is an interdisciplinary one with emphasis upon research and general principles. A thesis is required. Four areas of specialization are offered: system integration, usage of information, organization and operation of information activities, and equipment and the design of information services. A reading knowledge of one foreign language is required. The preferred languages are French, German and Russian.

Requirements for admission to the School of Library Service include admission to graduate status by the Graduate Division, an undergraduate course of study appropriate to the degree objective, an acceptable score on the Aptitude Test of the Graduate Record Examination, and a scholastic average accepted by both the Graduate Division and the School of Library Service. Acceptable undergraduate majors and minors are those offered by departments of the College of Letters and Science at UCLA, or the equivalent subjects in other colleges and universities. UCLA has no undergraduate major or minor in librarianship or library science. A special prerequisite for M.L.S. degree candidates is a reading knowledge of two modern foreign languages, preferably German and French; a special prerequisite for M.S.I.S. (Documentation) degree candidates is a background in mathematics through the calculus.

Requirements for admission to the program for Certificates of Specialization in Library Science are: the M.L.S. degree or its equivalent awarded by a school or department accredited by the American Library Association; unconditional admission to graduate status; and such other requirements as are deemed necessary by the School of Library Service for each field of specialization. For information regarding the approved fields of specialization, and the specific requirements for each field, write to the Office of the School of Library Service.

Since the admission of entering students is limited by the available laboratory space and research facilities, selection is on a competitive basis. Candidates are chosen because, in the judgment of the Admissions Committee of the School of Library Service, they have demonstrated a potential of becoming excellent professional librarians or information scientists. Criteria of selection by the Admissions Committee are: (1) recency of formal education; (2) undergraduate and graduate scholarship records; (3) score on the Aptitude Test of the Graduate Record Examination; (4) report of an interview of the applicant by the Dean of the School of Library Service or by a person designated by the Dean to conduct

an interview; and (5) letters of recommendation. The Admissions Committee may, if it believes a candidate has an inadequate understanding of the purposes and requirements of modern library service, recommend postponement of admission until the candidate has obtained nonprofessional working experience with a satisfactory performance rating in a reputable library.

Further information concerning entrance requirements, certificate or 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 admits 128 students to the freshman class. Applications for the class entering in September, 1970, with all transcripts of record and other necessary documents, must be filed between May 1, 1969, and October 31, 1969, with the Office of Student Affairs, UCLA School of Medicine, Los Angeles, California 90024. Application forms and information may be obtained from that office. Applications must be accompanied by a nonrefundable fee of \$10.

THE CURRICULUM

In September, 1966, the School of Medicine adopted the quarter system and inaugurated a new four-year curriculum. The first two years consist of six quarters of required study in the basic medical sciences and one summer quarter of elective study. The final two years consist of a required 52-week clerkship period for training in the clinical fields, followed by three quarters of elective study. The electives include research training, advanced clinical clerkship opportunities, and depth elective studies which emphasize the scientific foundation underlying the knowledge of diseases of specific organ systems.

BASIS OF SELECTION

Candidates will be selected on the basis of the following considerations:

1. Undergraduate and, where applicable, graduate scholarship.
2. Score on the Medical College Admission Test, which is administered for the Association of American Medical Colleges by the Psychological Corporation.
3. Interview of the applicant by a member or members of the Admissions Committee.
4. Evaluation of the applicant's accomplishments and character in letters of recommendation.

Candidates are selected who, in the opinion of the Committee on Admissions, present best evidence of broad training and high achievement in college, a capacity to develop mature interpersonal relationships, and the traits of personality and character essential to success in medicine. Preference will not be given students who major in natural science, since study in the social sciences and humanities is considered equally valuable.

REQUIREMENTS FOR ADMISSION

Ordinarily a baccalaureate degree is required for admission; but in certain instances outstanding students who have completed three full academic years

at an accredited college or university are admitted. College years should be devoted to obtaining as broad an education as possible. The major objectives should be the following: (1) competence in the use of English, written and spoken; (2) capacity for quantitative thinking represented by mastery of mathematics; (3) such training in physical and biological science as will facilitate comprehension of medical science and the scientific method; (4) a foundation for an ever-increasing insight into human behavior, thought and aspiration, through the study of man and his society as revealed by the social sciences and the humanities; and (5) some knowledge of a language and culture other than the student's own.

These objectives will ordinarily require completion of the following studies:

	<i>Quarter Units</i>	<i>Semester Units</i>
English	9	6
Physics	12	8
Chemistry		
Inorganic chemistry	12	8
Organic and quantitative chemistry	8	5½
(Also physical chemistry is highly recommended)		
Biology		
Biology	12-14	8-10
Vertebrate Embryology	4- 5	3
Genetics	4- 5	3
Mathematics (including college algebra)	6	4
(Also introductory calculus is highly recommended)		

Under certain circumstances the Committee on Admissions may consider students who have not fully satisfied all of these requirements.

Courses (e.g., bacteriology, human anatomy) which overlap in subject matter with those in the School of Medicine are not advised. However, advanced or specialized courses in biological science (e.g., cellular physiology) are desirable.

COMPLETION OF REQUIREMENTS

The student must complete the premedical requirements before beginning the first year of medical studies, although these requirements need not be completed at the time application for admission is filed.

PHYSICAL EXAMINATION

Accepted candidates must pass a physical examination before registering.

FEEs

For residents of California the total fee for each quarter is \$188.50. For non-residents the total fee for each quarter is \$505.50. These fees are subject to change.

ADMISSION TO ADVANCED STANDING

Students who have completed one or two years in an approved medical school and who desire to transfer to this School may apply to the Office of Student

Affairs of the School of Medicine for instructions. Applications will be received after April 1, but not later than June 1, and are accepted on a competitive basis to fill any available places in the second- and third-year classes. In no case will applications for transfer to the fourth-year class be considered.

INDIVIDUAL PROGRAMS OF STUDY IN THE MEDICAL CURRICULUM

Special programs of study for individual students may be arranged within the framework of the medical school curriculum. Normally these programs are available only after the student has completed his first year and with the approval of the Dean's Office and the chairman of the department responsible for the additional course work. Every effort is made to maintain flexibility within the medical school curriculum, although extensive changes in the course of study can be arranged for only a limited number of students.

GRADUATE WORK

Graduate work leading to the M.S. and/or Ph.D. degrees is offered, either separately or in conjunction with the M.D. program, in anatomy, biological chemistry, biomathematics, 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 School admits students of junior or higher standing, and offers curricula leading to the degrees of Bachelor of Science, Master of Science and Master of Nursing.

Curricula

THE BACCALAUREATE PROGRAM

The Baccalaureate Program leading to the Bachelor of Science degree provides for a close interweaving of general and professional education. The social, emotional, and health aspects of nursing are emphasized throughout the curriculum. Nursing laboratory under the guidance of faculty members is provided in hospitals, outpatient clinics, schools, homes, and community health centers.

Requirements for admission. (1) Admission to the University; (2) completion of 22½ courses of college work, including courses required by the School of Nursing. Personal recommendations as required by the School of Nursing. Eligibility for the study of nursing as determined by demonstrated aptitudes, recommendations, interviews, physical examinations and scholastic attainment.

REGISTERED NURSES

Students who are registered nurses will complete the curriculum required in the Baccalaureate Program.

Requirements for admission. (1) Graduation from an accredited school of nursing and evidence of the fulfillment of the legal requirements for the practice of nursing; (2) personal and professional recommendations as required by the School of Nursing; (3) completion of the lower division requirements or transfer credit evaluated as the equivalent. (See the UCLA ANNOUNCEMENT OF THE SCHOOL OF NURSING.)

GRADUATE PROGRAM

Under the jurisdiction of the Graduate Division, Los Angeles, the School of Nursing administers programs leading to the Master of Science degree and the Master of Nursing degree. Available courses provide the opportunity for advanced study in several areas of nursing and research training for increased professional competence and specialization in a clinical field, for functional preparation in teaching, administration, supervision or public health—mental health nursing consultation. The Thesis Plan is followed in the Master of Science degree program; and the Comprehensive Examination Plan is followed in the Master of Nursing Program. For further information about the graduate programs in nursing, consult the UCLA ANNOUNCEMENT OF THE GRADUATE DIVISION and the UCLA ANNOUNCEMENT OF THE SCHOOL OF NURSING.

Requirements for admission. (1) Completion of an accredited baccalaureate program satisfactory to the UCLA School of Nursing, and to the UCLA Graduate Division; (2) evidence of status as a registered nurse; (3) recommendations as requested by the School of Nursing; (4) evidence of the fulfillment of the legal requirements for the practice of nursing; (5) an undergraduate scholarship record satisfactory to the UCLA School of Nursing, and to the UCLA Graduate Division; and (6) personal and professional recommendations as requested by the UCLA School of Nursing.

ADMISSION

Applications for admission to the baccalaureate program in the School of Nursing should be filed not later than May 1, 1969 for the summer quarter; March 1, 1969 for the fall quarter; November 1, 1969 for the winter quarter. Applications for admission to the graduate program should be filed not later than April 15, 1969 for the summer quarter; May 15, 1969 for the fall quarter; October 15, 1969 for the winter quarter. The School of Nursing reserves the right to admit students on the basis of scholarship, recommendations, interviews, and demonstrated aptitudes.

Applications for admission to the undergraduate program (accompanied by a \$10 application fee) should be filed with the Office of Admissions, University of California, 405 Hilgard Avenue, Los Angeles, California 90024.

Applications for admission to the graduate program (accompanied by a \$10 application fee) should be filed with the Admissions Section of the Graduate Division, University of California, Los Angeles, California 90024.

Educational programs are planned in the School of Nursing after evaluations of credentials have been made by the Office of Admissions or the Graduate Division following receipt of applications for admissions.

Requirements for the Degree of Bachelor of Science

The degree of Bachelor of Science will be granted upon fulfillment of the following requirements:

1. The candidate shall have completed at least 45 courses of college work, and shall have satisfied the general University requirements.
2. The candidate shall include, in the required 45 courses, at least 22½ courses in general education.
3. The candidate shall have completed at least 23 upper division courses toward the degree.
4. The candidate shall have maintained at least a grade of C average in all courses taken.
5. The candidate shall have completed all required nursing courses in the School of Nursing and shall have maintained an average grade of C in all clinical nursing courses.
6. The candidate is required to have been enrolled in the School of Nursing during the final three quarters of residence; the last nine courses must be completed while so enrolled.

HONORS

The faculty of the School of Nursing or a duly authorized committee thereof shall recommend for Honors or Highest Honors candidates for the bachelor's degree who meet the criteria determined by the faculty of the School of Nursing.

Requirements for the Degree of Master of Science

The degree of Master of Science will be granted upon fulfillment of the following requirements:

1. The candidate shall have met the general requirements of the Graduate Division.
2. The candidate shall have completed in graduate status at least ten courses in upper division and graduate level courses; six must be in the 200 series, with five courses in nursing. Three courses must be in relevant basic science work 100-200 series. The additional courses required for the degree may be distributed among courses in the 100 or 200 series subject to approval of the student's faculty adviser.
3. A Thesis is required.

Requirements for the Degree of Master of Nursing

The degree of Master of Nursing will be granted upon fulfillment of the following requirements:

1. The candidate shall have met the general requirements of the Graduate Division.
2. The candidate shall have completed in graduate status at least ten courses in upper division and graduate level courses; seven courses must be in nursing with five courses in the 200 and 400 series. The additional courses may be distributed among courses in the 100, 200 or 400 series subject to approval of the student's faculty adviser.

3. A Comprehensive examination is required.

For further information concerning graduate work consult ANNOUNCEMENT OF THE GRADUATE DIVISION.

SCHOOL OF PUBLIC HEALTH

General Information

Public Health is a broad, multidisciplinary field of study directed toward understanding and controlling factors affecting the health of populations. One feature of the field of public health is a reliance on research methods to identify important health relationships. Another feature is a community or social approach to the problems of health and disease in their preventive or therapeutic aspects. The concerns of public health cut across national boundaries and include the functions of both voluntary and governmental agencies and of research and teaching institutions.

There are many areas of emphasis in the field, and five may be singled out as follows: (1) nature, extent and distribution of disease; (2) quantitative methods of description and analysis; (3) environmental hazards, their identification and control; (4) the organization and delivery of community health services—emphasis is on the development of strategies for optimal provision of health care of high quality for all members of society; (5) basic biological and psychosocial processes that affect the health and well-being of populations.

The purpose of programs of instruction in the field of public health is to provide opportunity to develop understanding of the theoretical foundations and philosophy of the field, and to permit specialization in fields of professional service or research. This is achieved through required and elective courses that stress broad exposure to basic issues as well as intensive study in selected specialties.

Because of multidisciplinary concerns, programs of study are available to students whose academic preparation has been in the natural or social sciences as follows:

1. Medicine, nursing, engineering, dentistry and related fields.
2. Mathematics and statistics.
3. Sociology, psychology, economics, political science, etc.
4. Physical and life sciences.

Through organized programs in the School of Public Health, students entering the field may thus prepare themselves for careers in such basic specialties as epidemiology, biostatistics, nutritional science, or environmental health. They may also prepare themselves for the newer challenges of community well-being such as the operation of hospitals, health maintenance in industry, the health education of the public, organization of medical care, international health, behavioral sciences in public health, and community health administration.

The School of Public Health offers the following degrees: Bachelor of Science, Master of Science in Public Health, Master of Science in Biostatistics, Master of Science in Nutritional Sciences, Master of Public Health, Doctor of Public Health, Doctor of Philosophy (Biostatistics). The School of Medicine offers the degree of Master of Science in Preventive Medicine.

Bachelor of Science Degree

The School of Public Health is discontinuing its Bachelor of Science degree program and will accept new students in this program only if they can complete the requirements for the degree by September, 1971. However, undergraduate courses in public health will continue to be available as electives or in preparation for the graduate degree programs.

Candidates for the degree of Bachelor of Science must have completed at least 45 courses (180 units) of college work, of which at least the last 9 courses (36 units) must have been completed while enrolled in the School of Public Health. The student must earn at least twice as many grade points as the number of courses undertaken in the University.

PREPARATION FOR THE MAJOR

Courses recommended for the first two years of college work in preparation for upper division study in the School of Public Health will be found in the ANNOUNCEMENT OF THE SCHOOL OF PUBLIC HEALTH.

THE MAJOR

1. The following Public Health courses are required: Public Health 100, 110, 147, 160A, 170.

2. In addition to the above requirements, those of one of the following *pre-graduate curricula* must be met: Biostatistics, Environmental Health, School Health Education, Health Record Science, Nutritional Sciences. For specific requirements of these curricula, consult the ANNOUNCEMENT OF THE SCHOOL OF PUBLIC HEALTH.

Fields of Concentration

The School of Public Health offers master's degree programs in the following areas of concentration: Behavioral Sciences in Public Health, Biostatistics, Environmental and Occupational Health, Epidemiology, Health Education, Infectious and Tropical Diseases, Medical Care Organization, Nutritional Sciences, Public Health Administration, International Health, and Hospital Administration.

Master of Science in Public Health

The Master of Science program provides research orientation within the general field of public health. It is intended to prepare the student in depth within a specialty, culminating in research activity suitable for a publishable thesis. If the student's undergraduate course has been deficient in breadth of fundamental training and fails to provide a proper foundation for advanced work in the special area of his choice, it probably will be necessary for him to take specified undergraduate courses.

A student seeking admission to the Master of Science program at UCLA should hold a bachelor's degree from an institution of acceptable standing. His academic work should be substantially equivalent, in distribution of subject

matter and in scholastic achievement to the requirements for a comparable degree at the University of California.

GENERAL REQUIREMENTS FOR THE DEGREE

Only courses in which the student is assigned grades A, B, or C are counted in satisfaction of the requirements for a master's degree, and the student must maintain a B average to remain in graduate status.

The Master of Science in Public Health requires one to two years and must include at least three quarters in academic residence. The program will be planned on an individual basis, according to the student's need, and will include formal courses and research leading to a thesis.

In accordance with the research-oriented objectives of the M.S. program, the thesis shall be of depth and quality to meet the standards of the Graduate Division. While library materials may, of course, be fully used, emphasis is placed on findings from some original investigation. The thesis shall be approved by a Master's Committee of three faculty members.

A minimum of nine courses (36 quarter units) is required of which at least five must be graduate level (courses numbered in the 200 or 500 series) although some programs may involve more than this.

Mandatory courses for the Master of Science in Public Health include one quarter in each of the following subjects: (1) epidemiology (Public Health 147 or Public Health 246A); (2) biostatistics (usually Public Health 160A); (3) public health organization (usually Public Health 200A).

Master of Science in Biostatistics

For admission to the Master of Science program in Biostatistics the student must have completed the bachelor's degree in statistics, mathematics, or in a field of application of biostatistics. Undergraduate preparation for the program should include Mathematics 12A-12B-12C or equivalent (second-year calculus), and Public Health 160A, 160B or the equivalent (introduction to biostatistics).

GENERAL REQUIREMENTS FOR THE DEGREE

A minimum of nine courses (36 quarter units) is required, at least five of which must be graduate level (200 or 500 series) in biostatistics or mathematical statistics, including at least three courses in biostatistics. A comprehensive 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, mathematics, physiology, public health, or sampling theory.

Master of Science in Nutritional Sciences

Candidates for admission to the Master of Science program in nutritional sciences must have completed the bachelor's degree in nutrition, chemistry or a life science. The undergraduate program should include courses in biology, general chemistry, quantitative analysis, organic chemistry, biological chemistry, bacteriology, calculus and German or French in addition to courses in nutritional sciences. Deficiencies must be satisfied.

GENERAL REQUIREMENTS FOR THE DEGREE

At least nine courses (36 quarter units), of which five must be graduate level (200 or 500 series), and a thesis are required. In accordance with the research-oriented objectives of the M.S. program, the thesis shall be of depth and quality to meet the standards of the Graduate Division. While library materials may be fully used, emphasis is placed on findings from some original investigation. The thesis shall be approved by a Master's Committee of three faculty members. Six courses (24 quarter units), including three strictly graduate courses, must be chosen from courses in nutritional sciences. The remaining three courses will be selected, following consultation with the adviser, from courses in chemistry, biological chemistry and related areas which are not prerequisite to the graduate major.

Master of Public Health

Candidates to be admitted for the degree of Master of Public Health may be either:

1. Holders of professional doctoral degrees in medicine, dentistry, or veterinary medicine (with or without a prior bachelor's degree) from an acceptable school, or
2. Holders of a bachelor's degree from an acceptable institution, with adequate preparation in sciences basic to public health. Such sciences basic to public health include various combinations of: (a) Life sciences; (b) Physical sciences and mathematics; (c) Social sciences; (d) Behavioral sciences.

Applicants are not expected to be prepared in all four of these fields, but a background in a suitable combination of these sciences is required.

GENERAL REQUIREMENTS FOR THE DEGREE

Only courses in which the student is assigned grades A, B, or C are counted in satisfaction of the requirements for a master's degree, and the student must maintain a B average to remain in graduate status.

Award of the M.P.H. degree requires: (1) A minimum of 11 courses (44 quarter units) at least five of which must be graduate level (200, 400, or 500 series). For students with suitable previous graduate studies in public health subjects, this may be reduced to a requirement of 10 courses. Students majoring in hospital administration are required to take an administrative residency up to 12 months. Students majoring in health education are required to take six quarters of full-time study. (2) Mandatory courses of at least one quarter in each of

the following subjects: (a) biostatistics (usually Public Health 160A); (b) epidemiology (Public Health 147 or Public Health 248A); (c) public health organization including environmental health administration (Public Health 200A-200B). (3) A comprehensive final examination in (a) the general field of public health, and (b) the student's field of major concentration. (4) Field training in an approved health program of 10 weeks may be required of candidates who have not had prior field experience.

At least 4½ courses are required in the field of major concentration, beyond the mandatory courses. Additional courses may be chosen from areas or departments other than that of the major concentration in consultation with the student's faculty adviser. By special permission of his faculty adviser a candidate may present an acceptable thesis in lieu of 1½ of the 4½ courses required in the major field.

Doctor of Public Health

The Dr.P.H. program is offered to provide education for higher level research, teaching, or professional service in public health than is attainable through the master's level programs.

High scholastic performance at undergraduate and master's level and a favorable recommendation by a faculty member in whose field the student intends to do his major concentration are required for admission, as well as a master's degree in public health or a master's degree in an appropriately related field such as education, social work, psychology, physical and life sciences, etc.

GENERAL REQUIREMENTS

A student must select two areas of concentration, a major area and a minor area. The major area may be selected from the following: Behavioral Sciences in Public Health, Biostatistics, Environmental and Occupational Health, Epidemiology, Health Education, Infectious and Tropical Diseases, Medical Care Organization, Nutritional Sciences.

In general, two years of study in residence are required beyond the master's degree. In the first of these years, a full program of formal courses is ordinarily required for three quarters. In the second year, a minimum of one and one-half courses per quarter for three quarters is required together with substantial concentration on research for the dissertation.

For persons with a previous doctoral degree in medicine or a related field, the Dr.P.H. requires four quarters in residence beyond the master's degree.

Academic preparation for the Dr.P.H. is directed toward general competence and depth of understanding in the major and minor areas as well as general understanding of the scope and aims of the broad field of public health. Instruction will include at least the mandatory course work required for the master's degree in the major as well as appropriate study in the minor.

On the advice of his major faculty adviser, a doctoral committee of five faculty members is appointed for each doctoral candidate. This committee advises the student on his course of study, reviews his dissertation and conducts the necessary examinations. Written and oral qualifying examinations are held near the conclusion of the academic preparation.

DISSERTATION

The Dr.P.H. program culminates in a dissertation based on original research leading to a final examination. The subject of the dissertation should bear on some aspect of the student's field of major concentration and should demonstrate ability to plan and carry out independent investigation. Work on the dissertation is ordinarily started after successful completion of the qualifying examinations. Completion of the dissertation is at the student's own pace, but in any event, no more than five years after his advancement to candidacy.

FIELD TRAINING

Field study in the major field may be required for a period up to 10 weeks dependent on the student's previous work and future objectives.

Doctor of Philosophy (Biostatistics)

A program of study leading to the degree of Ph.D. in biostatistics is offered. Reference should be made to the **UCLA ANNOUNCEMENT OF THE GRADUATE DIVISION** for general University requirements. The student's program of study must be approved by the department and by the Graduate Council and it must embrace at the graduate course level three areas of knowledge: biostatistics, mathematical statistics, and a biomedical field such as biology, epidemiology, infectious diseases, medicine, microbiology, pharmacology, physiology, psychology, public health or zoology. Recommendation for the degree is based on the attainments of the candidate rather than on the completion of specific courses.

SCHOOL OF SOCIAL WELFARE

The School of Social Welfare offers a two-year graduate program leading to the Master of Social Welfare degree. The curriculum deals with four major areas of study: Human Behavior, Social Welfare Services and Policy, Social Work Methods Theory and Social Work Research. In addition to academic courses in the above subjects, the curriculum provides for field instruction in selected social agency programs under tutorial direction. The School offers curriculum concentrations in Social Casework and Community Organization. Students are expected to enroll in the same concentration for two years of study.

ADMISSION REQUIREMENTS

The School of Social Welfare offers courses on the graduate level only. *Admission to the School is scheduled in the Fall Quarter only, and applications for admission should be filed by April 15 for the following Fall Quarter.* Applicants must file an Application for Admission to Graduate Status with the Graduate Division of the University and, in addition, must file an application with the School of Social Welfare and submit other specified information.

Candidates are expected to meet the general requirements of the Graduate Division for admission to graduate status.

The School requires a minimum of 22.5 quarter units (or 15 semester units) in the social sciences or a combination of social science and social welfare sub-

jects as prerequisite undergraduate preparation for graduate study in the field of social work. Completion of courses in psychology, sociology and statistics is ordinarily expected.

In addition to an acceptable academic record and completion of the above preparatory courses, the School of Social Welfare applies the following criteria in the selection of candidates: personal suitability for professional education and potential for successful social work practice, as defined by the School; a satisfactory state of health, as determined by a physical examination immediately prior to registration; and in the case of applicants over 35 years of age, assessment on an individual basis of the candidate's previous education and work experience.

APPLICATIONS FOR TRANSFER

Opportunities for transfer from other schools of social work into the second-year program of study will be extremely limited in number and will be determined by the credentials and potentialities of the individual candidate.

Such applicants must have successfully completed the first year of the master's program in an accredited school of social work within five years immediately preceding request for admission to the School. In addition, candidates must meet all other admission requirements of the School.

The School will prescribe the program required to qualify for the Master of Social Work degree. Candidates may be required to make up courses lacking for fulfillment of the degree requirements or to audit courses for up-dating of knowledge even though credit may have been granted for a similar course in another school.

A written evaluation of the candidate's first year of study will be requested from the institution in which the student completed his first year's work.

APPLICATIONS FOR READMISSION

Applications for candidates who have completed the first-year program in the UCLA School of Social Welfare at some prior time and wish to return for completion of work toward the master's degree in social welfare will be considered on an individual basis. If more than five years have elapsed since completion of the first year's work, candidate may be required to enroll for the full two-year program.

PART-TIME STUDY

The majority of students in the Master of Social Welfare program are in full-time attendance, completing all requirements for the degree within two consecutive years. Class scheduling is therefore arranged to meet the needs of this majority. A limited number of students may be admitted for study on a part-time basis which permits completion of the first-year academic courses and field instruction over a period of two academic years. The second-year program of study requires concurrent course and field instruction and necessitates enrollment on a full-time basis. Prospective students who are interested in completing the first year of study on a part-time basis are urged to discuss their plans fully with the School early in the admissions process.

FINANCIAL AID

A number of federal, state, and local agencies make available scholarships and traineeships to graduate students in social welfare. Applications are for the most part made directly to the School. Additional information regarding these resources may be obtained from the Admissions Office of the School.

In addition to the above grants, a number of scholarships are offered through voluntary national and local organizations. General information concerning these scholarships may be obtained by writing to the School or to the Council on Social Work Education, 345 East 46th Street, New York, New York 10017. For information on University scholarships available to Social Welfare students, consult the announcement of the Graduate Division, GRADUATE STUDY AT UCLA.

MASTER OF SOCIAL WELFARE

The degree of Master of Social Welfare will be granted upon fulfillment of the following requirements:

1. The candidate shall have fulfilled the general requirements of the Graduate Division and the University.

2. The candidate shall have satisfactorily completed the School's prescribed program of classroom and field instruction, in either the Social Casework or Community Organization curriculum concentration. This includes satisfactory completion of the required courses in the Research sequence and of a research project to be undertaken during the second year of study.

3. The candidate shall have achieved a minimum grade average of B in academic courses and in field instruction.

4. The candidate shall have spent a minimum of one year (three quarters) of study in residence at UCLA.

5. The candidate shall have satisfactorily passed a comprehensive final examination in the field of social welfare.

For information concerning courses and curricula, see the UCLA ANNOUNCEMENT OF THE SCHOOL OF SOCIAL WELFARE and page 475 of this bulletin.

THE GRADUATE DIVISION

UCLA offers advanced study leading to the degrees of Master of Architecture (Urban Design), Master of Arts, Master of Arts in Teaching (in Physics and in Mathematics), Master of Business Administration, Master of Education, Master of Engineering, Master of Fine Arts, Master of Journalism, Master of Library Science, Master of Nursing, Master of Public Administration, Master of Public Health, Master of Science, Master of Social Psychiatry, Master of Social Welfare, Doctor of Philosophy, Doctor of Education, and Doctor of Public Health as well as to certificates of completion for the elementary, secondary and junior college teaching credentials and other advanced credentials for public school service. For more complete information concerning the requirements for higher degrees, consult the Graduate Division publications, STANDARDS AND PROCEDURES FOR GRADUATE STUDY AT UCLA and STANDARDS AND PROCEDURES FOR PROGRESS AND EXAMINATIONS IN GRADUATE PROGRAMS AT UCLA, and consult the offerings of the major department under the appropriate section of this bulletin.

Definition of Academic Residence

A graduate student is considered in academic residence if he is registered for and completes at least one course (4 units) in graduate or upper division work during a quarter.

Full-Time Graduate Program

Graduate students (except Teaching and Research Assistants) are considered in full-time enrollment if they take at least two full courses in graduate and/or upper division work per quarter, or the equivalent of eight quarter units. When possible, they should plan to take three full courses per quarter to expedite progress toward their degree.

Teaching and Research Assistants are required to take at least one course per quarter, or the equivalent of four quarter units, throughout their appointments, and are considered in full-time enrollment with this minimum. During the first quarter of their appointment they may not take more than two courses or the equivalent of eight quarter units. A student is required to be registered throughout his appointment. If a Teaching or Research Assistant finds it necessary to request a leave of absence or to withdraw, his appointment is thereby automatically terminated.

Graduate students holding fellowships administered by the University are required to take at least two courses per quarter or the equivalent of eight quarter units, both before and after advancement to candidacy. These courses may be in the 500 series of individual study or research.

Prospective graduate students who are eligible for Selective Service or federal or state subsidy may consult the UCLA Office of Special Services regarding definition of full-time program for these purposes.

Requirements for Graduate Degrees

PREPARATION

An applicant for any advanced degree must possess a bachelor's degree from an institution of acceptable standing and must have completed the prerequisites for graduate study in his field at UCLA. He should consult the department in which he wishes to study concerning special departmental requirements or other aspects of graduate study in addition to those common to all UCLA graduate programs.

Master's Degrees

The Master of Arts is offered in the following fields:

African Area Studies	Economics	Greek
Anthropology	Education	History
Art	English	Islamic Studies
Astronomy	Folklore & Mythology	Italian
Botany	French	Journalism
Classics	Geography	Latin
Dance	German	Latin American Studies

Linguistics	Oriental Languages	Sociology
Mathematics	Philosophy	Spanish
Mathematics (M.A.T.)*	Physics (M.A.T.)*	Speech
Medical History	Political Science	Teaching English as a Second Language
Microbiology	Psychology	Theater Arts
Music	Slavic Languages and Literatures	Zoology
Near Eastern Languages and Literatures		

The Master of Science is offered in the following fields:

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

Other master's degrees offered:

Architecture (M.Arch. U.D.)	Engineering (M.Engr.)	Public Health (M.P.H.)
Art (M.F.A.)	Journalism (M.J.)	Social Psychiatry (M.S.P.)
Business Administration (M.B.A.)	Library Science (M.L.S.)	Social Welfare (M.S.W.)
Education (M.Ed.)	Nursing (M.N.)	Theater Arts (M.F.A.)
	Public Administration (M.P.A.)	

PLAN

At the option of his major department, the student follows either the Thesis Plan or the Comprehensive Examination Plan. The University minimum standards are the same under either plan. A department, however, may require a higher scholarship average and courses and examinations in addition to the minimum requirements of the Graduate Division.

UNIVERSITY MINIMUM STANDARDS

Courses. The program of courses consists of at least nine graduate and upper-division courses,** including at least five graduate courses. For the Master of Arts, Master of Science, and Master of Arts in Teaching, the five graduate courses may be in the 200 series (graduate courses and seminars) and the 500 series (directed individual study or research for graduate students). For other master's degrees, they may be in the 400 series (graduate professional courses) as well as in the 200 and 500 series.

Standard of Scholarship. UCLA requires at least a B average in all courses taken in graduate status on any campus of the University of California and in all courses for the master's degree.

* Master of Arts in Teaching.

** Under the Quarter System at UCLA, 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 combination of such courses.

Transfer of Credit. By petition, courses completed in graduate status on other University of California campuses may apply to master's programs at UCLA. If approved, such courses may fulfill up to one-half the total course requirement, one-half the graduate course requirement, and one-third the academic residence requirement.

Also by petition, courses completed in graduate status at institutions other than the University of California may apply to UCLA master's programs. A maximum of 2 such courses (the equivalent of eight quarter units or five semester units) may apply, but these courses may not be used to fulfill either the five-graduate-course requirement or the academic residence requirement.

Academic Residence. The student completes at least three quarters of academic residence in graduate status at the University of California, including at least two quarters at UCLA. He is in academic residence if he registers for (and completes) at least one course (4 units) in graduate or upper-division work during a quarter.

Foreign Language. If the degree program includes a foreign language requirement, every effort should be made to fulfill this before the beginning of graduate study or as early as possible thereafter so that the language skill will be of maximum benefit. The student normally meets these requirements by completing one or more examinations. In French, German, Russian, and Spanish he takes examinations which the Educational Testing Service (ETS) offers at UCLA and at other locations throughout the United States several times a year. In other languages, examinations are administered by foreign language departments at UCLA. Prospective graduate students are urged to take ETS examinations while still seniors, if possible, and their scores, if sufficiently high, will satisfy foreign language requirements for their graduate degrees.

Questions on foreign language requirements should be addressed to departments; questions about the examinations should be directed to the Language Examination Coordinator, Student and Academic Affairs Section, Graduate Division, or to the Educational Testing Service, Princeton, New Jersey 08540. See also the ANNOUNCEMENT OF THE GRADUATE DIVISION for a chart summarizing departmental foreign language requirements.

Advancement to Candidacy. Advancement to candidacy takes place after formal approval of the student's program, which may include work in progress. He files for advancement to candidacy no later than the second week of the quarter in which he expects to receive the degree. In case of unexpected delay in completing work in progress during the final quarter, he may have up to one additional year in which to complete all requirements.

THESIS OR COMPREHENSIVE EXAMINATION

Under the Thesis Plan, the student's thesis is a report of the results of his original investigation, the subject and general plan of which his department must have approved in advance. The Manuscript Adviser for Theses and Dissertations and from the UCLA Publication, STANDARDS AND PROCEDURES FOR ADVANCED

DEGREE MANUSCRIPT PREPARATION, provide guidance in the final preparation of the manuscript.

Under the Comprehensive Examination Plan, the examination is administered by a committee appointed by the department. In certain fields this examination may also serve as a screening or qualifying examination for a doctoral program.

DEPARTMENTAL SCHOLAR PROGRAM

Departments may nominate exceptionally promising undergraduates (juniors and seniors) as Departmental Scholars to pursue bachelor's and master's degree programs simultaneously.

Qualifications include the completion of 24 courses (96 quarter units) at UCLA—or the equivalent at a similar institution—as well as the prerequisites of the major. To obtain both the bachelor's and master's degrees the Departmental Scholar will fulfill requirements for each program and maintain a minimum average of B. He may not use any course to fulfill requirements for both degrees.

Interested students should consult their departments well in advance of application dates for admission to graduate standing (page 28).

SECOND MASTER'S DEGREES

Although the University discourages study for additional master's degrees, a student who wishes to work for a second master's in a new field may request permission to do so in advance, and the Graduate Division will review his petition on the basis of its particular merits. Work applied to the first master's degree is not applicable to the second.

Candidate in Philosophy Degree

In those departments for which the Graduate Council has approved formal proposals for its award, the new intermediate degree Candidate in Philosophy (C.Phil.) may be awarded qualified students upon advancement to candidacy in Ph.D. programs. Applicants may obtain further information from the department in which they wish to study.

THE CANDIDATE IN PHILOSOPHY IS OFFERED IN THE FOLLOWING FIELDS

Economics	Indo-European Studies	Near Eastern Languages and Literatures
English	Italian	Philosophy
French	Linguistics	Romance Languages and Literatures
Geography	Mathematics	Sociology
Hispanic Languages and Literatures	Meteorology	
History	Music	

Doctor of Philosophy Degree

The degree Doctor of Philosophy is awarded candidates who have displayed understanding in depth of the subject matter of their discipline as well as ability to make original contributions to knowledge in their field. The degree is an affidavit of critical aptitude in scholarship, imaginative enterprise in research, and proficiency and style in communication.

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

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

A professional doctor's degree is offered in the following major fields: (1) Education (Ed.D.); (2) Public Health (Dr.P.H.).

UNIVERSITY MINIMUM STANDARDS

Courses. The student takes whatever formal courses his department may require or recommend for knowledge in his field and preparation for qualifying examinations. The University has no formal course requirements for doctoral programs other than the academic residence requirement. The 500 series of directed individual study or research courses is designed for graduate research, preparation for examinations, and preparation of the thesis or dissertation.

Standard of Scholarship. UCLA requires at least a B average in all courses taken on any campus of the University of California for the entire time the student has been in graduate status.

Academic Residence. The student completes at least two years of academic residence in graduate status at the University of California, including one year, ordinarily the second, in continuous residence at UCLA. In most cases a longer period of academic residence is necessary, however, and from three to five years

* Joint program with California State College at Los Angeles.

is generally considered optimal. A graduate student is in academic residence if he registers for (and completes) at least one course (4 units) in graduate or upper-division work during a quarter.

Foreign Language. Every effort should be made to complete foreign language requirements before the beginning of graduate study or as early as possible thereafter so that the language skill will be of maximum benefit. The student normally meets these requirements by completing one or more examinations. In French, German, Russian, and Spanish he takes examinations which the Educational Testing Service (ETS) offers at UCLA and at other locations throughout the United States several times a year. In other languages, examinations are administered by foreign language departments at UCLA. Prospective graduate students are urged to take ETS examinations while still seniors, if possible, and their scores, if sufficiently high, will satisfy foreign language requirements for their graduate degrees.

Questions on foreign language requirements should be addressed to departments; questions about the examinations should be directed to the Language Examination Coordinator, Student and Academic Affairs Section, Graduate Division, or to the Educational Testing Service, Princeton, New Jersey 08540. See also the ANNOUNCEMENT OF THE GRADUATE DIVISION for a chart summarizing departmental foreign language requirements.

Qualifying Examinations. At an appropriate time in the doctoral program, written qualifying examinations are administered by a departmental guidance committee. After successful completion of these examinations and of part or all of the foreign language requirement, a doctoral committee is formally appointed by the Dean of the Graduate Division to conduct the oral qualifying examination, to supervise the research and writing of the dissertation, and to conduct the final oral examination.

Advancement to Candidacy. After the student has successfully completed the oral qualifying examination, he is eligible for advancement to candidacy.

Dissertation. The candidate demonstrates his ability for independent investigation by completing a dissertation in his principal field of study. His choice of subject must be approved by his doctoral committee, which also reviews and approves the dissertation prospectus for circulation in the department and guides him in the research and writing. The Manuscript Adviser for Theses and Dissertations and the UCLA publication, STANDARDS AND PROCEDURES FOR ADVANCED DEGREE MANUSCRIPT PREPARATION, provide guidance in the final preparation of the manuscript. The doctoral committee and the Dean of the Graduate Division approve the completed dissertation.

Final Oral Examination. The final oral examination, conducted by the doctoral committee, deals primarily with the relation of the candidate's dissertation to the field of knowledge to which it contributes.

Other Doctoral Degrees

Requirements for the degrees of Doctor of Education (Ed.D.) and Doctor of Public Health (Dr.P.H.) are described in the ANNOUNCEMENT OF THE GRADUATE SCHOOL OF EDUCATION and the ANNOUNCEMENT OF THE SCHOOL OF PUBLIC HEALTH.

Courses of Instruction

CLASSIFICATION AND NUMBERING

The classification and numbering of courses are described below.

Undergraduate Courses

Undergraduate courses are classified as lower division and upper division. *Lower division courses* (numbered 1–99) are open to freshmen and sophomores, and are also open to upper division students but without upper division credit. *Upper division courses* (numbered 100–199) are ordinarily open to students who have completed at least one lower division course in the given subject, or two years of college work. Courses in the 100 series may be offered in partial satisfaction of the requirements for the master's degree by a student registered in graduate status, if taken with the approval of the major department.

Graduate Courses

Graduate courses (numbered 200–299) are ordinarily open to students admitted in graduate status. As a condition for enrollment in a graduate course the student must submit to the instructor in charge of the course evidence of satisfactory preparation for the work proposed.

Individual study or research graduate courses (numbered 500–599) may be used to satisfy minimum higher degree requirements within the limitations prescribed by the major department and approved by the Graduate Council.

Professional Courses

Teacher-training courses (numbered 300–399) are highly specialized courses dealing with methods of teaching, and are acceptable toward the bachelor's degrees only within the limitations prescribed by the various colleges or schools. Courses in this series do not yield credit toward a higher degree.

Courses numbered 400–499 are professional courses other than teacher-training courses. They are acceptable toward academic degrees only within the limitations prescribed by the various colleges, schools, or Graduate Division, Los Angeles.

University Extension Courses

University of California Extension courses bearing numbers prefixed by X, XB, XD, XI, XL, XR, XSB, XSC, XSD yield credit toward the bachelor's degree. They are rated, with respect to the general and specific requirements for the degree, on the same basis as courses taken in residence at collegiate institutions of approved standing. Concurrent enrollment in resident courses and in University Extension courses (or courses at another institution) taken with a view to credit toward a degree is permitted only when the entire program has been approved in advance by the dean of the student's college.

Course Listings

Each course in the following listings by departments, as in the samples that follow, has the credit value of a full course unless otherwise noted. Thus a listing

Mathematics 11A–11B–11C. Calculus and Analytic Geometry. indicates three full courses, 11A, 11B, and 11C; while a listing

Botany 211A–211F. Advanced Plant Physiology. ($\frac{1}{2}$ course each) indicates six half courses, 211A, 211B, 211C, 211D, 211E, and 211F. Some courses have a variable value; for example,

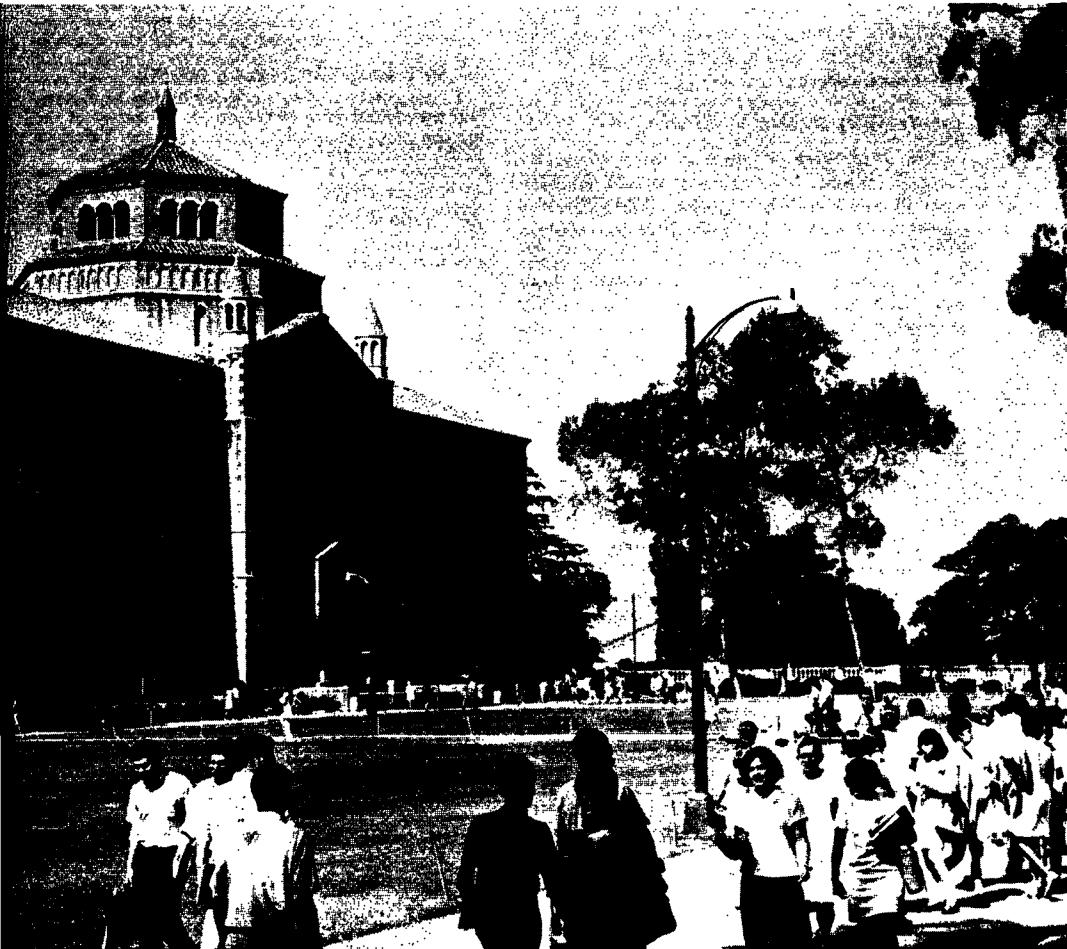
Business Administration 596A–596N. Research in Business Administration.
($\frac{1}{4}$ to $1\frac{1}{2}$ courses)

where within the limits indicated, the exact value of the course is fixed for each individual student when he enrolls.

Where noted, credit for a specific course is dependent upon completion of a subsequent course.

Credit for Courses

The normal undergraduate program is four courses each quarter and a minimum of 45 courses is required for the bachelor's degree. At least nine courses are required for the master's degree. The credit value of a course is equivalent to 4.0 quarter units. 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)

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

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

Robert M. McHargue, B.A., *Captain, U. S. Air Force, Assistant Professor of Aerospace Studies.*

Air Force Reserve Officers Training Corps (Air Force ROTC)

The mission of the Air Force ROTC is to develop in selected college students those qualities of leadership and other attributes essential to their progressive advancement to positions of increasing responsibility as commissioned officers in the U. S. Air Force. The objectives of the program are to: (1) develop in cadets an understanding of the U. S. Air Force mission, organization, operation, problems, and techniques; (2) develop in cadets the ability to work with others on group activities and assume a leadership role when required; (3) heighten each cadets appreciation of and dedication to American principles; and (4) prepare cadets to discharge the responsibilities required of them as U. S. Air Force officers.

Four-Year Program

The four-year program is open to beginning freshmen. It consists of an initial two-year General Military Course (GMC), and a terminal two-year Professional Officer Course (POC). In this program, the cadets in the POC are required to attend a four-week summer field training course between their junior and senior years. Students attending the summer field training are provided meals, quarters, travel expenses, and are paid about \$100.00. All students enrolled in the POC receive a \$50.00 per month retainer fee for 20 consecutive months.

Applicants desiring to enter flying training as pilots after being commissioned must have 20-20 vision, uncorrected, in each eye and normal color perception. Qualified students will receive 36 hours of flight training in civilian aircraft during their second year of the POC at no cost to the individual.

Applicants for training as navigators must have uncorrected distance vision of better than 20-50 bilaterally, corrective to 20-20 bilaterally and near vision of 20-20 bilaterally, uncorrected. Pilot and navigator ap-

plicants must not have reached 26½ years of age at the time of their commissioning.

Students not desiring flight training must have a bilateral distance vision of at least 20-400, corrective to 20-40 in one eye and 20-30 in the other and must not have reached their 28th birthday at time of commissioning.

Freshman Year

1A. World Military Systems. (½ course)

Lecture-seminar, one hour; leadership laboratory, one hour. An analysis of the nature and principles of war and of national power. Lt. Col. Gausche

1B. World Military Systems. (½ course)

Lecture-seminar, one hour; leadership laboratory, one hour. Prerequisite: course 1A. A survey of the organization of the Department of Defense and of the mission and organization of the U. S. Air Force and the Strategic Offensive Forces. Lt. Col. Gausche

1C. World Military Systems. (½ course)

Lecture-seminar, one hour; leadership laboratory, one hour. Prerequisites: course 1B. A survey of the mission and organization of the Strategic Offensive Forces and of the Strategic Defensive Forces. Lt. Col. Gausche

Sophomore Year

21A. World Military Systems. (½ course)

Lecture-seminar, one hour; leadership laboratory, one hour. Prerequisites: courses 1A, 1B and 1C. This course continues the study of world military systems. This course surveys the mission and organization of the Strategic Offensive Forces and the Aerospace Support Forces. Lt. Col. Gausche

21B. World Military Systems. (½ course)

Lecture-seminar, one hour; leadership laboratory, one hour. Prerequisite: course 21A. A survey of the mission and organization of Aerospace Support Forces and a comparative analysis of the conceptual bases and operational techniques of Democracy and Communism. Lt. Col. Gausche

21C. World Military Systems. (½ course)

Lecture-seminar, one hour; leadership laboratory, one hour. Prerequisite: course 21B. A discussion of national alliances and collective security. Concludes with an analysis of the search for peace. Lt. Col. Gausche

Four-Week Field Training Course

This course comprises 232 hours which includes academics, physical training, individual weapons familiarization, flying familiarization, and field exercises. The training is conducted on a United States Air Force base. Field Training Course Staff

Two-Year Program

The two-year Air Force ROTC program is offered to accommodate those students who have attained at least junior standing and have two years remaining in the University, either as an undergraduate or graduate student. A prerequisite for students entering this program is successful completion of a six-week field training course on an Air Force base during the summer preceding their enrollment in the program.

Students interested in this program must make application to the Professor of Aerospace Studies during the fall quarter preceding the six-week summer field training course. Students attending the six-week summer field training are provided meals, quarters, travel expenses, and are paid about \$120.00. Students enrolled in the POC receive \$50.00 per month retainer fee for 20 consecutive months.

Data concerning physical and age qualifications for flying and navigator training and for nonflying applicants is the same as for four-year program.

Six-Week Field Training Course

This course comprises 296 hours of six-week duration which includes academics, physical training, individual weapons familiarization, familiarization flying and field exercises. The training is conducted on a United States Air Force base.

Field Training Course Staff

131A. Growth and Development of Aerospace Power.

Seminar, three hours; leadership laboratory, one hour. Prerequisite: completion of GMC or six-week FTU (Summer Field Training). A survey course about development of airpower in the U.S. and the mission and organization of the Department of Defense. Practicing communication techniques and developing communicative abilities under the close supervision of the instructor.

Capt. McHargue

131B. Growth and Development of Aerospace Power.

Seminar, three hours; leadership laboratory, one hour. Prerequisite: course 131A. A survey course about Air Force concepts; doctrine and employment, the importance of a national space effort, development of the space program, the spatial environment, and orbits and trajectories. A continued emphasis on communicative abilities.

Capt. McHargue

131C. Growth and Development of Aerospace Power.

Seminar, three hours; leadership laboratory, one hour. Prerequisite: course 131B. A survey course about the United States space vehicle systems, the propulsion, propellants and power sources, control and guidance, ground support, manned space flight, and operations in space. Continued emphasis on communicative abilities.

Capt. McHargue

141A. The Professional Officer.

Seminar, three hours; leadership laboratory, one hour. Prerequisite: course 131C. An introduction to the foundation of the military profession, management and human relations. Leadership theories and their practical application.

Maj. Sutton

141B. The Professional Officer.

Seminar, three hours; leadership laboratory, one hour. Prerequisite: course 141A. An introduction to the principles of military discipline, human relations, and personnel policies. The junior officer as an administrator and the Military Justice System. Development of oral and written communicative skills and the Air Force approach to problem solving.

Maj. Sutton

141C. The Professional Officer.

Seminar, three hours; leadership laboratory, one hour. Prerequisite: course 141B. An introduction to the principles and functions of management. The junior officer as an administrator and the Military Justice System. Briefing for commissioned service.

Maj. Sutton

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 74 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. An interdisciplinary degree which has its own value, the M.A. program also furnishes an approach to doctoral work related

to Africa. Students gain exposure to several disciplines before deciding on the one most closely suited to their interests and capabilities. The degree is intended (a) to give an African area dimension to the studies of students in a specific academic discipline and (b) to help prepare students who wish to work in Africa. The Center intends to give new emphasis to the study of the arts and humanities in relation to Africa, and a master's degree is now possible in this field under the Master of Arts in African Area Studies as presently constituted. Such components as literature in French or English, ethnomusi-

cology, and traditional art may be combined with background studies in anthropology or an African language to produce a synthesis in the field. A doctor's degree in African Studies is not offered because it is believed that at such a level training should be in one academic discipline with the emphasis on Africa which the department recommends. The master's degree is administered by the Committee on the Master Degree in African Area Studies.

Admission to the M.A. Program

In addition to meeting the requirements of the Graduate Division, the student must have adequate preparation in undergraduate fields related to the program. Required preparation for the Master's degree in African Area Studies is a degree of Bachelor of Arts in the social sciences or arts and humanities. 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 139.

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 suggested.

Course of Study. A minimum of nine courses dealing with Africa in at least three disciplines. Of these, five or more must be at the graduate level (200 series). A student in the Master's Program must offer a major and a minor field. Major field concentration is defined as a minimum of four courses, of which two must be at the graduate level; minor field concentration is defined as a minimum of two courses, at least one of which must be at the graduate level. A student may, with the consent of the graduate advisor, offer methodology courses or contrastive courses for purposes of completing his major or minor fields of concentration. The student will be held responsible for both the major and minor fields in his final examination sequence for the M.A. degree. As a third discipline, a student will be expected to take African Languages 190 (Survey of African Languages) or a survey course on Africa in a field outside his major and minor areas of concentration. Courses taken prior to the M.A. program, may, with the consent of the Graduate Advisor, be counted as meeting part of the

requirements in the two fields, but will not reduce the total of nine courses.

Qualifying Examination. The student must pass both a written and oral examination for the Master's degree. The written examination will cover the major field of concentration. In the oral examination, the student will be held responsible for both the major and minor fields of concentration.

There is no thesis requirement for the Master's degree. An examining committee, with the Chairman drawn from the student's major field of concentration, will administer the examination sequence. The purpose of the oral examination is to test the student's ability to relate knowledge of Africa across disciplinary boundaries.

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.
- 285. Social Anthropology.
- 596. Directed Studies (Africa).

Art 118C. The Arts of Sub-Saharan Africa.

- 119A. The Arts of Africa: Western Sudan
- 119B. The Arts of Africa: The Guinea Coast.
- 119C. The Arts of Africa: The Congo.
- 220. The Arts of Africa, Oceania and Pre-Columbian America.

Economics 110. Economic Problems of Underdeveloped Countries.

- 111. Theories of Economic Growth and Development.
- 112. Policies for Economic Development.
- 211. Economic Growth of Underdeveloped Areas: Theory and Structure.
- 212. Economic Growth of Underdeveloped Areas: Models and Policy.
- 213A-213E. Selected Problems of Economic Development.
- 596. Individual Study (Africa).

Education 204A. Comparative Education.

- 204B. African Education.

- 253A. Current Problems in Comparative Education.
 253B. African Education.
- English** 114. Survey of African Literature in English.
 250K. Contrastive Analysis of English and Other Languages.
 271. Studies in African Literature in English.
 370K. The Teaching of English as a Second Language.
- French** 221A. Introduction to the Study of French African Literatures.
 221B. French-African Literature of Madagascar and Bantu Africa.
 221C. French-African Literature of Berber-Sudanese and Arabo-Islamic Africa.
 257A-257B. Studies in the French-African Literature.
- Geography** 188. Northern Africa.
 189. Middle and Southern Africa.
 288. Africa.
 290. Seminar: Selected Regions (Africa).
- History** 125A-125B-125C. History of Africa.
 126A-126B. History of West Africa.
 127A-127B. History of East Africa.
 128A-128B. History of Southern Africa.
 129. History of Northeast 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.
- Linguistics** 220A. Linguistic Areas (Africa).
- African Languages** 101A-101B-101C. Elementary Swahili.
 102A-102B-102C. Intermediate Swahili.
 103A-103B. Advanced Swahili.
 104A-104B-104C. Elementary Luganda.
 107A-107B-107C. Elementary Sotho.
 108A-108B-108C. Elementary Zulu.
 109A-109B-109C. Elementary Xhosa.
 110A-110B-110C. Intermediate Xhosa.
 111A-111B-111C. Elementary Yoruba.
 112A-112B-112C. Intermediate Yoruba.
 113A-113B-113C. Elementary Igbo.
 115A-115B-115C. Elementary Twi.
 121A-121B-121C. Elementary Fula.
- 131A-131B-131C. Elementary Bambara.
 132A-132B-132C. Intermediate Bambara.
 141A-141B-141C. Elementary Hausa.
 142A-142B-142C. Intermediate Hausa.
 150A-150B. African Literature in English Translation.
 190. Survey of African Languages.
 192. Comparative Studies in African Languages.
 199. Special Studies in African Languages.
 201A-201B. Comparative Niger-Congo.
 202A-202B. Comparative Bantu.
 260. Seminar in African Languages.
 270. Seminar in African Literature.
 596. Directed Studies.
- Music** 140A-140B-140C. 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.
- Near Eastern Languages**
- Arabic** 102A-102B-102C. Intermediate Arabic.
 103A-103B-103C. Advanced Arabic.
 111A-111B-111C. Spoken Egyptian Arabic.
 130A-130B-130C. Classical Arabic Texts.
 140A-140B-140C. Modern Arabic Texts.
 150A-150B. Survey of Arabic Literature in English.
 199. Special Studies in Arabic.
- Berber Languages** 101A-101B-101C. Elementary Berber.
 102A-102B-102C. Advanced Berber.
 120A-120B-120C. Introduction to Berber Literature.
 199. Special Studies in Berber Languages.
 201. Berber Structure.
- Semitics** 101A-101B-101C. Elementary Amharic (Modern Ethiopic).
 102A-102B-102C. Advanced Amharic (Modern Ethiopic).
 201A-201B-201C. Old Ethiopic.
 202A-202B-202C. Readings in Old Ethiopic Literature.
 209A-209B-209C. Comparative Study of the Ethiopian Languages.
 280A-280B-280C. Seminar in Comparative Semitics.
 290A-290B-290C. Comparative Morphology of the Semitic Languages.

Political Science 115. Theories of Political Change.
 130. New States in World Politics.
 165. Government and Politics in North Africa.
 166. Government and Politics in Tropical Africa.
 250E. African Studies.
 250K. North African Studies.
 271. Seminar in Political Change.
 596. Directed Individual Study or Research (Africa).

Sociology 130. Social Processes in Africa.
 132. Population and Society in the Middle East.
 140. Political Sociology.
 235. Social Structure and Social Movements.
 255A-255B. Systematic Sociological Theory.
 258. Sociology of Religion.
 272. Sociology of Political Movements.
 596. Special Problems in Sociology (Africa).

■ AGRICULTURAL SCIENCES

(Department Office, 280 Kinsey Hall)

Walter Ebeling, Ph.D., *Professor of Entomology.*

Vernon T. Stoutemyer, Ph.D., *Professor of Ornamental Horticulture (Chairman of the Department).*

Arthur Wallace, Ph.D., *Professor of Plant Nutrition.*

Sidney H. Cameron, Ph.D., *Emeritus Professor of Plant Physiology.*

William H. Chandler, Ph.D., LL.D., *Emeritus Professor of Horticulture.*

Undergraduate Study

Requirements for a major in the field of agriculture can no longer be met at Los Angeles and students beginning their work at Los Angeles with intentions to transfer should consult the catalogs of the campus on which the major is available.

Students electing majors in agriculture may satisfy certain lower division requirements in courses in other departments at Los Angeles and then transfer to the campus, Berkeley, Davis, or Riverside, where the major work is offered. The available majors cover a broad range of interests from soil,

food, plant and animal sciences to family and consumer interests. Various phases of agricultural economics and agricultural education are also available.

The first three years of the agricultural engineering curriculum are available in the College of Engineering at Los Angeles.

Students who register at Los Angeles with the intention of transferring to another campus for completion of their studies in agriculture, may obtain information and advice through the office of the Chairman of the Department of Agricultural Sciences at Los Angeles.

■ ANATOMY

(Department Office, 73-235 Health Sciences Center)

W. Ross Adey, M.D., *Professor of Anatomy and Physiology.*

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

Nathaniel A. Buchwald, Ph.D., *Professor of Anatomy in Residence.*

Carmine D. Clemente, Ph.D., *Professor of Anatomy (Chairman of the Department).*

Earl Eldred, M.D., *Professor of Anatomy.*

John D. French, M.D., *Professor of Anatomy and Clinical Professor of Surgery.*

Lawrence Kruger, Ph.D., *Professor of Anatomy.*

H. W. Magoun, Ph.D., *Professor of Anatomy.*

David S. Maxwell, Ph.D., *Professor of Anatomy.*

Richard E. Ottoman, M.D., *Professor of Radiology and Anatomy.*

Daniel C. Pease, Ph.D., *Professor of Anatomy.*

Charles H. Sawyer, Ph.D., *Professor of Anatomy.*

Arnold B. Scheibel, M.D., *Professor of Anatomy and Psychiatry.*
 Jose P. Segundo, M.D., *Professor of Anatomy in Residence.*
 Reidar F. Sognaes, Ph.D., D.M.D., *Professor of Anatomy and Oral Biology.*
 Richard W. Young, Ph.D., *Professor of Anatomy.*
 Roger A. Gorski, Ph.D., *Associate Professor of Anatomy (Vice-Chairman, Graduate Affairs).*
 James N. Hayward, M.D., *Associate Professor of Anatomy.*
 John D. Schlag, M.D., *Associate Professor of Anatomy in Residence.*
 P. Dean Bok, Ph.D., *Assistant Professor of Anatomy.*
 John H. Campbell, Ph.D., *Assistant Professor of Anatomy.*
 Edwin L. Cooper, Ph.D., *Assistant Professor of Anatomy.*
 Emilio E. Decima, M.D., *Assistant Professor of Anatomy in Residence.*
 Rafael Elul, M.D., *Assistant Professor of Anatomy.*
 Albert V. LeBouton, Ph.D., *Assistant Professor of Anatomy.*
 Richard N. Lolley, Ph.D., *Assistant Professor of Anatomy in Residence.*
 Eberhardt K. Sauerland, M.D., *Assistant Professor of Anatomy.*
 M. B. Sterman, Ph.D., *Assistant Professor of Anatomy and Physiology in Residence.*
 Anna N. Taylor, Ph.D., *Assistant Professor 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.*
 Jan Berkhout, Ph.D., *Assistant Research Anatomist.*
 George W. Bernard, Ph.D., *Lecturer in Anatomy and Associate Clinical Professor of Dentistry (Oral Biology).*
 Michel Bouteille, M.D., *Associate Research Anatomist and Pathologist.*
 Michael Chase, Ph.D., *Assistant Research Anatomist.*
 Donald J. Davenport, M.D., *Assistant Clinical Professor of Anatomy.*
 Mario Decandia, M.D., *Visiting Associate Research Anatomist.*
 Ross M. Durham, Ph.D., *Assistant Research Anatomist.*
 Thelma Estrin, Ph.D., E.E., *Associate Research Engineer in Anatomy.*
 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., *Research Anatomist and Clinical Professor of Oral Biology.*
 Gunnar Heuser, M.D., *Assistant Research Anatomist and Assistant Professor of Medicine in Residence.*
 Jessamine O. Hilliard, Ph.D., *Associate Research Anatomist.*
 Takashi Hoshizaki, Ph.D., *Assistant Research Anatomist.*
 Chester D. Hull, Ph.D., *Associate Research Anatomist.*
 Allan Jacobson, M.D., *Assistant Research Anatomist.*
 G. Arthur LaVelle, Ph.D., *Visiting Professor of Anatomy.*
 Harold Lyons, Ph.D., *Research Theoretical Physicist in Anatomy.*
 James G. McElligott, Ph.D., *Assistant Research Anatomist.*
 James J. McNew, Ph.D., *Assistant Research Anatomist.*
 Miroslava B. Nikitovitch-Winer, Ph.D., *Visiting Associate Research Anatomist.*
 Hiroharu Noda, M.D., *Assistant Research Anatomist.*
 Allen C. Norton, Ph.D., *Assistant Research Physiologist and Anatomist.*
 Anselmo R. Pineda, M.D., *Assistant Clinical Professor of Anatomy.*
 Robert W. Porter, M.D., *Clinical Professor of Anatomy and Surgery.*

Lionel D. Rovner, B.S.E.E., *Associate in Anatomy.*

Sant S. Sekhon, Ph.D., *Assistant Research Anatomist.*

George D. Silva, M.D., D.D.S., *Professor of Oral Medicine.*

Bernard Towers, M.B., Ch.B., M.A. (Cantab.), *Visiting Professor of Anatomy and Pediatrics.*

Arthur A. Uyeda, Ph.D., *Assistant Research Psychologist.*

Donald O. Walter, Ph.D., *Associate Professor of Physiology in Residence and Associate 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, 206 and 207; one departmental seminar; other courses as necessary to the candidate's particular program. No foreign language is required.

Requirements for the Doctor of Philosophy Degree

The following courses are required: Anatomy 101, 206, 207; Biochemistry; Mammalian Physiology; at least two different departmental seminars; additional courses selected by the student and his adviser as necessary to his program. Anatomy 210 and 257 are strongly recommended.

The student must demonstrate the ability to read two foreign languages. The first

should be selected from a choice of German or French, but Russian and Spanish may be accepted upon departmental approval. The second language may be any modern language, provided the student can demonstrate its particular value to his area of study. An individual course of study may be substituted for the second language upon departmental approval. He must complete successfully both written and oral qualifying examinations; gain teaching experience in three of the major anatomy courses; present and defend his dissertation on his research. His total program should not require more than four years to complete.

Upper Division Courses

101. Microscopic Anatomy. (2 courses)

Four 3-hour sessions per week in the fall quarter. Prerequisite: enrollment in School of Medicine or consent of the instructor. Microscopic study of the tissues and organs of the human body.

Mr. Pease and Staff

102A-102B. Gross Anatomy of the Human Body.

(½ course, 2 courses)

(Formerly numbered 100 and 102.) One hour of lecture and four of lab per week in the winter quarter; four hours of lecture and twelve of lab per week in the spring. Prerequisite: enrollment in School of Dentistry or consent of the instructor. Course 102A is prerequisite to 102B. Credit and grade are given only upon completion of 102B. Systemic and topographical human anatomy with dissection of the human cadaver. Emphasis on head and neck.

Mr. Sauerland and Staff

103. Basic Neurology.

Two 4-hour sessions and one 3-hour session per week in the spring quarter. Prerequisite: enrollment in School of Medicine. Must be taken concurrently with Physiology 103. Lectures, conferences, demonstrations and laboratory procedures necessary to an understanding of the function of the human nervous system.

Mr. Eldred and Staff

104. Mammalian Histology. (1½ courses)

Three 3-hour sessions per week in the fall quarter. Prerequisite: enrollment in School of Dentistry or consent of the instructor. Lectures, demonstrations and laboratories dealing with the structural organization of tissues and organs at the microscopic level.

Mr. Cooper and Staff

105A-105B. Gross Anatomy.

See 207A-207B Gross Anatomy.

106. Mammalian Neurology.

One 1-hour session and one 4-hour session per week in the winter quarter. Prerequisite: enrollment in School of Dentistry or consent of the instructor. Lectures, demonstrations and laboratories dealing with the fundamental structure and functional organization of the nervous system.

Mr. Sterman, Mrs. Taylor

Graduate Courses**206. Neurosciences: The Introductory Course for Graduate Students. (2 courses)**

Six hours of lecture and four of lab per week in the spring quarter. Prerequisite: consent of the instructor. Fundamental approaches to neuroanatomy, neurophysiology and the brain mechanisms for behavior.

Mr. Scheibel and Staff

207A-207B. Gross Anatomy. (2 courses, 1 course)

Four 4-hour sessions per week in the fall quarter; two 4-hour and one 1-hour session per week in the winter quarter. Prerequisite: consent of the instructor. Course 207A is prerequisite to 207B. Credit and grade are given only upon completion of 207B. Medical students enroll for 105A-105B. Lectures and dissection of the human body.

Mr. Hayward and Staff

208A-208B. Basic Electronics for Research in Experimental Anatomy and Neurophysiology.

Two hours of lecture and four of lab per week in the fall and winter quarters. Prerequisite: consent of the instructor. Course 208A is prerequisite to 208B. Credit and grade are given only upon completion of 208B. Applications of electronic instrumentation to problems of data acquisition, recording and analysis with emphasis on practical solutions.

Mr. Rovner

209. Fine Structure and Function in the Central Nervous System. (½ course)

Two 1-hour sessions per week in the fall quarter. Prerequisite: Basic Neurology. Lectures and discussion of the fine structure of selected areas of central nervous system, together with related electrical and biochemical patterns of activity.

Mr. Scheibel

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

One 4-hour session per week in the winter and spring quarters. Credit and grade will be given only upon completion of 210B. Laboratory exercises, demonstrations and lectures to provide experience with a variety of research techniques, including fixation, embedding, sectioning, staining, autoradiography, microradiography, electron microscopy, electrophoresis, paper and thin layer chromatography, photomicrography, and tissue culture.

Mr. Young

211. 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. Anatomy and physiology of cerebral processes in alerting, learning and memory.

Mr. Adey

212. Neural Mechanisms of Inhibition. (½ course)

Two hours per week in the fall quarter. Prerequisite: Basic Neurology. A systematic consideration of inhibitory processes in the nervous system from the synapse to integrated behavior. Special attention is given to the recent concepts of inhibition at the behavioral level and their implications for learning, emotion and mental health.

Mr. Sterman

213. Evolution and the Structure of Biomolecules. (½ course)

One 2-hour session per week in the spring quarter. Prerequisite: consent of instructor and upper level courses in two of the following subjects: genetics, evolution, biochemistry. Interpretation of pattern in molecular organization of living organisms in terms of evolution, and considerations of the impact of such pattern on evolutionary theory.

Mr. Campbell

214. Data Acquisition in Behavioral Neurophysiology.

Prerequisite: course 211. Neurophysiological techniques in behavioral studies; data acquisition systems and computer analysis of neurophysiological data.

Mr. Adey

218. Instrumentation and Apparatus for Research in Experimental Anatomy and Neurophysiology.

Two hours of lecture and four of lab in the spring quarter. Prerequisite: courses 208A-208B or consent of the instructor. Techniques are presented for reduction of biologic data to metrics and experience is provided in their use.

Mr. Rovner

250. Problems in Developmental and Cellular Biology. (½ course)

One 2-hour session per week in the fall quarter. Prerequisite: consent of the instructor. Review of literature in comparative cell biology with emphasis on cellular and molecular mechanisms controlling cell proliferation and specialization.

Mr. Thrasher

251. Problems in Developmental and Comparative Immunology. (½ course)

One 2-hour session per week in the winter quarter. Prerequisite: consent of the instructor. Review of current literature emphasizing early development and evolution of immune competence.

Mr. Cooper

253. Seminar in Experimental Neurology. (½ course)

One 1-hour session per week in the winter and spring quarters. Prerequisite: consent of the instructor.

Mr. Segundo

254. Interdisciplinary Research Seminar. (½ course)

One 2-hour session per week. Prerequisite: Basic Neurology. Lectures by senior research workers and staff dealing with problems related to mental health.

The Staff

255A-255D. Seminar in Endocrinology. (½ course each)

Prerequisite: consent of the instructor.

Mr. Gorski, Mr. Hayward, Mr. Sawyer

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

One 2-hour session per week in the winter and spring quarters. Prerequisite: Basic Neurology. Lectures and laboratory exercises dealing with the most recent advances in the study of the central and peripheral nervous system. The Staff

257. Journal Reviews in Experimental Anatomy. (½ course)

One 2-hour session per week in the spring quarter. Research frontiers in various fields of experimental anatomy are reviewed and mutually discussed by graduate students and professors.

Mr. Clemente, Mr. Kruger

258. Seminars in Neuroscience. (½ course)

Two hours per week in the fall, winter and spring quarters. Prerequisite: Basic Neurology and Anat-

omy 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)

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).*

Theodore Graves, Ph.D., *Professor of Anthropology.*

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.*

Ralph L. Beals, Ph.D., *Emeritus Professor of Anthropology and Sociology.*

Eshref Shevky, Ph.D., *Emeritus Professor of Anthropology and Sociology.*

Robert B. Edgerton, Ph.D., *Associate Professor of Anthropology and Psychiatry in Residence.*

Michael Moerman, Ph.D., *Associate Professor of Anthropology.*

Philip L. Newman, Ph.D., *Associate Professor of Anthropology and Education (Vice-Chairman of the Department).*

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.*

Christopher Donnan, Ph.D., *Assistant Professor of Anthropology.*

Michael Gilsean, Ph.D., *Assistant Professor of Anthropology.*

James N. Hill, Ph.D., *Assistant Professor of Anthropology.*

Paul E. Hockings, Ph.D., *Assistant Professor of Anthropology.*

John G. Kennedy, Ph.D., *Assistant Professor of Anthropology and Psychiatry in Residence.*

Murray J. Leaf, Ph.D., *Assistant Professor of Anthropology.*

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.*

¹ In residence summer quarter only, 1969-1970.

Bobby J. Williams, Ph.D., *Assistant Professor of Anthropology.*
 Clyde M. Woods, Ph.D., *Assistant Professor of Anthropology.*

David G. Epstein, Ph.D., *Acting Assistant Professor of Anthropology.*
 Frederick Plog, M.A., *Acting Assistant Professor of Anthropology.*
 Sterling Robbins, B.A., *Acting Assistant Professor of Anthropology.*
 Norman E. Whitten, Ph.D., *Visiting Associate Professor of Anthropology.*

Preparation for the Major

Required: Anthropology 1A-1B, 5A-5B-5C.

The Major

Required: (1) ten quarter courses or their equivalent including at least one course each from groups 1 through 7; and (2) four upper division courses from economics, geography, history, political science, psychology, or sociology, chosen in consultation with an adviser.

Note: Students intending to continue for a graduate degree are advised to take Anthropology 162A-162B, at least one course in field training (Group 8), and Anthropology 186 or its equivalent. These are not required for the B.A., but if not completed before graduation, the student will be held for them as part of his graduate program.

The student must also meet the requirements of the University and the College of Letters and Science for graduation.

Admission to Graduate Status

Applicants for admission to graduate status, in addition to the general requirements of the Graduate Division, normally must have the A.B. degree with a major in anthropology or its equivalent. In some cases students may be admitted with deficiencies but will be required to take additional preparatory work prior to the normal M.A. requirements. Students who have not had Anthropology 112, 162, and 186 (or their equivalent) must include these courses in their graduate program.

The Master of Arts Degree

The M.A. degree demands a breadth of knowledge in anthropology, and the student is required to demonstrate his competence in all recognized fields of the discipline: cultural anthropology, social anthro-

pology, archeology, physical anthropology and linguistics.

Students are admitted to the M.A. program who have an undergraduate major in anthropology from UCLA or other institutions of comparable standing. The Department follows the Comprehensive Examination Plan (for the general University requirements, see page 139). The students must demonstrate reading proficiency in one foreign language by passing the Language Examination administered by the Graduate Division, preferably in French, German, Russian, or Spanish.

A series of graduate courses (Anthropology 202, 212, 222, 232, and 242), commonly referred to as "core courses," are primarily for M.A. candidates. Prerequisites for these courses are Anthropology 112, 162A-162B, and 186.

The M.A. Comprehensive Examination, normally taken not later than the sixth quarter of residence in the program, tests the candidate in all fields of anthropology. In addition, the student writes a research paper under the guidance of an Advisory Committee in the field of his special interest.

The Doctor of Philosophy Program

For general University requirements, see page 143. 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, Russian, or Spanish is required of each student. The student must demonstrate a high reading proficiency and a control of relevant literature in his chosen area of work under the supervision of his Advisory Committee.

Each student, before formal advancement to candidacy will be given an examination, administered by his Doctoral Advisory Committee. In addition to a written examination covering three fields in anthropology, the candidate prepares an essay, normally a research project plan for his dissertation. The University administers an Oral Preliminary Examination and a Final Oral Examination in defense of the Dissertation. The Dissertation is an original contribution to anthropological literature, normally but not necessarily based upon field work.

The Doctor of Philosophy Degree in Anthropology-Sociology (Interdepartmental)

The Ph.D. degree in anthropology and sociology is awarded upon demonstration of an integrated command of the two disciplines and completion of a dissertation that demonstrates research competence relevant to both. For admission to the joint degree program the student must have completed the Bachelor's degree (or equivalent work) in either anthropology or sociology, and must be acceptable for graduate standing in both departments. Upon admission to the program the student is assigned a guidance committee consisting of two members from anthropology and two from sociology, to be appointed by the respective department chairmen. The committee in consultation with the student formulates the program of work and delineation of fields, and this program will be submitted to both departments for approval. Candidates will conform to the general re-

quirements for the Ph.D. set forth by the Graduate Division. The student may follow the language requirement of either department.

The student must demonstrate his competence in theory, methods of research, and a special field for both disciplines. 1) Competence must be demonstrated in ethnological theory by satisfactory completion of Anthropology 202 and a special essay in this area, and in sociological theory by passing the General Theory section of the Department's comprehensive examination at the level required for the Ph.D. in sociology. 2) The student must satisfactorily complete the graduate methods course and supervised field training in anthropology, sociology 18, (or its equivalent), sociology 110A, and any one of the two-quarter sequences in the Sociology 211-218 series. The student may be exempted from sociology 18, 110A, or both on the basis of examination. 3) A special field in anthropology and a special field in sociology will be established for each student so as to form a coherent unit. The student must pass an examination in each field.

Lower Division Courses

1A-1B. The Principles of Human Evolution.

Lecture, three hours; discussion-demonstration section, one hour. Course 1A is prerequisite to course 1B. Human population biology in the conceptual framework of evolutionary processes. Vertebrate and primate evolution and interpretation of the fossil human record. Concepts of race formation and classification in terms of human population genetics. These courses are required as preparation for the major. The Staff

5A. Principles of Cultural Anthropology.

(Formerly numbered 2B.) Lecture, three hours; discussion section, one hour. Course 5A is prerequisite to courses 5B and 5C. The character of culture and nature of social behavior as developed through anthropological study of contemporary peoples. The Staff

5B. Methods of Ethnology.

(Formerly numbered 80A-80B.) Lecture, three hours; discussion section, one hour. An introduction to the strategy of ethnological field work; an examination of the relationship between the situation of field observation and the nature of ethnological generalization; concept formation and research design. The Staff

5C. Culture History.

(Formerly numbered 2A.) Lecture, three hours; discussion section, one hour. The development of culture from its first beginnings to the advent of writing as developed through archeological investigation. Courses 5A-5B-5C are required as preparation for the major. The Staff

11. The Evolution of Man.

Not open for credit to students who have had Anthropology 1A-1B. This course does not satisfy major requirements. An intensive course in the biology of man, with emphasis on his evolutionary development and his place in nature (with particular attention to nonhuman primates and fossil man); genetic and racial diversity; and theories and problems of race. Mr. Birdsell

22. General Cultural Anthropology.

Lecture, three hours; discussion section, one hour. This course does not satisfy major requirements. Students who have had Anthropology 12 will not receive credit for Anthropology 22. An introduction to the cultural understanding of human behavior designed for students who do not plan further work in anthropology. Stress is placed on those concepts and theories that are applicable to the everyday life and professional activities in the modern world. Examples of institutions and individual behavior of modern America are counterpointed against studies of primitive life. Mr. Goldschmidt, Mr. Rodgers

Upper Division Courses

Courses 1A-1B, 5A-5B-5C or upper division standing are prerequisite to all upper division courses, except as otherwise stated.

100. Anthropology and the Modern World.

(Formerly numbered 12.) Lecture, three hours. May not be taken for credit by students who have taken Anthropology 12 or 22. Not applicable toward group requirements for the B.A. degree in Anthropology but may be applied toward the ten required anthropology courses for the major. The impact of cultural and social anthropology upon modern consciousness and contemporary affairs. Effects of anthropology upon selected areas such as psychology, art, music, literature. Role of anthropology in various professions, in policy making and in directed culture change. Mr. Oswalt

101. The Social Sciences in Psychiatry.

(Same as Psychiatry 105.) Prerequisite: consent of the instructor. Not applicable toward degree in anthropology. An introduction to the fields of social psychology, sociology, cultural anthropology and ethnology. Mr. Kennedy

120. The Individual in Culture.

Designed for non-majors. The course considers the balance of freedom and determinism for individuals and societies in the interrelation of personality, social structure and culture. It surveys the nature and limits of human plasticity; the variability and uniformity of personality within and between cultures; the relation of normal and abnormal, conformity and deviance. Mr. Edgerton

GROUP I

102. World Ethnography.

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

Area Courses. Prerequisite: courses 5A, 5C, 22 or 102. Each course is a survey of native peoples and cultures in designated areas of

the world. The survey will include discussions of technological, social and ideational patterns among the ethnic groups of the area. Special ethnological and theoretical problems will be covered as appropriate. Outside reading and papers may be required.

103A-103D. Peoples of Asia.

(Each part may be taken independently.)

- 103A. South Asia. Mr. Leaf
- 103B. Southeast Asia. Mr. Moerman
- 103C. East Asia.
- 103D. Soviet Asia.

104. Peoples of the Pacific. Mr. Lessa

105. Peoples of North America. Mr. Oswalt

106. Peoples of California. Mr. Meighan

107. Peoples of South America. Mr. Wilbert

108A-108B. Peoples of Africa.

(Each part may be taken independently.)

- 108A. East and South Africa. Mrs. Kuper
- 108B. West and Central Africa. The Staff

109. Peoples of Middle America.

Prerequisites: courses 5A, 5C, 22 or 102.

Mr. Woods

121. Latin American Societies.

(Same as Sociology 131.) A descriptive survey of the major Latin American societies emphasizing their historical backgrounds and their emergent characteristics, with special attention to the relations between rural and urban life.

GROUP II

122. Traditional Political Systems.

Prerequisite: course 125 or Sociology 101 or consent of the instructor. Political organization in pre-industrial societies of varying degrees of complexity. Law and the maintenance of order; corporate groups; ideology. The relations of political to other institutions of society.

123. Culture and Personality.

Prerequisites: Psychology 10 and either courses 5A-5B or Sociology 1. Theories of the relationship between personality and culture. The development of such theories in the history of anthropology. The relationship of culture and personality research to general social and cultural research. A review of the modern sub-field of psychological anthropology.

Mr. Edgerton, Mr. Robbins

125. Comparative Society.

Prerequisite: courses 5A-5B-5C, or Sociology 1 or consent of the instructor. The general principles of the organization of society; the relation of these to the technological complexity and ecological conditions of the culture; the principles of evolutionary development of social systems.

Mr. Epstein, Mr. Moerman

126. Technology and Invention of Nonliterate Peoples.

Significance of material culture in archeology and ethnology; problems of invention and the acceptance of innovations; the ecological and sociological concomitants of technological systems; selected problems in material culture. Mr. Donnan

127. Primitive Art.

Development and change of conventions of visual art forms of various nonliterate peoples; effects of craftsmanship, materials and local culture on primitive art. Mr. Oswalt

145. Oral Art and Drama of Non-Western Peoples.

(Same as Folklore 145.) Various genres of oral art found among non-Western peoples including myth, legend, proverb, riddle, song text and ritual drama; social functions of oral art; role of the innovator; dynamics of stability and change in oral art; various classical theories of folklore.

146. Musical Arts of Non-Western Peoples.

(Same as Folklore 146.) Music as an aspect of culture in various non-Western societies. Native ideas about music and systems of criticism. The social functions of music. Music in relation to anthropological theories of symbolic behavior, enculturation, innovation, unconscious patterning, and culture history.

147. The Cultures of the Arah 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. Mr. Gilseman

148. The Theory of Oral Literature.

(Same as Folklore 148.) The historical development of the study of oral literature among preliterate people; theoretical bases for the analysis of oral traditions.

GROUP III**124. Comparative Religion.**

The origins, elements, forms and symbolism of religion; the role of religion in society. Mr. Hockings, Mr. Lessa, Mr. Newman

126. Kinship and Social Organization.

Prerequisite: courses 5A-5B-5C or course 22. Kinship systems, principally in non-Western societies, and their significance in the organization of social life. Theories of kinship, marriage regulations, and kinship role patterns. Mr. Gilseman, Mr. Leaf

129. Economic Anthropology.

A survey of the ethnology and ethnography of economic life, principally in non-Western societies, with an emphasis on the operation of systems of production and distribution within diverse cultural contexts. Mr. Woods

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

Prerequisite: courses 5A-5B-5C or course 22. Course 130A is prerequisite to 130B. A survey of

the prehistoric foundations and cultural development of primary civilizations in the Near East, Europe and Asia as revealed by archeology; theories of cultural evolution and diffusion based upon archeological discovery. Mr. Hockings

131A-131B. Old Stone Age Archeology.

Prerequisite: courses 5A-5B-5C or consent of the instructor. Course 131A is prerequisite to 131B. No credit will be allowed for course 131A without course 131B. The development of Paleolithic and Mesolithic cultures of Europe, Africa and Asia, emphasizing the ordering and interpretation of archeological data, Pleistocene geology and chronology, the relationship between human, cultural and biological evolution. Mr. Sackett

133A. Ancient Civilizations of Western Middle America (Nahuatl Sphere).

Prerequisite: course 5A-5B-5C or course 22 or consent of the instructor. Pre-Hispanic and Conquest period native cultures of western Middle America as revealed by archeology and early colonial writing in Spanish and Indian languages. Toltec-Aztec and Mixteca civilizations and their predecessors, with emphasis on socio-political systems, economic patterns, religion, and esthetic and intellectual achievements. Mr. Nicholson

133B. Ancient Civilizations of Eastern Middle America (Maya Sphere).

Prerequisite: courses 5A-5B-5C or course 22 or consent of the instructor. Pre-Hispanic and Conquest period native cultures of eastern Middle America as revealed by archeology and early colonial writings in Spanish and Indian languages. Lowland and Highland Maya civilizations and their predecessors, with emphasis on socio-political systems, economic patterns, religion, and esthetic and intellectual achievements. Mr. Donnan

134. Ancient Civilizations of Andean South America.

Prerequisite: courses 5A-5B-5C or course 22 or consent of the instructor. Pre-Hispanic and Conquest period native cultures of Andean South America as revealed by archeology and early Spanish writings. The Inca and their predecessors in Peru, with emphasis on socio-political systems, economic patterns, religion, and esthetic and intellectual achievements. Mr. Nicholson

135A-135B. Archeology of North America.

Prerequisite: courses 5A-5B-5C or course 22 or consent of the instructor. Course 135A is prerequisite to 135B. Prehistory of the North American Indians; prehistoric culture areas; relations with historic Indians. Mr. Hill

138A-138B. The Strategy of Archeology.

Prerequisite: course 5B. Course 138A is prerequisite to 138B. An introduction to research design in the cultural interpretation of archeological materials, with special emphasis upon the techniques of laboratory analysis and data-processing. The history and contemporary developments of archeological research in both the Old and New Worlds are reviewed as part of the course. Mr. Meighan, Mr. Sackett

167. Afro-American Culture.

Prerequisite: upper division standing or consent of the instructor. Present day cultural characteristics of rural and urban Black Americans; the historical and contemporary forces in the formation of Afro-American culture. Mr. Epstein

Related Courses in Another Department

Indo-European Studies 130. Introduction to European Archeology.

131. European Archeology: The Neolithic Period.

132. European Archeology: The Bronze Age.

133. European Archeology: The Early Iron Age.

134. Eastern Mediterranean and Anatolian Archeology.

135. History of European and Near Eastern Archeology.

136. European Paleodemography.

GROUP V

Prerequisites for this group: courses 1A-1B or Biology 2A-2B, and consent of the instructor.

151A-151B. The Genetics of Race.

Course 151A is prerequisite to 151B. No credit will be allowed for course 151A without course 151B. A general survey of the techniques and problems of racial classification. Emphasis is on the genetic approach. The methods of modern classical genetics and population genetics are applied to human evolution. Mr. Birdsall

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

156. History of Human Evolutionary Theory.

The men, the events, and the spirit of the time which mark man's attempt to understand his origins and diversity.

GROUP VI**110. Language in Culture.**

(Same as Linguistics 190.) The study of language as an aspect of culture; the relation of habitual thought and behavior to language; the problem of meaning.

***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.

Prerequisite: reading knowledge of Spanish. The Nahuatl (Aztec) language and historical sources published in Nahuatl. Mr. Bright

GROUP VII**149. Urban Anthropology.**

Prerequisite: consent of the instructor. The evolution, structure, systemics and culture of the city as artifact and environment for its component individuals, status groups and communities, explored in terms of the methods and perspectives of anthropology. Mr. Rodgers, Mr. Schwartz

161. Social Anthropology.

Prerequisite: courses 5A-5B-5C or course 22 or Sociology 1 or 101 and upper division standing in anthropology or sociology. Formal presentation of the methods, aims and development of social anthropology. Analysis of culture within systems of social relationships. Emphasis on structural-functional approach and the process of social change. Mr. Gilsenan, Mrs. Kuper

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. Epstein, Mr. Gilsenan

* Graduate courses in linguistics (see page 343) 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.

163. History of Archeology.

The intellectual history of archeology from the ancient world to the present. Although each of its major traditions is reviewed, particular emphasis is given to those branches of archeology that have evolved during the last century within the discipline of anthropology. Mr. Sackett

165. Culture Stability and Culture Change.

Problems of cultural and social change, including the impact of western civilization on native societies. Mr. Moerman, Mr. Rodgers, Mr. Schwartz

166. Development Anthropology.

Prerequisites: courses 5A-5B-5C and upper division standing or consent of the instructor. An anthropological perspective on the problems of development in formerly primitive or peasant societies and the cultural factors in planning economic and social institutions in emergent national entities. The cultural and social implications of continuing development in industrial societies will also be examined. Mr. Moerman, Mr. Schwartz

GROUP VIII

These courses are intended primarily for majors and beginning graduate students in anthropology.

139. Dating Techniques in Archeology.

Introduction to radioisotope dating techniques, relative dating techniques and applicable geophysical methods. Mr. Berger

180. Field Training in Ethnology. (1 to 2 courses)

Prerequisite: consent of the instructor. No other course may be taken concurrently. Introduction to ethnographic field methods involving participation in field studies among various ethnic groups. Students will spend most of the period in off-campus research activities. More than one section of the course may be given concurrently in different research sites. 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. (1 to 2 courses)

Prerequisite: consent of the instructor. No other courses may be taken concurrently. Introduction to archeological field methods involving participation in actual site excavation during the entire session. More than one section of the course may be given concurrently in different research sites. The Staff

184A-184B. Laboratory Methods in Physical Anthropology.

Lecture, one hour; laboratory, four hours. Prerequisite: courses 1A-1B and consent of the instructor. Laboratory methodology and analysis of human variation on skeletal material (184A) and on living populations (184B). Mr. Bridesell, Mr. Williams

185A-185B. Linguistic Field Methods in Anthropology.

(Same as Linguistics 185A-185B.) Prerequisite: course 112. Course 185A is prerequisite to 185B. An introduction to linguistic field methods and analysis intended to prepare students to record and analyze linguistic data pertinent to ethnological studies. Informants will be used and emphasis will be placed on practical problems. Miss 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. Leaf, Mr. Rodgers, Mr. Williams

187. Laboratory Methods in Technology and Invention.

Prerequisite: course 126 and consent of the instructor. Intensive experimentation in the technology of nonliterate people. Mr. Donnan

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.

($\frac{1}{2}$ to 1 course)

Prerequisite: senior standing in anthropology and consent of the instructor. The Staff

Graduate Courses

Because the following courses numbered 250 and above are nonrepetitive in content, the Graduate Council has ruled that they may be repeated for credit on recommendation of the graduate adviser.

202. Ethnology. (1½ courses)

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

Mr. Edgerton, Mr. Rodgers

203. Cultures of Asia.

Survey of literature and problems of selected areas of Asia. Mr. Moerman

204. Pacific Island Cultures.

Survey of literature and problems of the Pacific Islands. Mr. Lessa

205. North American Indians.

Survey of the literature and problems of the American Indians north of Mexico. Mr. Oswald

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

208. Cultures of the Soviet Union.

Literature and problems of the peoples of the Soviet Union.

212. Anthropological Linguistics. (1½ courses)

Prerequisite: course 112 or its equivalent. The development of anthropological linguistics, modern linguistic theory and its application to the study of nonlinguistic aspects of culture, including relationship of language to world view; comparative historical linguistics; lexico-statistics; semantic analysis; linguistic acculturation; and socio- and ethnolinguistics. Mr. Hoijer

214A. Linguistic Areas: Aboriginal North America.

(Same as Linguistics 220F.) Prerequisite: Linguistics 120. Recommended preparation: Linguistics 200B and 205A. Mr. Hoijer

214B. Linguistic Areas: Aboriginal South America.

(Same as Linguistics 220G.) Prerequisite: Linguistics 120. Recommended preparation: Linguistics 200B and 205A. Mr. Hoijer

220. Social Anthropology.

Intensive examination of current theoretical views and literature. Mrs. Kuper

221. Social Movements and Social Crisis.

Prerequisite: consent of the instructor. The emergence of social movements of difference types, whether millennial, nationalist, reformist, political, etc., particularly as in situations of social conflict and crisis. Movements of rebellion and revolution examined in the light of anthropological and sociological theory focusing on a broad range of problems. Mr. Gilsenan

222. Research Methods and Procedures.

(1½ courses)

Lecture, three hours. An integrated review of the research methods in anthropological inquiry focusing on problem formulation, methods of setting up testable hypotheses, the kinds of data available for anthropological explanation, statistical and non-statistical means of "explanation" in anthropology. Mr. Hill, Mr. Robbins, Mr. Schwartz

230. Analytical Methods in Archeological Studies.

Mr. Hill

231. Technology Laboratory.

Prerequisite: course 126 or consent of the instructor. The intensive study of elementary technological principles through experimentation. Mr. Hill

232. Archeology. (1½ courses)

Lecture, three hours. A review of the history of archeology and the basic techniques of archeological investigation and analysis as these have established the present state of knowledge of major prehistoric periods in diverse parts of the world. Mr. Sackett

240. Current Problems in Physical Anthropology.

A detailed examination of present, on-going research by physical anthropologists in order to determine the direction and place of physical anthropology in the general discipline of anthropology. Mr. Williams

242. Physical Anthropology. (1½ courses)

Lecture, three hours. The examination of the concepts, methods, and problems in physical anthropology with respect to man's evolutionary past, and the evolutionary biology of living human populations. The last part to be conducted as a seminar on current literature. Mr. Williams

246. Population Genetics of Man.

(Formerly numbered 159.) Prerequisite: 1A-1B. Recommended: an introductory course in statistics. The study of population concepts, probability, the conditions of gene frequency equilibria and factors causing gene frequency change. Mr. Williams

252. Selected Topics in Ethnology.

Prerequisite: consent of the instructor. Mr. Wilbert

253. Selected Topics in Cultures of Asia.

Prerequisite: consent of the instructor. Emphasis on different subcultural areas will vary in accordance with the instructor. Mr. Hockings, Mr. Moerman

254. Selected Topics in Cultures of the Pacific Islands.

Prerequisite: consent of the instructor. Mr. Lessa, Mr. Newman

255A-255B. North American Indians.

Prerequisite: consent of the instructor. Credit to be given only at the completion of 255B. The full sequence may be repeated for credit. Mr. Oswald

256. Selected Topics in Arctic Cultures.

Prerequisite: consent of the instructor. Mr. Oswald

257. Indians of South America.

Prerequisite: consent of the instructor. Mr. Wilbert

258. Selected Topics in African Cultures.

Prerequisite: consent of the instructor. Mrs. Kuper

259. Selected Topics in Cultures of the Soviet Union.

Prerequisite: consent of the instructor.

260. Mediterranean Society and the Arab World.

Mr. Gilsenan

261. Selected Topics in Myth and Ritual.

Prerequisite: consent of the instructor. Mrs. Kuper, Mr. Lessa, Mr. Newman

262. The Individual in Culture: Selected Topics.**263. Ethnolinguistics.**

(Same as Linguistics 265A.) Prerequisite: consent of the instructor. Problems in the relations of language to culture; structural semantics; language and prehistory. Mr. Bright

264. Selected Topics in Higher Cultures of Nuclear America.

Prerequisite: consent of the instructor.
Mr. Nicholson

265A-265B. Contemporary Latin American Problems.

Prerequisite: consent of the instructor. Preference is given to students with a reading knowledge of Spanish or Portuguese. Credit to be given only at the completion of 265B. The full sequence may be repeated for credit.
The Staff

266. Selected Topics in Culture and Personality.

Mr. Robbins, Mr. Schwartz

267. Selected Topics in Culture Change.

Prerequisite: consent of the instructor.
Mr. Moerman

268A-268B. European Archeology.

(Same as Indo-European Studies 250A-250B.) Prerequisite: consent of the instructor. Credit to be given at the completion of 268B. The full sequence may be repeated for credit. Studies in ancient European archeological materials, and their relationship to those of the Near East, Western Siberia, and Central Asia.
Mrs. Gimbutas

269. Selected Topics in African Arts.

Prerequisite: consent of the instructor.

270A-270B-270C. Documentary Film.

(Same as Theater Arts 209C, 265A, 265B respectively.) Lecture, two hours. Prerequisites: consent of the instructor. Course 270A is prerequisite to courses 270B and 270C. A study of the possibilities and problems in the use of motion picture techniques for ethnographic documentation, analysis, and instruction. Examination of selected ethnographic films. Subsequent field work for selected students.
Mr. Hockings

271. Selected Topics in 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. Selected Topics in Prehistoric Nonagricultural Societies.

Prerequisite: consent of the instructor. Regional studies in the development of early human culture.
Mr. Meighan

273. Problems in Old World Archeology: Selected Topics.

Prerequisite: consent of the instructor. Mr. Sackett

274. Selected Topics in Prehistoric Civilizations of the New World.

Prerequisite: consent of the instructor.
Mr. Nicholson

275. Selected Topics in Principles of Human Ecology.

Prerequisite: consent of the instructor. Mr. Birdsell

276. Current Problems in Population Genetics: Selected Topics.

Prerequisite: consent of the instructor. 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: consent of the instructor. Mr. Birdsell

278. Problems in Southwestern Archeology.

A consideration of prehistoric cultural systems in the American Southwest, with emphasis on the description and explanation of organizational variability and change. Examination of the historical development of major theories, problems and methodologies.
Mr. Hill

280. Selected Topics in Field Training in Ethnography. (1 to 2 courses)

Prerequisite: consent of the instructor. Supervised collection of ethnographic information in the field. To be offered only in summers. Students will spend full time in the field for most of the period. The Staff

281. Selected Topics in Childhood and Society. (1 to 2 courses)

Lecture, two hours. Prerequisite: consent of the instructor. An examination of the relationship between childhood experiences and institutionalized adult behavior and beliefs.
Mr. Robbins

282. Selected Advanced Topics in Archeological Dating Techniques. (1 to 2 courses)

Prerequisite: 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. Selected Topics in Field Training in Archeology. (1 to 2 courses)

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. To be offered in summers only.
The Staff

284. Selected Topics in Cultural Ecology.

Prerequisite: consent of the instructor. Mr. Rodgers

285. Special Topics in Social Anthropology.

Prerequisite: consent of the instructor. Mrs. Kuper

286. Selected Topics in Problems in Cultural Anthropology.

Prerequisite: consent of the instructor.
Mr. Goldschmidt

287. Selected Topics in Kinship.

Prerequisite: consent of the instructor. Mrs. Kuper

288. Selected Topics in Comparative Political Institutions.

Prerequisite: consent of the instructor.

289. Selected Topics in Economic Anthropology.

Prerequisite: consent of the instructor.

290A-290B. Methods in Psychological Anthropology.

Prerequisites: adequate background in psychology in fields of personality, clinical psychology and psychological testing, as evaluated by the instructor. Credit to be given only at completion of 290B. The full sequence may be repeated for credit. The methods of study of aspects of personality, perception, cognition, and mental health as applicable to non-Western and particularly primitive cultures. 290A deals with methods other than testing. 290B deals with diverse standardized tests applicable in cross-cultural research. Mr. Edgerton, Mr. Schwartz

291. Urban Anthropology.

Prerequisite: Course 149 or consent of the instructor. Mr. Rodgers, Mr. Schwartz

292. Research Methods in Community Health.

(Same as Public Health 245A.) Prerequisite: Public Health 180A, 147 or 246A, or consent of the 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.

Individual Study and Research

596. Individual Studies for Graduate Students.

(¼ to 2 courses)

Prerequisite: consent of the instructor. The Staff

597. Preparation for the Master's Comprehensive Examination or the Doctoral Qualifying Examination. (½ to 2 courses)

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. The Arts of Oceania.

118B. The Arts of Pre-Columbian America.

118C. The Arts of Sub-Saharan Africa.

119A. The Arts of Africa: Western Sudan.

119B. The Arts of Africa: The Guinea Coast.

119C. The Arts of Africa: The Congo.

220. The Arts of Africa, Oceania and Pre-Columbian America.

Folklore 101. Introduction to Folklore.

104. The Literature of Myth and Oral Traditions.

118. The Folklore of Material Culture.

161. Decorative Textiles in Folk Cultures.

201A-201B. Field Collecting.

213. Folk Belief and Custom.

216. The Folk Tale.

259. Seminar in Folklore.

Indo-European Studies 250A-250B. Seminar in European Archeology.

251. Seminar in Early Iron Age Archaeology.

252. Seminar in Eastern Mediterranean Archaeology.

253. Seminar in European Paleodemography.

259. Field Work in Old World Archaeology.

Music 140A-140B-140C. Musical Cultures of the World.

141A-141B. 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.

■ ARCHITECTURE AND URBAN PLANNING

(Department Office, 1118 Architecture Building)

John Friedmann, M.A., Ph.D., *Professor of Planning.*

Harvey S. Perloff, B.A., Ph.D., *Professor of Planning (Chairman of the Department).*

Thomas R. Vreeland, Jr., B.A., B.Arch., *Professor of Architecture.*

Peter Kamnitzer, M.Arch., M.C.P., *Associate Professor of Planning.*

Henry C. K. Liu, B.Arch., M.Arch., *Associate Professor of Urban Design.*

R. Bruce Ricks, B.S., Ph.D., *Associate Professor of Business Administration and Associate Professor of Business Administration in Architecture.*

Denise V. Scott-Brown, M.C.P., M.Arch., *Associate Professor of Architecture.*

Frank Dimster, B.A., M.Arch., *Assistant Professor of Urban Design.*
 Bernard Hafner, M.Arch., *Assistant Professor of Urban Design.*
 Helmut Schulitz, M.Arch. (U.D.), *Instructor in Urban Design.*



James G. Banks, A.B., M.A., *Acting Professor of Planning.*



Leland Burns, Ph.D., *Professor of Urban Land Economics in Business Administration.*
 Harry Scoble, Ph.D., *Associate Professor of Political Science.*

Graduate Courses

210. Planning Theory.

Types of planning and their interaction in system guidance; case studies of national, regional and local planning; development of hypotheses for planning research; the role of the planner as an agent of change as conditioned by the cultural and institutional environment.

211. History of City Planning.

Forces contributing to the rise of the city planning movement in the United States and Europe; interaction between social planning demands and planning concerns; the rise of the city planning profession; major currents of thinking within the profession.

212. Urban Theory.

The changing ecological structure of the American city and consideration of the technological, economic and social forces accounting for these changes; ecological and location theories; accelerated urbanization; large-scale urban systems.

213. Analytical Methods in Planning.

Urban data processing and analysis; the uses of urban data in planning and policy analysis; simulation of urban systems; statistical ecological analysis; laboratory problems.

214. Planning Decisions Under Uncertainty.

Statistical decision theory and alternative design solutions for coping with different degree of future uncertainty in planning; nature of models for rational behavior in presence of conflicts of interests; individual and group decision-making under uncertainty.

215. The Planning of Complex Social Systems.

Complex social systems (e.g., transportation, communication, education) under conditions of rapid change; urban systems and their response to innovation; measures of social entropy.

Professional Courses

401. Urban Design Studio I: Introduction to Urban Analysis and Design. (2½ courses)

A multidisciplinary approach to an understanding of the dynamics of the political, socioeconomic and technological framework of the urban realm.

The Staff

402. Urban Design Studio II: Urban Design Prototype Studies. (2½ courses)

Investigation of components in the urban complex with emphasis on characteristics of prototypes.

The Staff

403. Urban Design Studio III: Regional Infrastructure. (2½ courses)

Development of communication, transportation, and other urban and interurban services in the political and socioeconomic context of the region.

The Staff

404. Urban Design Studio IV: Future Environments. (2½ courses)

Construction of future environments through advanced technologies as applied to the future organization of human habitations at various levels of aggregation. Forecasting of technological breakthroughs.

The Staff

405. Urban Design Studio V: Media and Methodology. (2½ courses)

The application of new methods and experimentation with new communication media such as film and television; application of problem solving methodology, such as behavioral modeling and gaming simulation.

The Staff

406. Urban Design Studio VI: Special Projects. (2½ courses)

Work on a specific urban design problem, selected by the individual student, approved and supervised by the faculty.

The Staff

411. Decision Theory Seminar.

Prerequisites: Mathematics 2A-2B-2C or the equivalent. Decision theory in the design process. Probability, statistical inference, sampling techniques, value systems and evaluations, as they affect architectural design. Heuristics, models, gaming techniques. Flow charts, critical path, cost-benefit analysis, programming and other management techniques.

412. Urban Theory Seminar.

Structure and form of the American city. History of urban development and urban policy. Theories of regional economic development. Patterns and evolution of urban systems.

413. Socioeconomic Seminar.

Prerequisites: Sociology 101, Anthropology 100, or the equivalent. Social behavior and the human habitat. Dynamic human interactive systems, and social institutions. Optimizing among conflicting interests and value systems. The human habitat in post-industrial society and developing nations. Problems of density, overpopulation and overcrowding.

414. Perception Seminar. (½ course)

Prerequisite: Psychology 101 or the equivalent. Perception and aesthetic theory. The functioning of the sense receptors. Gestalt psychology, behaviorism, and culturally-conditioned response. Information theory, neural processing, pattern recognition. Semantics, linguistics, symbolization and nonverbal systems. Visualization and visual logic. Laboratory work in visual communication.

415. Human Comfort Seminar. (½ course)

The physiological, anatomical, and psychological aspects of man in his working and living environment. Anthropometrics and proxemics. The sensory apparatus and the ranges of its tolerance to fluctuations in temperature, sound, and light. Laboratory work in human engineering.

421. Transportation Seminar. (½ course)

Prerequisites: Engineering 6A, Mathematics 41 or the equivalent. Transportation technology and its effect on built environment. New movement systems, both vertical and horizontal. Queuing, maximum handling capacity and rate of travel. Relation to population distribution, accessibility, aesthetic factors, and stationary storage as they influence the man-made environment.

422. Building Industry Seminar. (½ course)

Prerequisite: Economics 100 or the equivalent. The building industry, its history, its organization, and its capability. Problems of manufacture, distribution, transport, market and assembly. Techniques for the management, control and organization of the building operation. Actual visits to fabrication plants, building sites and contractors' offices.

423. Building Materials Seminar. (½ course)

Prerequisite: Physics 1A or the equivalent. Building materials and their processing. Processing of natural and synthetic substances. New metal alloys and plastics and their usefulness. New fabrication

techniques and structural possibilities. Laboratory work in materials testing.

424. Environmental Control Seminar. (½ course)

Prerequisite: Physics 1B or the equivalent. Luminous, auditory, and thermal conditions of the environment and their control. Effect of climate, dust, noise and other pollutants on the human habitat and possible counter-measures. Supplying energy systems, pure air and water; elimination of waste. Laboratory work in lighting acoustics and the effect of wind.

451. Architecture Studio I. (1½ courses)

Corequisite: course 411. Theoretical exercises of a simple nature designed to develop the student's problem-solving ability and test his knowledge in the behavioral and technological areas of concentration. Individual work.

452. Architecture Studio II. (1½ courses)

Prerequisite: course 451. Corequisite: course 412. Hypothetical problem situations of a complex nature designed to further develop the student's problem-solving ability and test his knowledge in the behavioral and technological areas of concentration. Individual work and team work.

453. Architecture Studio III. (1½ courses)

Prerequisite: course 452. Corequisite: course 413. Design problems handled as individual case studies requiring sophisticated understanding of the behavioral and technological areas of concentration and demanding a high degree of problem-solving ability. Team work.

490. Fieldwork. (1½ courses)

Prerequisite: course 453. Three quarters of work on clinic projects under supervision of the clinical staff. Includes projects in the inner-city program and contract work in the clinic, which operates year round. Students doing clinic projects will work through the summer and quarter breaks.

ART

(Department Office, 1300 Dickson Art Center)

Laura F. Andreson, M.A., *Professor of Art.*

Karl M. Birkmeyer, Ph.D., *Professor of Art.*

E. Maurice Bloch, Ph.D., *Professor of Art and Curator of Graphic Arts.*

William J. Brice, *Professor of Art.*

J. LeRoy Davidson, Ph.D., *Professor of Art (Chairman of the Department).*

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.*

Katharina Otto-Dorn, Ph.D., *Professor of Art.*

Jan Stussy, M.F.A., *Professor of Art.*

Frederick S. Wight, M.A., *Professor of Art and Director of Art Galleries.*

Dorothy W. Brown, A.B., *Emeritus Professor of Art.*

Annita Delano, *Emeritus Professor of Art.*
 Josephine P. Reys, *Emeritus Professor of Art.*
 Karl E. With, Ph.D., D.F.A., *Emeritus Professor of Art.*
 S. Macdonald Wright, *Emeritus Professor of Art.*
 Samuel Amato, B.F.A., *Associate Professor of Art.*
 Oliver W. Andrews, A.B., *Associate Professor of Art.*
 Alexander Badawy, B.Arch., D.I.A., Ph.D., *Associate Professor of Art.*
 Jack B. Carter, M.A., *Associate Professor of Art.*
 Elliot J. Elgart, M.F.A., *Associate Professor of Art.*
 Robert F. Heinecken, M.A., *Associate Professor of Art.*
 J. Bernard Kester, M.A., *Associate Professor of Art.*
 Lee Mullican, *Associate Professor of Art.*
 Carlo Pedretti, M.A., *Associate Professor of Art.*
 Nathan Shapira, Dottore in Architettura, *Associate Professor of Art.*
 Morio Shinoda, *Associate Professor of Art in Residence.*
 Otto-Karl Werckmeister, Ph.D., *Associate Professor of Art.*
 Helen Clark Chandler, *Emeritus Associate Professor of Art.*
 Melvin Best, M.A., *Assistant Professor of Art.*
 Leslie Biller, M.A., *Assistant Professor of Art.*
 Raymond B. Brown, M.A., *Assistant Professor of Art.*
 Hans Brummer, Ph.D., *Assistant Professor of Art.*
 Christian E. Choate, B.Arch., *Assistant Professor of Art.*
 Susan B. Downey, Ph.D., *Assistant Professor of Art.*
 Robert Fichter, M.F.A., *Assistant Professor of Art in Residence.*
 George Foy, B.Arch., *Assistant Professor of Art.*
 Llyn Foulkes, *Assistant Professor of Art in Residence.*
 David Gordon, B.Arch., *Assistant Professor of Art.*
 Thomas Holland, *Assistant Professor of Art in Residence.*
 Richard Joseph, M.F.A., *Assistant Professor of Art in Residence.*
 Mitsuru Kataoka, M.A., *Assistant Professor of Art.*
 Eugene Kleinbauer, Ph.D., *Assistant Professor of Art.*
 Alice E. M'Closkey, M.A., *Assistant Professor of Art.*
 Velizar Mihich (Vasa), *Assistant Professor of Art.*
 John Neuhart, *Assistant Professor of Art.*
 Rex Raymer, B.Arch., *Assistant Professor of Art in Residence.*
 Gilbert Rios, B.S., *Assistant Professor of Art in Residence.*
 Donald Roberts, *Assistant Professor of Art.*
 Madeleine Boyce Sunkees, B.E., *Assistant Professor of Art.*
 Edward H. Traynor, M.A., *Assistant Professor of Art.*
 James Weeks, *Assistant Professor of Art in Residence.*



Colin Cannon, *Visiting Associate Professor of Art.*
 Benjamin Johnson, M.A., *Lecturer in Art.*
 Arnold Rubin, M.A., *Acting Assistant Professor of Art.*
 Robert Wark, Ph.D., *Lecturer in Art.*
 Jean Weisz, M.A., *Lecturer in Art.*

It is recommended that each student majoring in art have each quarter's program approved by a departmental adviser.

The departmental major offered in the College of Fine Arts leads to the degree of Bachelor of Arts with the opportunity to

specialize in one of three areas: (1) Art History, (2) Pictorial Arts, (3) Design.

Preparation for the Major

Art History. Courses 1A, 1B, 1C.

Pictorial Arts. Two courses selected from

1A, 1B, 1C; courses 10A, 10B, 20A, 20B, 25.

Design. Two courses selected from 1A, 1B, 1C; courses 30A, 30B; one course selected from 10A, 25, 1A, 1B, 1C.

The Major

Art History. A minimum of 17 upper division courses selected in consultation with an art history adviser, including one course from each of the following eight groups: 101A-104; 105A-105D; 106A-108B; 109A-109D; 110A-112B; 114A-116; 118A-119C; 120A-123B. Six courses in not more than two of the above groupings and three courses of art electives. Classics 151A-151B-151C, Anthropology 127, Oriental Languages 170A-170B-170C, or Philosophy 160 may be substituted for the art electives. Other related courses in anthropology, classics, literature, foreign languages, history, philosophy, music and theater arts are recommended as nonmajor electives for the degree. Course 124 is required of students who plan to pursue graduate work in art history.

Pictorial Arts. A minimum of 13 upper division courses selected in consultation with a pictorial arts adviser including one course each in courses 130, 132, 133, 135, 140, 145 and 147; two courses selected from courses 101-123 and four courses of art electives.

Design. A minimum of 15 upper division courses selected in consultation with a design adviser, including courses 150A-150B-150C, 151A-151D, four courses from 101-123B; and four courses of art electives.

Admission to Graduate Status

In addition to meeting the requirements of the Graduate Division, the student will usually be expected to have a bachelor's degree in Art. Students whose preparation in Art is deficient as determined by the departmental adviser will be required to take additional work before proceeding with the graduate program.

Requirements for the Master's Degree

For the general University requirements, see page 139. 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, includ-

ing course 201) and a thesis. The program for the degree is worked out under the guidance of the adviser in the area of specialization. Knowledge of at least one approved foreign language is required; this requirement must be fulfilled by the end of the third quarter. A final written examination covers the following fields: primitive and preclassical art, art of the ancient near east, classical art, medieval art, renaissance art, baroque art, art of the eighteenth and nineteenth centuries, modern art, American art, Oriental art, theory of art. Following submission of the thesis the candidate must pass an oral examination.

Pictorial Arts or Design. The master's program with these specializations follows the Comprehensive Examination Plan, a minimum of nine courses of graduate work including a minimum of five courses in the 200 series in the field of specialization. The final comprehensive examination is oral. Those majoring in pictorial arts may concentrate on painting, sculpture, printmaking or photography in their advanced project. Majors in design may stress graphic, industrial, environmental, costume, textile design or ceramics, but the ideal degree candidate is the comprehensive designer rather than the specialist. All candidates are expected to have a good general knowledge of the history and theory of art. The specific program for the Master of Arts degree is worked out under the guidance of a staff member in the area of the advanced project.

Master of Fine Arts Degree in Pictorial Arts or Design

The program requires a minimum of 18 courses, with at least ten courses in the 200 series. Candidates must have completed, whether as undergraduates or graduate students, a minimum of ten courses in art history. The pictorial arts candidate must complete a minimum of 11 courses in the field of specialization (including 10 courses in the 200 series), and three courses in an advanced project. Candidates in the fields of design must complete a minimum of 13 courses in the field of specialization (including ten courses in the 200 series) and three courses in an advanced project. Students who have an M.A. degree may be accepted as candidates for the M.F.A., but the M.A. degree is not a prerequisite. The M.F.A. is the highest degree in course for prospective professional artists. Two to three years

of graduate work will normally be required to complete the requirements in terms of quality of creative work.

Doctor of Philosophy Degree in Art History

In addition to the general University regulations for the Doctor of Philosophy degree, including the dissertation and final examination (see page 143), a candidate must satisfy the following departmental requirements:

Foreign Language. A reading knowledge of German and French is requisite for all candidates. The chairman of the candidate's committee may advise an additional language. The requirements for the first language must be fulfilled by the end of the third quarter of graduate work, the requirement for the second language at the end of the fifth quarter. Both language requirements must be satisfied before advancement to candidacy for the degree.

Qualifying Examination. Preparation for the qualifying examination, which advances the student to candidacy, will include a minimum of six graduate seminars and a term paper or master's thesis demonstrating scholarly competence. The examination is both written and oral and may be combined with the master's examinations if this intention is declared in advance.

Lower Division Courses

1A. History of Art.

Lecture, three hours; quiz, one hour. Painting, sculpture, and architecture from prehistoric times to the year 1000.
Miss Downey

1B. History of Art.

Lecture, three hours; quiz, one hour. Painting, sculpture, and architecture from the year 1000 to the year 1600.
Mr. Kleinbauer, Mrs. Weisz

1C. History of Art.

Lecture, three hours; quiz, one hour. Painting, sculpture, and architecture from the year 1600 to the present.
Mrs. Weisz

10A. Drawing.

Studio, eight hours; six hours arranged. Beginning course in drawing.
Mr. Brice, Mr. Joseph

10B. Drawing.

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

20A. Painting.

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

20B. Painting.

Studio, eight hours; six hours arranged. Prerequisite: course 20A. Composition and color.
Mr. Mullican

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. Kester, Mr. Neuhart

30B. Delineation.

Studio, eight hours; five hours arranged. Exploration of the fundamentals of three dimensional structuring and their relation to appearance; expression of conceptual structures through delineation.
Mr. Vasa

Related Courses in Other Departments

Integrated Arts 1A-1B-1C.

Upper Division Courses

HISTORY AND THEORY OF ART

100A. History and Criticism of Art.

Lecture, three hours; quiz, one hour. Not open to students having credit for 1A. Painting, sculpture and architecture from prehistoric time to the year 1000.

100B. History and Criticism of Art.

Lecture, three hours; quiz, one hour. Not open to students having credit for 1B. Painting, sculpture and architecture from the year 1000 to the year 1600.
Mr. Longman

100C. History and Criticism of Art.

Lecture, three hours; quiz, one hour. Not open to students having credit for 1C. Painting, sculpture and architecture from the year 1600 to the present.
Mr. Longman

101A. Egyptian Art and Archaeology.

(Formerly numbered 110F.) Lecture, three hours; quiz, one hour. A comprehensive study of art in Ancient Egypt from the earliest times to the Roman period, covering architecture, sculpture, graphic and minor arts. Relations with contemporaneous arts of the Aegean and Greece.
Mr. Badawy

101B. Egyptian Art and Archaeology.

(Formerly numbered 110F.) Lecture, three hours; quiz, one hour. Prerequisite: course 101A. Continuation of 101A.
Mr. Badawy

101C. Egyptian Art and Archeology.

(Formerly numbered 110F.) Lecture, three hours; quiz, one hour. Prerequisite: course 101B. Continuation of 101B.
Mr. Badawy

103B. Hellenistic Greek Art.

Lecture, three hours; quiz, one hour. Miss Downey

103C. Roman Art.

Lecture, three hours; quiz, one hour. Miss Downey

103D. Etruscan Art.

Lecture, three hours; quiz, one hour. The arts of Italy from 1000 B.C. to the period of the Roman domination (about the 2nd century B.C.).

Miss Downey

104A. Art of the Ancient Near East.

Lecture, three hours; quiz, one hour. Art and architecture of Mesopotamia, the Hittites and the Levant.

Mr. Badawy

104B-104C-104D. Architecture and the Minor**Arts of Islam in the Middle Ages.**

Lecture, three hours; quiz, one hour. Prerequisites: course 104B for course 104C; course 104C for course 104D.

Mrs. Otto-Dorn

105A. Early Christian and Byzantine Art.

(Formerly numbered 111E.) Lecture, three hours; quiz, one hour. Architecture, painting, sculpture of the early Christian and Byzantine periods to 1453.

Mr. Kleinbauer

105B. Early Medieval Art.

Lecture, three hours; quiz, one hour. Art and architecture of Western Europe from the Migration period until 1000 A.D.

Mr. Kleinbauer, Mr. Werckmeister

105C. Romanesque Art.

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

Mr. Werckmeister

105D. Gothic Art.

Lecture, three hours; quiz, one hour. Art and architecture of Europe in the 13th century.

Mr. Brummer, Mr. Werckmeister

106A. Italian Art of the Trecento.

(Formerly numbered 113A.) Lecture, three hours; quiz, one hour. Art and architecture of the 14th century.

Mr. Birkmeyer

106B. Italian Art of the Quattrocento.

(Formerly numbered 113B.) Lecture, three hours; quiz, one hour. Art and architecture of the 15th century.

Mr. Birkmeyer, Mr. Brummer

106C. Italian Art of the Cinquecento.

Lecture, three hours; quiz, one hour. Art and architecture of the 16th century.

Mr. Pedretti

108A. Northern Renaissance Art.

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

Mr. Birkmeyer

108B. Northern Renaissance Art.

Lecture, three hours; quiz, one hour. Continuation of 108A.

Mr. Birkmeyer

109A. Baroque Art.

(Formerly numbered 107A.) Lecture, three hours; quiz, one hour. Art and architecture of Italy and Spain, 16th to late 17th century.

Mr. Brummer

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

109C. European Art of the 16th Century.

Lecture, three hours; quiz, one hour. Art and architecture of this period.

109D. Art and Architecture of Georgian England.

Lecture, three hours; quiz, one hour.

Mr. Wark

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

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

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

Lecture, three hours; quiz, one hour. Continuation of 110A.

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

Lecture, three hours; quiz, one hour. Continuation of 110B.

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

Lecture, three hours; quiz, one hour. Continuation of 110C.

111. 20th Century Design and Architecture in Italy.

Lecture, three hours; quiz, one hour. A comprehensive survey of significant developments in design and architecture of Italy during the 20th century; particular emphasis to the period following World War II.

Mr. Shapira

112A. American Art.

(Formerly numbered 116A.) Lecture, three hours; quiz, one hour. Architecture in the United States from the Colonial period to the present.

Mr. Bloch

112B. American Art.

(Formerly numbered 116B.) Lecture, three hours; quiz, one hour. Painting in the United States in the 18th and 19th centuries.

Mr. Bloch

114A. Indian Art.

(Formerly numbered 111A.) Lecture, three hours; quiz, one hour. Art and architecture of India and Indonesia from prehistoric times to the present.

Mr. Davidson

114B. Chinese Art.

(Formerly numbered 111B.) Lecture, three hours; quiz, one hour. Art and architecture of China from prehistoric times to the present.

Mr. Davidson

114C. Japanese Art.

Lecture, three hours; quiz, one hour. Art and architecture of Japan from prehistoric times to the present.

115A. Advanced Indian Art.

Lecture, three hours; quiz, one hour. Prerequisite: course 114A. Study in Indian sculpture and architecture.

Mr. Davidson

115B. Advanced Chinese Art.

Lecture, three hours; quiz, one hour. Prerequisite: course 114B. Study in Chinese painting and sculpture.

116. Buddhist Art in Asia.

Lecture, three hours; quiz, one hour. Buddhist art of India, China, Japan, Korea, Central and Southeast Asia; an analysis of changing forms as effected by developments in Buddhist religion and geographic expansion.

Mr. Davidson

118A. The Arts of Oceania.

Lecture, three hours; quiz, one hour. Mr. Rubin

118B. The Arts of Pre-Columbian America.

Lecture, three hours; quiz, one hour. Mr. Rubin

118C. The Arts of Sub-Saharan Africa.

Lecture, three hours; quiz, one hour. Mr. Rubin

119A. The Arts of Africa: Western Sudan.

Lecture, three hours; quiz, one hour. Mr. Rubin

119B. The Arts of Africa: The Guinea Coast.

Lecture, three hours; quiz, one hour. Mr. Rubin

119C. The Arts of Africa: The Congo.

Lecture, three hours; quiz, one hour. Mr. Rubin

120A. History of Prints.

Lecture, three hours; quiz, one hour. Development of style and techniques of expression in the graphic arts. Mr. Bloch

120B. History of Prints.

Prerequisite: course 120A. Continuation of 120A. Mr. Bloch

121A. Critical and Historical Studies in Drawing.

(Formerly numbered 117D.) Lecture, three hours; quiz, one hour. Development of style and means of expression in drawing from late Middle Ages to the present.

121B. Critical and Historical Studies in Drawing.

(Formerly numbered 117D.) Lecture, three hours; quiz, one hour. Continuation of 121A.

122. History of Style and Ornament.

Lecture, three hours; quiz, one hour. Development of stylistic ideas and motifs in the Western world and their expression in design media from the Renaissance to 1900. A study in connoisseurship. Mr. Bloch

123A. Theory and Criticism of Art.

(Formerly numbered 101.) Lecture, three hours; quiz, one hour. The esthetic attitude; functionalism and morality in art; components of formal eloquence; symbolism, cognition and esthetic truth, historic theories of art; definition of art and art terms. Mr. Longman

123B. Theory and Criticism of Art.

(Formerly numbered 101.) Lecture, three hours; quiz, one hour. Locus of value; nature of vision and representation; history of icons of reality; criteria of critical judgment; cultural and historical relativism; psychology of modern art; criticism of contemporary art. Mr. Longman

124. Bibliography and Research Methods.

Proseminar: two hours. Instruction in research methods, use of library, bibliography, etc. Required for all majors intending to undertake graduate work in art history. The Staff

Related Courses in Other Departments**Anthropology 127. Primitive Art.****Classics 151A. Classical Archaeology: Greco-Roman Architecture.****151B. Classical Archaeology: Greco-Roman Sculpture.****151C. Classical Archaeology: Greco-Roman Painting.****Oriental Languages 170A-170B-170C. Archaeology in Early and Modern China. Philosophy 160. Philosophy of Art.****DRAWING, PAINTING, PRINTS, SCULPTURE AND PHOTOGRAPHY****130. Life Drawing.**

(Formerly numbered 120.) Studio, eight hours; five hours arranged. Prerequisites: courses 10A, 10B, or consent of instructor. Maximum three courses. Studies from the model. Mr. Brice, Mr. Stussy

132. Drawing.

(Formerly numbered 125.) Studio, eight hours; five hours arranged. Prerequisite: consent of the instructor. Maximum two courses. Drawing as a terminal medium of artistic expression. Mr. Foulkes

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. Holland

135. Life Painting.

Studio, eight hours; five hours arranged. Prerequisite: course 133. Maximum three courses. Varied media. Composition, interpretation, expression. Mr. Diebenkorn, Mr. Elgart

140. Print Making.

Studio, eight hours; five hours arranged. Prerequisites: courses 10A-10B, 20A-20B, 132A, or consent of the instructor. Maximum three courses. Engraving, etching, drypoint, aquatint, softground, lithography, woodcut, and mixed media. Traditional and experimental studies. Fine printing. Mr. Brown

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. Fichter, Mr. Heinecken

DESIGN**150A. Principles of Design.**

Studio, eight hours, five hours arranged. Prerequisite: course 30A. Abstract Structuring in design. The Staff in Design

150B. Principles of Design.

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

150C. Principles of Design.

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

151A-151D. Comprehensive Design.

Studio, eight hours, five hours arranged. Prerequisites: courses 150B, 150C or consent of the instructor. Investigation, experimentation, and evaluation of aesthetic content in form and processes. 151A, Materials; 151B, Communication; 151C, Function; 151D, Environment. Each course may be repeated once. **The Staff in Design**

Special Studies for All Majors**197. Honors Course.**

Hours to be arranged. Prerequisite: recommendation of staff. Individual studies for majors with 3.0 average. Maximum, two courses. **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, consent of the instructor and adviser, and 3.0 average in major. 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. Historiography of Art.

Seminar, two hours. A critical study of the various approaches to art history through the centuries. **Mr. Kleinbauer, Mr. Werckmeister**

205. Studies in Prints.

Seminar, two hours. **Mr. Bloch**

206. Studies in Drawings.

Seminar, two hours. **Mr. Bloch**

210. Egyptian Art.

Seminar, two hours. **Mr. Badawy**

213. Problems in Islamic Art.

Seminar, two hours. **Mrs. Otto-Dorn**

220. The Arts of Africa, Oceania and Pre-Columbian America.

(Formerly numbered 250.) Seminar, two hours. **Mr. Rubin**

223. Classical Art.

Seminar, two hours. **Miss Downey**

225. Medieval Art.

(Formerly numbered 252.) Seminar, two hours. **Mr. Kleinbauer, Mr. Werckmeister**

226A-226B. Medieval Art and Architecture.

Seminar, two hours. Credit and letter grade will be given only on completion of the full seminar sequence. **Mr. Kleinbauer**

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. Brummer**

245. European Art from 1700 to 1900

(Formerly numbered 259.) Seminar, two hours.

248. Art and Architecture of Georgian England.

Seminar, two hours. **Mr. Wark**

253. Modern Art.

(Formerly numbered 258.) Seminar, two hours. **Mr. Wight**

255. American Art.

Seminar, two hours. **Mr. Bloch**

260. Asian Art.

Seminar, two hours. **Mr. Davidson**

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. Brown**

273. Graduate Sculpture. (½ to 2 courses)

Hours to be arranged. **Mr. Andrews**

274. Graduate Photography. (½ to 2 courses)

Hours to be arranged. **Mr. Heinecken**

280. Graduate Graphic Design. (½ to 2 courses)

Hours to be arranged. **Mr. Jennings**

281. Graduate Industrial Design. (½ to 2 courses)

Hours to be arranged. **Mr. Best**

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**

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. **The Staff in Pictorial Arts**

Professional Courses

401. History of Museums and Collecting.

Prerequisite: B.A. in Art History and course 124.
The Staff

402. Connoisseurship.

Prerequisite: B.A. in Art History and course 124.
The Staff

403A-403B. Restoration, Preservation and Conservation.

Prerequisite: B.A. in Art History and course 124.
Mr. Johnson

Individual Study and Research

596. Directed Individual Study or Research.

(½ to 2 courses)

Prerequisite: consent of the instructor. The Staff

597. Preparation for the Comprehensive Examination for the Master's Degree or the Qualifying Examination for the Ph.D. (½ to 2 courses)

Prerequisite: consent of the instructor. The Staff

598. Research for and Preparation of the Master's Thesis. (½ to 2 courses)

Prerequisite: consent of the instructor. The Staff

599. Research for and Preparation of the Doctoral Dissertation. (½ to 2 courses)

Prerequisite: consent of the instructor. The Staff

Related Courses in Another Department

Classics 251A. Seminar in Classical Archaeology: The Aegean Bronze Age.

251B. Seminar in Classical Archaeology: Greco-Roman Architecture.

251C. Seminar in Classical Archaeology: Greco-Roman Sculpture.

251D. Seminar in Classical Archaeology: Greco-Roman Painting.

The Department of Art reserves the right to hold for exhibition purposes examples of any work done in classes and to retain for the permanent collection of its galleries such examples as may be selected.

University Art Galleries

The UCLA Art Galleries in the South Wing of the Dickson Art Center present a series of major exhibitions throughout the year. The main emphasis is on modern art and its origins. Scholarly exhibitions dealing with earlier periods are integrated with the teaching program. An active print room is devoted primarily to the collection of the Grunwald Graphic Arts Foundation.

■ ASTRONOMY

(Department Office, 8979 Mathematical Sciences Building)

George O. Abell, Ph.D., *Professor of Astronomy (Chairman of the Department).*

Lawrence H. Aller, Ph.D., *Professor of Astronomy.*

Samuel Herrick, Ph.D., *Professor of Astronomy and Engineering.*

Daniel M. Popper, Ph.D., *Professor of Astronomy.*

Harland W. Epps, Ph.D., *Assistant Professor of Astronomy.*

Kurt W. Riegel, Ph.D., *Assistant Professor of Astronomy.*

Edward K. L. Upton, Ph.D., *Assistant Professor of Astronomy.*

_____, *Assistant Professor of Astronomy.*

_____, *Assistant Professor of Astronomy.*

_____, *Assistant Professor of Astronomy.*

_____, *Assistant Professor of Astronomy.*

_____, *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 7A-7B-7C-7D; Mathematics 11A-11B-11C, 12A-12B-12C. Recommended: Chemistry 1A; a reading knowledge of French, German and/or Russian.

The Major

Required: Astronomy 101, 103A-103B-103C; 117A-117B-117C; Physics 105A-105B, 131, 110A-110B, 115A-115B. Mathematics: at least one upper division course chosen from 130 through 152. Also recommended: Astronomy 104; Physics 108, 112A, 112B, 124A; Engineering 160A, 160B.

Astrodynamics. Students with a major interest in the applications of celestial mechanics to problems of space flight are re-

ferred to the Department of Engineering, which offers courses in this field.

Requirements for the Master's Degree

General Requirements. See page 139. 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 143. 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.

The Department of Astronomy operates an off-campus observatory at Ojai, California, which features a 24-inch reflecting telescope that is available to students in their independent study and research programs in connection with courses 199, 596A and 599.

Lower Division Courses

Physical Sciences 3A. Astronomy.

(Formerly numbered Astronomy 1.) See Physical Sciences, page 410.

2. Practice in Observing. (½ course)

Meets one evening a week for 2½ hours. Prerequisite: knowledge of plane trigonometry and some previous or concurrent course in astronomy, or consent of the instructor. Practical work for beginners, including telescopic observations and laboratory exercises cognate to an introductory course in astronomy. The Staff

Upper Division Courses

101. Introduction to Astronomy.

Meets four hours per week. Prerequisites: Physics 1A and Mathematics 11A-11B or their equivalents. Open to qualified sophomores as well as upper division students. Course 2 may be elected for observatory and laboratory work in connection with this course. A survey of the whole field of astronomy, designed primarily for students majoring in a physical science or mathematics. The Staff

103A. Spherical and Gravitational Astronomy.

Meets three hours per week. Prerequisites: Physics 7A-7B-7C-7D; Mathematics 11A-11B-11C and either 12A-12B or 13A-13B or their equivalents. Spherical astronomy; the two body problem; orbit determination of minor planets and binary stars. Mr. Abell, Mr. Epps

103B. The Solar System.

Meets three hours per week. Prerequisite: course 103A. Gravitational potential of a planet, precession, perturbations, radar astronomy, theory of solar radio observations, planetary temperatures and atmospheres, interplanetary medium, origin of the solar system.

103C. Stars and Galaxies.

Meets three hours per week. Prerequisites: the same as for course 103A plus course 101; or 103A-103B. Thus a non-astronomy major may take 101 and 103C. Properties of stars; stellar distribution and motions; structure of the galaxy; galaxies and cosmology. The Staff

104. Astronomical Optics.

Meets three hours per week. Prerequisite: Physics 105A. Geometrical optics, including ray tracing and optical aberrations commonly encountered in optical design. Interference, diffraction, dispersion, photoelectric emission and other aspects of physical optics with particular emphasis placed on practical applications in astronomical investigation. Mr. Epps

117A-117B-117C. Introduction to Astrophysics.

Meets three hours per week. Prerequisite: senior standing in astronomy or physics, or consent of the

instructor. Course 117A: spectroscopy and the physical foundations of astrophysics. Course 117B: radiative transfer; outer layers of the sun and stars; stellar chemical abundances. Course 117C: stellar interiors and evolution; interstellar matter and star formation. The Staff

199. Special Studies. (½ or 1 course)

Prerequisite: senior standing in astronomy or physics, with an outstanding record and consent of the instructor. Special studies with an individual faculty member. With prior approval, this course may be used to carry out a meritorious observing program at the UCLA Students' Observatory, or in special cases with the 24-inch reflector at the Department's Field Station in Ojai. The Staff

Graduate Courses

Prerequisite to graduate courses is by consent of the instructor. Graduate courses 201 through 229 are offered in alternate years.

201A–201B–201C. Astrophysics of the Solar System.

The sun, solar phenomena, and solar-terrestrial relationships. The interplanetary medium and astronomical plasma physics, comets, meteorites, meteors, satellites and planets, planetary atmospheres. Origin and evolution of the solar system. Mr. Aller, Mr. Peale

204A–204B–204C. Observational Astronomy.

Positional astronomy, data reduction, telescopes, photometric, spectroscopic and radio instruments and techniques. Includes laboratory. Mr. Epps, Mr. Popper, Mr. Riegel

*208. The Interstellar Medium.

Interstellar gas and dust. Diffuse and planetary nebulae. Magnetic fields in space and the acceleration of cosmic rays. Star formation. Mr. Aller

*217A–217B. Stellar Photospheres.

Meets three hours per week. Physics of stellar photospheres and radiative transfer. The continuous and line spectra of stars. Chemical abundances in stars. Mr. Aller

*219A–219B. Galactic Astronomy.

Statistical astronomy. Distance determinations. Stellar motions and populations. Radio observations of the interstellar medium. Stellar dynamics. Structure of the galaxy from optical and radio observations. Mr. Riegel, Mr. Upton

227A–227B. Stellar Structure and Evolution.

Structure and evolution of the stars. Stellar energy sources and origin of the elements. Pulsation theory of variable stars. The second quarter is devoted primarily to the application of machine computation to the solution of astrophysical problems, including the computation of stellar models. Mr. Epps, Mr. Upton

*229. Extragalactic Astronomy.

Galaxies and clusters of galaxies. Distribution of matter in space. The observational approach to cosmology. Mr. Abell

* Not to be given, 1969–1970.

240. Modern Problems in Astronomy and Astrophysics.

Special topics offered by distinguished visiting professors. May be repeated for credit. Open to qualified graduate students in astronomy and in related fields (physics, meteorology, planetary and space physics).

250. Seminar on Current Astronomical Research. (½ course)

The Staff

285. Seminar on the Origin of the Solar System.

(Same as Planetary and Space Science 285.) Dynamical problems of the solar system; chemical evidences from geochemistry, meteorites, and the solar atmosphere; nucleosynthesis; formation of the solar nebula; solar contraction; hydromagnetic processes in the nebulae, condensation of the planets; origin of satellite systems. The Staff

Individual Study and Research

The following courses, 596A, 596L and 599, may be repeated by a student at the discretion of the Department.

596A. Directed Individual Studies. (½ to 2 courses)

The Staff

596L. Advanced Study and Research at the Lick Observatory. (½ to 3 courses)

Intended for graduate students who require 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.

Planetary and Space Science 101. Introduction to Planetary and Space Physics.

220A–220B–220C. Planetary and Orbital Dynamics 1, 2, 3.

225A–225B. Physics and Chemistry of Planetary Interiors 1, 2.

228A–228B. Magnetic Fields of the Earth and Planets 1, 2.

260A–260B–260C. Particles and Fields in Space.

BACTERIOLOGY

(Department Office, 5304 Life Sciences Building)

June Lascelles, Ph.D., *Professor of Bacteriology.*M. J. Pickett, Ph.D., *Professor of Bacteriology.*Sydney C. Rittenberg, Ph.D., *Professor of Bacteriology (Chairman of the Department).*William R. Romig, Ph.D., *Professor of Bacteriology.*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.*Eugene Rosenberg, Ph.D., *Associate Professor of Bacteriology.*Eli E. Sercarz, Ph.D., *Associate Professor of Bacteriology.*R. John Collier, Ph.D., *Assistant Professor of Bacteriology.*Frederick A. Eiserling, Ph.D., *Assistant Professor of Bacteriology.*Donald P. Nierlich, Ph.D., *Assistant Professor of Bacteriology.*Wilbur T. Ebersold, Ph.D., *Associate Professor of Botany.*Dan S. Ray, Ph.D., *Assistant Professor of Zoology.*Richard W. Siegel, Ph.D., *Professor of Zoology.***Preparation for the Major**

Biology 1A-1B; Chemistry 1A-1B-1C, 4A-4B-4C, 6A-6B-6C; Mathematics 3A-3B-3C; Physics 7A-7B-7C-7D. For transfer students lacking the equivalent of Chemistry 1B laboratory, Chemistry 5, half course, will be required.

The Major

Bacteriology 100A-100B-100C, 107, plus two additional upper division courses in bacteriology; Chemistry 153. Three additional upper division 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 154 recommended. Bacteriology 195 or 199 will not be counted toward the major without departmental approval.

Graduate Study

The Department of Bacteriology offers programs of study and research leading to the M.A. and Ph.D. degrees in microbiology (see page 351). Financial aid is available to qualified graduate students in the form of teaching assistantships, traineeships and research assistantships. More detailed information may be obtained by writing to the Chairman, Department of Bacteriology.

Advisement

Each undergraduate and graduate student will be assigned an official departmental adviser upon entrance. It is the student's responsibility to confer with his adviser at least once every quarter.

Lower Division Courses (See also Biology)**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; 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. Mendelian principles. The gene: its structure, function, and chemistry, with emphasis on mutation, coding, regulation and transmission.

Mr. Ebersold, Mr. Krieg, Mr. Romig

110. The Microbiology of Infection.

(Formerly numbered 103.) Lecture, two hours, laboratory, six hours. Prerequisite: courses 100A-100B. The salient characteristics of bacteria, rickettsiae, and viruses, both pathogenic and adventitious, associated with diseases of man. Mr. Pickett

110C. The Laboratory Diagnosis of Infection.

(½ course)

Laboratory, six hours. Prerequisite: course 110. Techniques in the laboratory examination of clinical material.

111. Immunology.

(Formerly numbered 130.) Lecture, three hours; laboratory, four hours. Prerequisite: course 100B; or consent of instructor. Structure of antigens and antibodies; nature of immunochemical specificity; cellular aspects of the immune response; regulatory mechanisms in immunology; hypersensitivity.

Mr. Sercarz

112A-112B. Structure and Physiology of Bacteria.

(Formerly numbered 106.) Lecture, three hours. Prerequisite: course 100A, Chemistry 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 153; or consent of instructor. The major patterns of energy generation and biosynthesis, and their regulation.

Miss Lascelles

119. Bacterial Viruses.

(Formerly numbered 109.) Lecture, three hours. Prerequisite: courses 100B, 107, Chemistry 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, Mr. Romig

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. Prerequisites: course 107 and Chemistry 153 or consent of the instructor. The genetic coding of information and its transfer from DNA through RNA to protein; the operon model and other aspects of regulatory genetics, mutations and genetic fine structure.

Mr. Krieg, Mr. Romig, Mr. Siegel

203. Chromosome Structure and Replication.

(Same as Botany 203 and Zoology 203.) Prerequisites: course 107, Chemistry 153, Physics 7A-7B-7C or consent of the instructor. A survey of biochemical and biophysical investigations of the structure and replication of chromosomal nucleic acids with emphasis on bacterial and viral systems.

Mr. Ray

204. Microbial Genetics.

(Formerly numbered 212.) Lecture, one hour; laboratory, nine hours. Prerequisite: consent of the instructor. Advanced methodology for the study of bacterial and viral genetics.

Mr. Romig

206. Subcellular Structure and Function in Bacteria.

Lecture and discussion, three hours. Prerequisite: course 112A-112B, or consent of the instructor. A discussion of the structure, chemical nature, biosynthesis, and function of subcellular elements of bacteria.

Mr. Eiserling, Mr. Martinez

207. Electron Microscopy in Microbiology.

Lecture, two hours; laboratory, ten hours. Prerequisites: courses 112A-112B or 206, an acceptable course in physical chemistry, 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

209. Molecular Biology Laboratory.

(Same as Zoology 209.) Lecture, two hours; laboratory, eight hours. Prerequisites: consent of instructor.

tor. Selected experimental approaches in molecular biology. The current emphasis is on techniques for the study of protein synthesis in cell free systems, determination of the genetic code, and the study of repressor molecules.

210. Advanced Microbial Biochemistry.

Lecture and discussion, three hours. Prerequisite: course 113 or consent of the instructor. A consideration of specialized aspects of microbial chemistry and metabolism with emphasis on current developments.

Miss Lascelles, Mr. Nierlich

222A-222I. Advanced Topics in Microbiology.

(½ course each)

Lecture and discussion, two hours. The subject matter of this course will be in an advanced field of microbiology in which the instructor has special proficiency. The fields for each quarter will be announced in the Schedule of Classes. The Staff

250. Seminar in Microbial Metabolism. (½ course)

Miss Lascelles, Mr. Rittenberg

251. Seminar in Regulation and Differentiation.

(½ course)

Mr. Nierlich, Mr. Rosenberg

252. Seminar in Medical Microbiology. (½ course)

Mr. Pickett

253. Seminar in Immunology. (½ course)

Mr. Sercarz

254. Seminar in Microbial Physiology. (½ course)

Mr. Collier, Mr. Jann, Mr. Martinez

255. Seminar in Bacterial Viruses. (½ course)

Mr. Krieg

256. Seminar in Microbial Genetics. (½ course)

Mr. Eisinger, Mr. Romig

257. Seminar in Host-Parasite Relationships.

(½ course)

(Same as Medical Microbiology and Immunology 257.) Mr. Pickett

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 179), in the Division of Biochemistry, Department of Chemistry

(see page 204), and in the Department of Botanical Sciences (see page 186). More detailed information regarding admission requirements and opportunities for graduate studies in these programs may be obtained by writing to the graduate adviser in the department in which you are interested.

■ BIOLOGICAL CHEMISTRY

(Department Office, 33-257 Center for the Health Sciences)

Robert M. Fink, Ph.D., *Professor of Biological Chemistry.*

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

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

Ralph W. McKee, Ph.D., *Professor of Biological Chemistry.*

James F. Mead, Ph.D., *Professor of Biophysics and Professor of Biological Chemistry.*

Joseph F. Nyc, Ph.D., *Professor of Biological Chemistry.*

John G. Pierce, Ph.D., *Professor of Biological Chemistry (Vice-Chairman of the Department).*

George J. Popják, D.Sc., M.D., *Professor of Psychiatry and Biological Chemistry.*

Sidney Roberts, Ph.D., *Professor of Biological Chemistry.*

Emil L. Smith, Ph.D., *Professor of Biological Chemistry (Chairman of the Department).*

Marian E. Swendseid, Ph.D., *Professor of Nutrition and Professor of Biological Chemistry.*

Irving Zabin, Ph.D., *Professor of Biological Chemistry.*

Stephen Zamenhof, Ph.D., *Professor of Biological Chemistry and Professor of Microbial Genetics, Medical Microbiology and Immunology.*

Max Dunn, Ph.D., LL.D., *Emeritus Professor of Chemistry and Biological Chemistry.*
 Samuel Eiduson, Ph.D., *Associate Professor of Biological Chemistry in Residence and Associate Professor of Psychiatry in Residence.*

Alexander N. Glazer, Ph.D., *Associate Professor of Biological Chemistry.*

John E. Snoke, Ph.D., *Associate Professor of Biological Chemistry.*

Robert J. DeLange, Ph.D., *Assistant Professor of Biological Chemistry.*

John Edmond, Ph.D., *Assistant Professor of Biological Chemistry.*

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

Dohn G. Glitz, Ph.D., *Assistant Professor of Biological Chemistry.*

Harvey R. Herschman, Ph.D., *Assistant Professor of Biological Chemistry.*

† Bruce D. Howard, M.D., *Assistant Professor of Biological Chemistry.*

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

David S. Sigman, Ph.D., *Assistant Professor of Biological Chemistry.*

Patrice J. Zamenhof, Ph.D., *Assistant Professor of Biological Chemistry in Residence.*

Requirements for Admission to Graduate Status

1. For general University requirements for the M.S. degree, see page 139; for the Ph.D. page 143 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) or zoology or bacteriology and advanced quantitative analysis, qualitative organic analysis and advanced organic chemistry are recommended.

Concurrent M.D. and Ph.D. Programs

Students may enroll in both the School of Medicine and the Graduate Division in order to fulfill some graduate degree requirements while obtaining the M.D. degree. This dual registration makes it possible for a medical student to utilize for graduate work one vacation period and the four elective quarters during the four-year medical curriculum and to offer this work in partial fulfillment of the requirements for the Ph.D. The De-

partment of Biological Chemistry offers this opportunity to qualified applicants. There are various ways in which financial support can be made available to students in the program after completion of one or two years of the medical curriculum. Contact Dr. Joseph Nyc, the Department Adviser, for further information concerning the program.

Requirements for the M.S. degree

1. General University Requirements, see page 139.

2. Thesis Plan. Courses 253, 255, 257, 263 and 267 following completion of a beginning course in biochemistry either before or after admission to graduate status. A reading knowledge of German, Russian or French. Completion of a satisfactory thesis based on laboratory research. Oral examination on thesis and a written qualifying examination if performance in courses 253, 255, 257, 263 and 267 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 143.

2. Courses 253, 255, 257, 263 and 267 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).

† Absent on leave, 1969-1970.

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. Biological Chemistry Seminar for Medical Students. (½ course)

Lecture or recitation, four hours. Required in the medical curriculum. Special subjects, such as metabolic defects, biochemistry of antibodies, neurobiochemistry, etc., are studied in depth by small groups meeting to present and discuss topics on the selected subject. Mr. Fink and the Staff

101E. Biological Chemistry Laboratory.

Laboratory, seven hours. Required in the medical curriculum; consent of the instructor is required for nonmedical students. Experiments illustrating some of the procedures employed in clinical chemistry, enzymology and metabolic studies. 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: course 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.

(Same as Chemistry 253.) Lecture or recitation, four hours. Prerequisites: Chemistry 153 or course 101B and Chemistry 110A-110B 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.

(Same as Chemistry 255.) Lecture or recitation, four hours. Prerequisites: Chemistry 143A, Chemistry 153 or course 101B and Chemistry 110A-110B 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

257. Physical Chemistry of Biological Macromolecules. (½ course)

(Same as Chemistry 257.) Lecture, two hours. Prerequisite: Chemistry 110A or consent of the instructor. Theory of hydrodynamic, thermodynamic, optical and x-ray techniques used to study the structure and function of biological macromolecules. 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. Snake

261A-261B-261C. Seminar in the Biochemistry of Lipids. (½ course each)

Lecture or recitation, one hour. Prerequisites: courses 101A-101B-101C or equivalent; consent of the instructor. Biochemistry of lipids including methods of isolation, characterization and determination; role of lipids in animal metabolism. Mr. Howton, Mr. Mead

262A-262D. Seminar in the Biochemistry of Proteins. (½ course each)

Lecture or recitation, one hour. Prerequisites: courses 101A-101B-101C and consent of the instructor. An advanced seminar in the field of protein structure including current methods used in research and the relationships between the structure and function of proteins. Mr. DeLange, Mr. Glazer, Mr. Markland

263. Cellular Metabolism.

(Same as Chemistry 263.) Lecture or recitation, three hours. Prerequisites: Chemistry 153 or course 101B and Chemistry 110A or equivalent. Patterns of biological degradation and synthesis; metabolic interrelationships and control; energetics of metabolism. The Staff

264. Seminar in Regulation of Cell Metabolism. (½ course)

Lecture or recitation, one hour. Prerequisites: courses 101A-101B-101C or equivalent. Regulatory processes in animal metabolism. Membrane trans-

port, intracellular compartmentation, protein biosynthesis, enzyme activation and inhibition; relationship to hormone action and cell function.

Mr. Roberts

266A-266B-266C. Seminar in the Biochemistry of Differentiation. (½ course each)

Lecture or recitation, one hour. Prerequisite: consent of the instructor. A review of the current literature covering the chemical mechanisms underlying the developmental process including: control of gene expression, metabolism in developing systems, specific expression of function and control of enzyme synthesis, external parameters determining cellular expression in the whole organism and the single cell.

Mr. Harary

267. Nucleic Acid and Protein Biosynthesis.

(½ course)

(Same as Chemistry 267.) Lecture or recitation, two hours. Prerequisites: Chemistry 153 or course 101C. Mechanisms of nucleic acid and protein biosynthesis and their interrelationships with molecular genetics and control.

The Staff

■ BIOLOGY

(See also Bacteriology, Botanical Sciences, and Zoology)

Lower Division Courses

1A-1B. Introductory Biology.

Lecture, three hours; laboratory, three hours. Prerequisite: Chemistry 1A. Offered primarily for majors in bacteriology, botany, zoology, and other sciences, as well as premedical and pre dental students. The general principles of biology. The Staff

2. Principles of Biology.

Lecture, three hours; discussion, one hour. Prerequisites: Physical Sciences 1 and 2. Offered for students other than majors in the biological sciences. The general principles of biology. The Staff

21. Field Biology.

Lecture, three hours; required field trips. Prerequisite: Biology 2. An introduction to the natural history and ecology, interrelationships, and classification of the common animals and plants, with emphasis on western North America. The Staff

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. The Staff

599. Research for and Preparation of the Doctoral Dissertation. (½ to 3 courses)

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

cation of the common animals and plants, with emphasis on western North America. The Staff

181A-181B. Biology for Majors in Physical Sciences and Engineering.

Lecture, three hours; demonstration or discussion, one hour. Prerequisite: upper division standing with a major in physical sciences or engineering. This course may be taken in place of Biology 2 in fulfillment of two quarters of the life sciences requirements for nonmajors in the biological sciences. Principles of biology for students with an advanced background in physical sciences. Mr. Kavanau

Professional Courses

370. Methods and Materials for Teaching Life Sciences.

Lectures, demonstrations, field trips. Prerequisite: major in biological sciences, senior or graduate standing, and one of the following courses: Biology 21 or Zoology 103. The Staff

■ BIOMATHEMATICS

(Department Office, AV-111 Center for the Health Sciences)

Wilfrid J. Dixon, Ph.D., *Professor of Biomathematics and Biostatistics (Chairman of the Department).*

Donald J. Jenden, B.Sc., M.B., B.S., *Professor of Pharmacology and Biomathematics.*

Frank J. Massey, Ph.D., *Professor of Biostatistics and Biomathematics.*

Virginia A. Clark, Ph.D., *Associate Professor of Biostatistics and Biomathematics.*

Olive Jean Dunn, Ph.D., *Associate Professor of Biostatistics and Biomathematics.*

Carol M. Newton, M.D., Ph.D., *Associate Professor of Biomathematics.*

Abdelmonem A. Affif, Ph.D., *Assistant Professor of Biostatistics and Biomathematics.*

Michael A. Fox, Ph.D., *Assistant Professor of Biomathematics in Residence.*
 Harvey S. Frey, *Assistant Professor of Radiology and Biomathematics in Residence.*
 Robert I. Jennrich, Ph.D., *Assistant Professor of Biomathematics and Mathematics in Residence.*
 Jan W. Kuzma, Ph.D., *Assistant Professor of Biomathematics in Residence.*



Alan B. Forsythe, Ph.D., *Lecturer in Biomathematics.*
 John A. Hartigan, Ph.D., *Visiting Associate Professor of Biomathematics.*
 M. Ray Mickey, Ph.D., *Research Statistician and Lecturer in Biomathematics.*

The Department of Biomathematics offers instruction primarily to students with undergraduate preparation in mathematics and the biological and physical sciences. The field of biomathematics relates to the biological domain, which comprises many and diverse sciences, such as mathematical physics relates to the physical. Most courses offered in biomathematics presuppose familiarity with some aspects of biology, as well as with mathematical and computational tools.

After completing formal requirements in biomathematics, biology, mathematics, and statistics those pursuing the Department of Biomathematics' proposed degree program may seek different emphases in advanced training for their investigative careers. Some may specialize as theoreticians in a particular area of biology; others may concentrate on mathematical and computational preparation in sufficient depth to enable them to fashion new analytical tools required by the emerging theoretical components of the biological sciences. In all work, especial emphasis will be placed on exposing students to the difficult decisions biomathematicians must make when considering such problems as adjustment of theoretical approaches to the competing demands of mathematical tractability and biological realism.

Further information concerning course offerings or the proposed graduate degree program may be obtained by writing the Department of Biomathematics.

Upper Division Courses

110. Elements of Biomathematics.

Prerequisite: calculus. Analysis of deterministic models including some general approaches to the study of homeostasis. Conditions under which deterministic and probabilistic descriptions of biological phenomena are appropriate. Both approaches will be applied to selected examples in epidemiology and enzyme kinetics.

Miss Newton and the Staff

199. Special Studies in Biomathematics.

(½ to 1 course)

Prerequisites: upper division standing and consent of the instructor. Special studies in biomathematics, including either reading assignments or laboratory work or both, designed for appropriate training of each student who registers in this course. The Staff

Graduate Courses

201. Deterministic Models in Biology.

Prerequisites: linear algebra and differential equations. The conditions under which deterministic approaches can be employed are examined, and conditions where they may be expected to fail. Topics receiving special attention include compartmental analysis, enzyme kinetics, membrane theory, and the homeostatic control of physiological systems.

Miss Newton and the Staff

202A-202B. Time Series Analysis.

Prerequisites: calculus, linear algebra and probability. Spectral representation, linear time invariant systems, ergodic theory, and prediction theory. Estimation of spectra, coherence, frequency response and bi-spectra. Statistical stability, hypothesis testing, and design. Use of the fast Fourier transform, complex demodulation, and instrumental variables. Biomedical and physical applications.

Mr. Jennrich and the Staff

203. Stochastic Models in Biology.

Prerequisites: courses 201 and 202. The mathematical description of physiological relationships with particular attention directed to biological areas where the conditions for deterministic models are inadequate. The appropriateness of various stochastic approaches for these analyses will be evaluated.

Mr. Dixon and the Staff

210. Introduction to Biomedical Computation.

Prerequisite: graduate standing. Basic concepts of data acquisition and machine computation, with special reference to biomedical applications.

The Staff

215. Advanced Biomedical Computation.

Prerequisite: course 210 or equivalent programming experience. Biomedical computation enabling those having elementary FORTRAN programming to acquire skills applicable to biomedical research. Use of random-number generators, stochastic modeling, models with differential equations, package programs, specialized applications, interactive modeling on IBM-2250 graphics system. Individual term projects.

Miss Newton and the Staff

220. Topics in Biological Control Theory.

Prerequisite: Calculus, up to differential equations. Biochemical, physiological and neurological phenomena are treated theoretically using the methodology of cybernetics. An approach towards understanding of the nervous system is presented with a discussion of neurons, neural nets, perception, and various topics in cybernetics.

Mr. Fox

Individual Study and Research

596. Directed Individual Study or Research in Biomathematics. (1 to 2 courses)

Independent study of an advanced nature.

The Staff

■ BIOPHYSICS

(Department Office, B1-153 Health Sciences Center)

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

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

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

Alexander Kolin, Ph.D., *Professor of Biophysics.*

O. Raynal Lunt, Ph.D., *Professor of Biophysics and of Plant Nutrition (Acting Chairman of the Department and Director of the Laboratory of Nuclear Medicine and Radiation Biology).*

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

James F. Mead, Ph.D., *Professor of Biophysics and of Biological Chemistry.*

Wilbur A. Selle, M.D., Ph.D., *Professor of Biophysics.*

Norman S. Simmons, D.M.D., Ph.D., *Professor of Biophysics and of Oral Medicine.*

Albert W. Bellamy, Ph.D., *Emeritus Professor of Biophysics.*

Stafford L. Warren, M.D., L.L.D., D.Sc., *Emeritus Professor of Biophysics.*

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

Lawrence S. Myers, Jr., Ph.D., *Assistant Professor of Biophysics and of Radiology in Residence.*

E. Hardin Strickland, Ph.D., *Assistant Professor of Biophysics in Residence.*



Benedict Cassen, Ph.D., *Clinical Professor of Biophysics.*

Thomas G. Hennessy, M.D., Ph.D., *Lecturer in Biophysics.*

Ole A. Schjeide, Ph.D., *Lecturer in Biophysics.*

Admission to Graduate Status

In addition to fulfillment of the requirements of the Graduate Division, applicants for admission to graduate status in biophysics should have adequate training and experience in mathematics, chemistry, biology, and physics.

It is expected that completion of a major in any one of these fields, with some upper division courses in the other areas of concern, would adequately prepare the student for beginning his graduate studies. There will be an opportunity for the graduate student to take courses during his residence to fulfill these broad requirements.

Students who are planning their undergraduate curriculum may wish to orient their programs to include: (a) mathematics through

differential equations; (b) chemistry through physical chemistry including the laboratory; (c) biology to include an upper division course in general physiology and an upper division course in genetics; (d) physics to include an upper division course in electromagnetic theory or electrodynamics, and an upper division laboratory course in electrical and electronic measurement.

Graduate Study

The Department of Biophysics offers programs of study and research leading to the M.S. and the Ph.D. For the general requirements for the M.S. degree, see pages 139-143. A foreign language is not required for the master's degree. The general University requirements for the Ph.D. degree are given

on pages 143-145. 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

102. Elements of Dental Biophysics. (½ course)

Lecture, two hours. Lectures and demonstration on the physical basis of biological processes, with emphasis on understanding the physical fundamentals. Areas of greatest importance to dentistry are stressed. Mr. Myers and the Staff

103. Applications of New Development in Physics and Engineering to Medicine. (½ course)

Prerequisite: postsophomore standing in UCLA Medical School or consent of the instructor. A survey of present developments and potential possibilities of medical applications of new materials, newly engineered systems (blood dialyzers, oxygenators), new diagnostic procedures (radioisotope techniques, scanning), and new optical devices (lasers, fiber optics, etc.). Mr. Cassen

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

†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. Whole 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. The Staff

‡246A-246B-246C. Sub-Cellular Radiation. Biophysics.

Lecture, two hours; tutorial, two hours. Prerequisite: consent of the instructor. The effects of visible, ultraviolet, and ionizing radiation on sub-cellular systems, with emphasis at the molecular level on the mechanisms by which these effects are brought about. Mr. Myers, Mr. Howton

250. Advanced Topics in Biophysics. (½ course)

Lecture, one hour; tutorial, one hour. Prerequisite: consent of the instructor. The subject matter of this course will be in the field of biophysics in which a staff member, or invited scholar giving the course, has developed a special proficiency owing to his research interest. Mr. Schjeide

251A-251B-251C. Seminar in Biophysics. (¼ course each)

Prerequisite: consent of the instructor. All graduate students in the department are required to take this seminar. Oral reports by the graduate students on important topics suggested from the current literature in biophysics and related fields. Mr. MacDonald

252. Experimental Neurobiophysics. (½ course)

Laboratory, four hours. Prerequisite: course 262, or consent of the instructor. Experiments on the application of biophysical methods to the study of the nervous system. The Staff

260. Seminar on the Physics of Viruses. (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 bio-

‡ Given alternate years only. To be given, 1969-1970.

† Given alternate years only. Not to be given, 1969-1970.

physical 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)

Graded on Satisfactory/Unsatisfactory basis.
The Staff

■ BOTANICAL SCIENCES

(Department Office, 320 Botany Building)

Jacob B. Biale, Ph.D., *Professor of Plant Physiology.*

Karl C. Hamner, Ph.D., *Professor of Botany.*

George 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-Herbarium.*

Bernard O. Phinney, Ph.D., *Professor of Botany.*

Charles A. Schroeder, Ph.D., *Professor of Botany.*

Henry J. Thompson, Ph.D., *Professor of Botany (Chairman of the Department).*

Samuel G. Wildman, Ph.D., *Professor of Botany (Vice-Chairman of the Department).*

David Appleman, Ph.D., *Emeritus Professor of Plant Physiology.*

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.*

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



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

Preparation for the Major

Biology 1A-1B, Chemistry 1A-1B-1C, 4A-4B-4C, 6A-6B-6C, Physics 7A, 7B, 7C, 7D, Mathematics 3A-3B-3C.

The Major

Botany 103A-103B, 105, 107, 109, 111, 113, plus at least four additional courses selected either from botany or from an approved list of courses in related departments.

Graduate Study

Applicants for admission to the graduate program will be expected to submit evidence of adequate undergraduate preparation in the biological and physical sciences. The De-

partment grants advanced degrees with specialization in areas of anatomy, morphology, ecology, systematics, genetics, evolution, plant physiology, plant biochemistry, and soils.

Requirements for the Master's Degree

General requirements are given on page 139. 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 110A-110B and 113).

In addition to the general requirements of the Graduate Division, students intending to become candidates for the doctoral program must pass a written qualifying examination administered by the Department. The language requirements for the Ph.D. degree in botany are usually met by examinations or course work in one of the following: French, German, Spanish, or Russian. Preparation in the languages before application to graduate school is strongly recommended.

Students working toward a teaching credential should consult the UCLA ANNOUNCEMENT OF THE SCHOOL OF EDUCATION for general requirements.

Lower Division Courses
(See also Biology)

10. Plants and Civilization.

Lecture, three hours; lecture-demonstration, one hour. Prerequisite: Biology 2 or 181A-181B. The importance of plants to man's social and economic development; man's role in modification and distribution of plants. Mr. Schroeder

12. Taxonomy and Ecology of Ornamental Plants.

(Formerly numbered Agricultural Science 131.) Lecture, one hour; laboratory and field trips, nine hours. Prerequisite: Biology 2, the equivalent, or consent of the instructor. The origin, classification, and identification of the more important ornamental plants in southern California with special emphasis on their environmental requirements and adaptation. A course primarily for art students majoring in design. Mr. Stoutemyer

Upper Division Courses

102. The Soil as a Medium for Plant Growth.

Lecture. Prerequisite: Biology 1A-1B, 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. Lant

103A-103B. The Natural History of Plants.

(Formerly numbered 104 and 105.) Students must complete both courses in order to receive credit. Lecture, two hours; laboratory, four hours; field trips. Prerequisite: Biology 1A-1B, or the equivalent.

The evolution and development of plant form; a comparison of vegetative and reproductive systems among major plant groups.

Mr. Diboll, Mr. Phinney

105. Ecology and Evolution.

(Formerly numbered 150. Same as Zoology 105.) Lecture, three hours; laboratory, three hours. Prerequisite: Biology 1A-1B, or the equivalent. Introduction to the study of mechanisms that control the structure, distribution, and evolution of populations. Mr. Thompson in charge

107. Comparative Genetics.

(Formerly numbered 136. Same as Bacteriology 107 and Zoology 107.) Lecture, four hours. Prerequisite: Biology 1A-1B, 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, or the equivalent. Physiological principles underlying soil plant relations; translocation and transpiration; photosynthesis; chemical regulation of growth; photoperiodism and photomorphogenesis. Mr. Laties

111. Cell Structure.

Lecture, four hours; laboratory, three hours. Prerequisite: Biology 1A-1B, or the equivalent. Structural aspects of cells and tissues in relation to function. The Staff

113. Plant Cell Physiology.

Lecture, three hours; laboratory, three hours. Prerequisite: Biology 1A-1B, or the equivalent. General physiology of plant cells and organelles with emphasis on the cell wall, chloroplasts, other plastids, mitochondria, the central vacuole, photosynthesis, and physical-chemical properties of membranes. Mr. Nobel

115. Marine Botany. (2 courses)

Lecture, two hours; laboratory, six hours. Prerequisite: Biology 1A-1B, 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 153.) Lecture, two hours; laboratory, six hours; field trips. Prerequisite: Biology 1A-1B, 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, 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. Phinney

153. Plant Population Ecology.

(Formerly numbered 150 and 152.) Lecture, two hours; laboratory, six hours; field trips. Prerequisite: course 105, or the equivalent. A study of genetic and ecological variation, structure, and distribution of plant populations emphasizing field studies of selected populations and ecosystems. Mr. Thompson

163. Cytogenetics.

(Same as Zoology 163.) Lecture, two hours; laboratory, six hours. Prerequisite: course 107. The fundamentals of cytogenetics. Heredity as related to cytogenetical phenomena.

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

Prerequisite: senior standing and consent of the instructor. The Staff

193. Special Studies in Plant Physiology.

(½ course)

Prerequisite: senior standing and consent of the instructor. The Staff

195. Special Studies in Plant Systematics and Ecology. (½ course)

Prerequisite: senior standing and consent of the instructor. The Staff

197. Special Studies in Plant Genetics. (½ course)

Prerequisite: senior standing and consent of the instructor. The Staff

Graduate Courses**201. Comparative Genetics Laboratory.**

(Formerly numbered 196C. Same as Zoology 201.) Laboratory, nine hours. Prerequisite: course 107 (may be taken concurrently). Experimental techniques demonstrating recombination, mutagenesis, biochemical pathways, complementation, and cytogenetics of plants, animals, and microorganisms.

The Staff

202. Gene Structure and Function.

(Formerly numbered 222. Same as Microbiology 202 and Zoology 202.) Lecture. Prerequisites: course 107 and Chemistry 153 or consent of the instructor. The genetic coding of information and its transfer from DNA through RNA to protein; the operon model and other aspects of regulatory genetics, mutations and genetic fine structure.

203. Chromosome Structure and Replication.

(Same as Microbiology 203 and Zoology 203.) Prerequisites: course 107, Chemistry 152 or 153, Physics 7A-7B-7C-7D or consent of the instructor. A survey of biochemical and biophysical investigations of the structure and replication of chromosomal nucleic acids with emphasis on bacterial and viral systems.

Mr. Ray

204. Evolution and Population Genetics.

(Formerly numbered 224. Same as Zoology 204.) Lecture, two hours; individual study. Prerequisite: courses 105 and 107. Genetic mechanisms of evolutionary change.

Mr. Lewis

205A-205F. Topics in Genetics.

(Formerly numbered 225A-225F. Same as Zoology 205A-205F.) Lecture. Prerequisite: course 107 and consent of the instructor. Intensive study of selected topics.

The Staff

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, Mr. Nobel

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*.

The Staff

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)

- William F. Brown, Ph.D., *Professor of Marketing.*
 Elwood S. Buffa, Ph.D., *Professor of Operations Management.*
 Leland S. Burns, Ph.D., *Professor of Urban Land Economics.*
 Joseph D. Carrabino, Ph.D., *Professor of Management.*
 A. B. Carson, Ph.D., C.P.A., *Professor of Accounting.*
 Fred E. Case, D.B.A., *Professor of Urban Land Economics.*
 James V. Clark, D.B.A., *Professor of Organizational Development.*
 Louis E. Davis, M.S., *Professor of Organizational Sciences.*
 Benjamin Graham, B.S., *Professor of Business Administration in Residence.*
 James R. Jackson, Ph.D., *Professor of Business Administration.*
 Neil H. Jacoby, Ph.D., LL.D., *Professor of Business Economics and Policy.*
 Raymond J. Jessen, Ph.D., *Professor of Business Statistics.*
 Paul Kircher, Ph.D., C.P.A., *Professor of Accounting and Information Systems.*
 Harold Koontz, Ph.D., *Mead Johnson Professor of Management.*
 Frederic Meyers, Ph.D., *Professor of Industrial Relations.*
 S. H. Nerlove, A.M., *Professor of Business Administration in Residence.*
 Irving Pfeffer, Ph.D., *Professor of Insurance.*
 Barry M. Richman, Ph.D., *Professor of Management and International Business.*
 George W. Robbins, M.B.A., *Professor of Marketing.*
 John P. Shelton, Ph.D., *Professor of Finance.*
 Harry Simons, M.A., C.P.A., *Professor of Accounting.*
 R. Clay Sprowls, Ph.D., *Professor of Business Administration.*
 George A. Steiner, Ph.D., Litt.D., *Professor of Management and Public Policy.*
 Robert Tannenbaum, Ph.D., *Professor of Behavioral Science.*
 Eric L. Trist, M.A., *Professor of Organizational Behavior and Ecology.*
 J. Fred Weston, Ph.D., *Professor of Finance and Business Economics.*
 Robert M. Williams, Ph.D., *Professor of Business Economics and Statistics.*
 †Ralph M. Barnes, Ph.D., *Emeritus Professor of Production Management and Engineering.*
 Ralph Cassady, Jr., Ph.D., *Emeritus Professor of Marketing.*
 John C. Clendenin, Ph.D., *Emeritus Professor of Finance.*
 Ira N. Frisbee, M.B.A., C.P.A., *Emeritus Professor of Accounting.*
 †Leo Grebler, Ph.D., *Emeritus Professor of Urban Land Economics.*
 Ralph C. Hoerber, J.D., Ph.D., *Emeritus Professor of Business Law.*
 Wilbert E. Karrenbrock, Ph.D., *Emeritus Professor of Accounting.*
 †Jacob Marschak, Ph.D., *Emeritus Professor of Business Administration and Economics.*
 †Wayne L. McNaughton, Ph.D., *Emeritus Professor of Business Administration.*
 Cyril J. O'Donnell, Ph.D., *Emeritus Professor of Business Organization and Policy.*
 Theodore A. Andersen, Ph.D., *Associate Professor of Business Economics and Finance.*
 Robert B. Andrews, Ph.D., *Associate Professor of Operations Management.*
 John W. Buckley, D.B.A., *Associate Professor of Accounting and Information Systems.*
 David K. Eiteman, Ph.D., *Associate Professor of Finance.*
 Walter A. Fogel, Ph.D., *Associate Professor of Industrial Relations.*
 Arthur M. Geoffrion, Ph.D., *Associate Professor of Quantitative Methods.*
 Alfred E. Hofflander, Jr., Ph.D., *Associate Professor of Finance and Insurance.*

† Recalled to active service.

- John Hutchinson, Ph.D., *Associate Professor of Industrial Relations.*
 Harold H. Kassarian, Ph.D., *Associate Professor of Business Administration.*
 Erwin M. Keithley, Ed.D., *Associate Professor of Business Administration.*
 James B. MacQueen, Ph.D., *Associate Professor of Business Administration.*
 Fred Massarik, Ph.D., *Associate Professor of Behavioral Science and Industrial Relations.*
 William H. McWhinney, Ph.D., *Associate Professor of Organizational Behavior.*
 Frank G. Mittelbach, M.A., *Associate Professor of Business Administration in Residence.*
 Rosser T. Nelson, Ph.D., *Associate Professor of Business Administration.*
 Alfred Nichols, Ph.D., *Associate Professor of Business Economics.*
 Frank E. Norton, Ph.D., *Associate Professor of Business Economics.*
 R. Bruce Ricks, Ph.D., *Associate Professor of Finance.*
 Ichak Adizes, Ph.D., *Assistant Professor of Management and International Business.*
 Gary M. Cadenhead, Ph.D., C.P.A., *Assistant Professor of Accounting and Information Systems.*
 Michael Chatfield, D.B.A., C.P.A., *Assistant Professor of Accounting.*
 Richard A. Goodman, D.B.A., *Assistant Professor of Business Administration.*
 Maurice Goudzwaard, Ph.D., *Assistant Professor of Finance.*
 J. Morgan Jones, Ph.D., *Assistant Professor of Business Administration.*
 Michael N. Kawaja, Ph.D., *Assistant Professor of Business Economics.*
 Archie Kleingartner, Ph.D., *Assistant Professor of Industrial Relations.*
 Steven A. Lippman, Ph.D., *Assistant Professor of Quantitative Methods.*
 Richard O. Mason, Ph.D., *Assistant Professor of Information Systems.*
 Robert Hal Mason, Ph.D., *Assistant Professor of Business Administration.*
 John J. McDonough, Ph.D., *Assistant Professor of Accounting and Information Systems.*
 William W. McKelvey, Ph.D., *Assistant Professor of Organizational Sociology.*
 Daniel J. B. Mitchell, Ph.D., *Assistant Professor of Industrial Relations.*
 Harold T. Moody, Ph.D., *Assistant Professor of Business Economics.*
 Masao Nakanishi, Ph.D., *Assistant Professor of Business Administration.*
 Corine T. Norgaard, Ph.D., C.P.A., *Assistant Professor of Accounting and Information Systems.*
 David R. Peters, Ph.D., *Assistant Professor of Behavioral Science.*
 Michael Quinn, Ph.D., *Assistant Professor of Business Administration.*
 Hans Schöllhammer, D.B.A., *Assistant Professor of Management Theory and International Business.*
 Philip J. Schreiner, Ph.D., *Assistant Professor of Business Administration.*
 Keith V. Smith, Ph.D., *Assistant Professor of Finance and Business Economics.*
 Peter Vaill, D.B.A., *Assistant Professor of Business Administration.*
 James Warren, Ph.D., *Assistant Professor of Finance.*
 Donald Woods, D.B.A., *Assistant Professor of Finance.*
 Michael Y. Yoshino, Ph.D., *Assistant Professor of Business Administration.*
 Burton Zwick, Ph.D., *Assistant Professor of Business Administration.*



- Robert Buttrey, LL.B., C.P.A., *Lecturer in Accounting.*
 John W. Cave, B.S., *Lecturer in Business Administration.*
 Eugene P. Durbin, Ph.D., *Lecturer in Business Administration.*
 Francis M. Fillerup, M.B.A., *Lecturer in Business Administration.*
 Lee C. Garrison, Jr., M.A., *Acting Assistant Professor of Marketing.*

Michael E. Granfield, B.A., *Acting Assistant Professor of Urban Land Economics.*

Glenn W. Graves, Ph.D., *Acting Associate Professor of Quantitative Methods.*

Clarence J. Huizenga, M.S., *Lecturer in Business Economics.*

Maxwell Kaufman, M.B.A., *Lecturer in Finance.*

Joan K. Lasko, Ph.D., *Lecturer in Behavioral Science.*

Theodore J. Mock, *Acting Assistant Professor of Accounting and Information Systems.*

Wesley C. Morse, *Lecturer in Business Administration.*

Paul Prasow, Ph.D., *Senior Lecturer in Industrial Relations.*

Sol L. Rabin, B.A., M.C.P., *Acting Assistant Professor of Regional Science.*

Anthony P. Raia, Ph.D., *Lecturer in Business Administration.*

Donald Ratajczak, B.A., *Acting Assistant Professor of Business Administration.*

Fred Schmidt, B.A., *Senior Lecturer in Industrial Relations.*

Warren Schmidt, Ph.D., *Lecturer in Behavioral Science.*

Arthur J. Shedlin, M.A., *Lecturer in Business Administration.*

Robert Singleton, M.A., *Acting Assistant Professor of Business Administration.*

Lower Division Course

1A-1B. Elementary Accounting.

Prerequisite: sophomore standing. Course 1A is prerequisite to course 1B. An introduction to accounting theory and practice. The first quarter presents the recording, analyzing and summarizing procedures used in preparing balance sheets and income statements. The second quarter includes payroll and tax accounting, partnership and corporation accounts, manufacturing and cost accounting and supplementary statements. The Staff

Upper Division Courses

Upper division courses in business administration are open to all University students who have completed the necessary prerequisites. Courses 1A, 1B, Economics 1 and 2, and Mathematics 2C are prerequisites to all upper division courses in Business Administration.

BUSINESS ECONOMICS

100. Business Economics.

Prerequisite: Mathematics 2A-2B-2C, course 115A (may be taken concurrently). Required of all students in their first quarter of residence. Effort of the enterprise to secure profits, nature of demand for its products. Costs and production. Allocation of resources through competition. Forms of market competition. Relation of size to efficiency. Markets for productive factors. Incentives and growth, capital budgeting. Mr. Kawaja, Mr. Nicols, Mr. Smith

101. Business Fluctuations and Forecasting.

Prerequisite: courses 100, 115A, and Economics 160 (may be taken concurrently). Required of all students in their second quarter of residence or immediately following course 100. How the enterprise reacts to general economic fluctuations and how its decisions, in turn, affect them. Important forces in past fluctuations. Behavior of indexes of business activity. Appraisal of forecasting techniques. Entrepreneurial and public policies to mitigate business fluctuations. Mr. Granfield, Mr. Moody, Mr. Norton

BUSINESS LAW

100. Legal Analysis for Business Managers.

Not open to students who have credit for course 18 (Berkeley) or equivalent. Must be completed in the first year in residence. 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. The Staff

BUSINESS COMMUNICATIONS

109. Business Communications.

(Formerly numbered 110.) The development of information, skills, and attitudes as they relate to the types of communication required in the management of enterprises. Mr. Keithley, Mr. Schreiner

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. Jackson

113A. Electronic Computers in Business.

An introduction to electronic computers and computer programming with substantial laboratory work in problem solving using computers and both machine language and FORTRAN. Mr. Sprowls

113B. Electronic Computer Methods.

Prerequisite: course 113A or consent of the instructor. A continuation of course 113A with emphasis upon solving problems related to business and general social sciences with such languages as COBOL for data processing, IPL for list processing and others. Mr. Sprowls

115A. Business Statistics.

Prerequisite: Mathematics 2A-2B-2C (formerly 37A-37B) or the equivalent. Elements of probability, probability distributions, estimation and confidence intervals, tests of significance and of hypotheses, linear regression and correlation, time series analysis and principles of index numbers. Applications to the analysis of and the decision-making aspects of everyday business problems. Mr. Lippman

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. Granfield

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: Decision.

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

Mr. Nelson

116B. Statistical Methods: Analysis.

Prerequisite: course 115A or equivalent. Analysis of variance; design and analysis of statistical experiments and surveys; multiple regression and correlation, curvilinear regression; analysis of enumeration data; nonparametric methods.

Mr. Jessen

ACCOUNTING**120. Intermediate Accounting.**

Prerequisite: courses 1A-1B or consent of the instructor. 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.

The Staff

120M. Management Accounting.

Prerequisite: course 120 or consent of the instructor. Not open to students who have credit for course 403. Management Accounting theory and methods; formulation and analysis of management reports; internal control; planning and budgeting; cost-volumes-profit analysis; elements of cost accounting; price-level accounting; learning curves and capital budgeting.

The Staff

122. Cost Accounting.

Prerequisite: 120M or consent of the instructor. 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

124. Advanced Accounting

Prerequisite: courses 120, 122 or consent of the instructor. 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: course 124 or consent of the instructor. A study of the fundamentals of federal income taxation with emphasis on the taxation of the income of individuals.

Mr. Buttrey

FINANCE

Economics 135 is required of all students in the School of Business Administration.

130. Business Finance.

A study of the forms and sources of financing business firms large and small, corporate and noncorporate. The emphasis is on financial planning and developing judgment in formulating decisions on financial problems. Financial problems are also considered in their social, legal, and economic effects.

Mr. Kaufman, Mr. Warren, Mr. Woods

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. Kaufman, Mr. Ricks, Mr. Smith

RISK BEARING AND INSURANCE**135. Principles of Insurance.**

Basic principles of risk and insurance and their applications to business management and personal affairs. Analysis of concepts and methods of handling risks; insurance carriers, contracts, and underwriting; loss prevention and settlement; government insurance programs; economic functions of insurance.

Mr. Hofflander, Mr. Pfeiffer

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. The Staff

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. Nakanishi

*162. Retail Store Management.

Prerequisite: course 160. A study of retailing from the standpoint of management. Includes the case-method treatment of such problems as buying, sales promotion, inventory planning and control, pricing, style merchandising, and general management problems. Mr. Brown, Mr. Dalrymple

*163. Advertising Principles and Policies.

Lecture, three hours; laboratory, two hours. Prerequisite: course 160. The preparation, use and administration of advertising, emphasizing the use of research to direct and measure the effectiveness of each stage in the operation. The economic and social implications of advertising also are evaluated. Mr. Kassarian

*165. Sales Management.

Prerequisite: course 160 or consent of the instructor. A case-method study of sales strategy from the managerial viewpoint. Includes merchandising policies, distribution policies, forecasting and planning, sales method and campaigns, pricing, sales department organization, management of the sales force, and budgetary control of sales. Mr. Brown

*169. Marketing Policies. (1½ courses)

Lecture, four hours; laboratory, four hours. Prerequisite: course 160 and senior standing. Marketing management and research methods, including product and promotional policies, distribution channel decisions, the theory of pricing and price policies, and restrictive legislation. Business cases constitute the basis for class discussion. Laboratory periods provide practice in the application of principles. Mr. Brown, Mr. Cassidy

TRANSPORTATION

170. Physical Distribution Management.

Prerequisite: Economics 175 or consent of the instructor. Principles of purchasing transportation services of all types by business managers analysis. Selection of transportation alternatives as a distribution logistics problem of overall product spatial activities. Mr. Quinn

171A-171B. Transportation Management.

Prerequisite: Economics 175 or consent of the instructor. Management of transportation enterprises. Application of management principles and techniques 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. Case, Mr. Mittelbach, Mr. Rabin

* Course to be phased out, presumably by 1969.

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. Ratajczak

BEHAVIORAL SCIENCE

180. Behavioral Science Foundations.

(Formerly numbered 108.) An introduction to selected concepts in behavioral science, their integration and application to management. Organization, group, cultural, individual behavior in relation to managerial environment and functional fields of business administration. Simulations and demonstrations of behavioral science principles. Mrs. Lasko

182. Leadership Principles and Practice.

(Formerly numbered 152.) Prerequisite: senior standing. Knowledge and skills leading to effectiveness in interpersonal relations. Understanding oneself as a leader, and others as individuals and as members of working groups. Understanding of group process, including group leadership. Lectures and "sensitivity training" laboratory. The Staff

MANAGEMENT THEORY AND POLICY

190A-190B. Organization and Management Theory.

Prerequisite: senior standing. Required of all business administration students. A study of the principles of business management. Emphasis is placed upon the application of these principles to the general, as distinguished from the functional, management of enterprise by means of readings and case studies. Mr. Adizes

ADVANCED STUDY IN BUSINESS ADMINISTRATION

199. Special Studies in Business Administration.

(¼ to 2 courses)

Prerequisite: senior standing and consent of the instructor and the dean by special petition available in the Graduate Student Affairs Office. 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. Nicols, Mr. Smith, Mr. Weston

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. Princi-

ples 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, Mr. Rabin

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. Weston

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. International Business Economics.

Prerequisite: courses 401, 406 or consent of the instructor. The international business environment, international economic institutions, national and regional trade policies and developments, trends in foreign markets, international monetary problems are studied for their influence on the organization and operation of the international corporation.

Mr. Mason, Mr. Yoshino

205B. Comparative Market Structure and Competition.

Prerequisite: course 205A or consent of the instructor. A comparative study of public policies toward competition, market structures and competitive practices in key industries in selected countries.

Mr. Kawaja, Mr. Williams

205C. Business Forecasting for Foreign Economies.

Prerequisite: course 201A or consent of the instructor. Forecasting changes in business activity, population, industrial structure, productivity, Gross National Product, and its components for selected countries.

Mr. Williams

208. Selected Topics in Business Economics.

Prerequisite: courses 200, 201. Special topics in business economics. Current development in theory or practice in business economics. May be repeated for credit.

The Staff

QUANTITATIVE METHODS

210A. Mathematical Programming.

Prerequisite: Mathematics 12A and 152A or the equivalent. The theory and computational methods of linear programming and two-person zero-sum finite games, with applications to business and related disciplinary areas.

Mr. Graves

210B. Stochastic Processes.

Prerequisite: Mathematics 11C and 150A or Engineering 120A. Elements of deterministic and Markov processes in discrete and continuous time, with and without deliberate control; dynamic programming; applications to queuing, inventory, and other systems in the business and industrial domains.

Mr. Geoffrion, Mr. Lippman

210C. Network Flows and Combinatorial Programming.

Prerequisite: Mathematics 12A. Theory and techniques of discrete models in Operations Research, Integer programming, combinatorial programming, and network flows. Applications to various allocation, coordination, scheduling, and sequencing problems.

Mr. Geoffrion, Mr. Graves

211A. Nonlinear Mathematical Programming.

Prerequisite: Mathematics 12B, and course 210A or Mathematics 144. Theory, methods, and applications of the optimization of nonlinear systems. Review of classical optimization methods; saddle-point characterizations for concave programs; gradient and pivotal methods; parametric and sub-problem strategies; nonlinear duality theory; combinatorial programming.

Mr. Geoffrion, Mr. Graves

211B. Large-Scale Mathematical Programming.

Prerequisite: course 210A or consent of the instructor. Theory and computational methods for optimizing large-scale linear and nonlinear programs. Exploitation of special structures with combinatorial, dynamic, multi-divisional, and stochastic aspects to obtain practical solution procedures in spite of large numbers of variables and/or constraints.

Mr. Geoffrion, Mr. Graves

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

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. Granfield

215E. Statistical Design of Surveys.

(Formerly numbered 216.) Prerequisite: course 116B or equivalent. Mathematical theory and practices of statistical survey design and analysis.

Mr. Jessem

215F. Statistical Design of Experiments.

(Same as Engineering 275A.) Prerequisite: course 116B and Mathematics 11C. Matrix treatment of linear hypotheses in statistical experimentation. Statistical estimation, tests of hypotheses, analysis of variance, regression models. Randomized blocks, factorial, Latin square, multiple factor and level experiments. Principles of orthogonality, confounding, fractional replication, incomplete block designs with applications.

The Staff

217A. Statistical Decision Theory.

Prerequisite: course 116A or equivalent; Mathematics 152A recommended. Relationships among statistical decision theory, game theory, and classical statistical inference, with emphasis on sequential analysis and dynamic decision processes; axiomatic foundations, Bayes' and minimax solutions, applications to selected models of dynamic decision problems in business.

Mr. MacQueen

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. Jackson

218A. Selected Topics in Mathematical Methods.

($\frac{1}{4}$ to 1 course)

(Formerly numbered 211.) Prerequisite: consent of the instructor. Newly developing topics and viewpoints in the field of operations research will be presented from time to time under this course designation. Topics and instructors will be announced when they become known. May be repeated for credit.

The Staff

218B. Selected Topics in Data Processing.

($\frac{1}{4}$ to 1 course)

(Formerly numbered 214.) Prerequisite: consent of the instructor. Special topics in data processing. Current developments in data processing principles and practices. Analysis of recent literature. Topics and instructors will be announced when they become known. May be repeated for credit.

The Staff

218C. Selected Topics in Business Statistics.

($\frac{1}{4}$ to 1 course)

Prerequisite: consent of the instructor. Special topics in statistical methods. Current developments in statistical theory and practice. Analysis of recent literature. Topics and instructors will be announced when they become known. May be repeated for credit.

The Staff

218D. Selected Topics in Quantitative Methods.

($\frac{1}{4}$ to 1 course)

(Formerly numbered 219.) Prerequisite: consent of the instructor. Topics, usually recent developments, in statistics, decision theory, operations research, data processing and management science. Topics and instructors will be announced when they become known. May be repeated for credit.

The Staff

ACCOUNTING AND INFORMATION SYSTEMS

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. Chatfield

221. Institutional Accounting.

Prerequisite: course 124 or 403. The seminar provides a penetrating analysis of the accounting practices of government and nonprofit institutions. The application of innovative commercial accounting methods to institutional accounting management are investigated and vice versa and current research topics are featured.

Mr. Buckley

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.

The Staff

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.

Mrs. Norgaard

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

225A. Information Systems.

Prerequisites: course 113A, course 403, or consent of the instructor. Design of information systems. Emphasizes systems concepts, user's requirements, methods of systems analysis, and measurement, coding and classification of data. Use of computerized systems. Utility of information systems relative to the needs of particular organizational decision and control centers.

Mr. Cadenhead, Mr. R. O. Mason, Mr. Mock

225B. Information Systems for Planning and Control.

Prerequisite: course 113A or consent of the instructor. Design of systems to produce information for planning and control. Data collection, measurement, storage, processing and communication requirements for planning and control systems. Role of current accounting and budgeting methods. Impact of planning and control information on human behavior.

Mr. Cadenhead, Mr. R. O. Mason, Mr. Mock

226. International Accounting.

Prerequisite: graduate status. Comparative analysis of accounting concepts and practices in other countries; study of contrasts between various systems; problems of accounting for international corporations including transfers of funds and income measurement; and accounting influences on economic development.

Mr. Buckley, Mr. Kircher

227A. 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. Buttrey

227B. Taxation and Business Policy.

Tax systems, tax shifting and burden theory. Impact of taxation law and theory on business decisions. Corporate tax planning. The businessman and tax reform.

Mr. Buttrey

228. Advanced Accounting Problems.

Prerequisite: consent of the instructor. 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

229A. 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. Cadenhead, Mr. Carson

229B. Research Methodology in Accounting.

Prerequisite: course 229A or consent of the instructor. Design of empirical and theoretical research in accounting. Sources of research problems. Research conduct and methodology in accounting and other fields as they relate to accounting.

Mr. Kircher, Mr. Mason, Mr. Mock

229C. Special Topics in Accounting.

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 accounting. Emphasis on recent contributions to theory, research, and methodology. Of special interest to advanced doctoral candidates, the academic staff, or distinguished visiting faculty. May be repeated for credit.

The Staff

229D. Special Topics in Information 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 Information Systems. Emphasis on recent contributions to theory, research and methodology. Of special interest to advanced doctoral candidates, the academic staff, or distinguished visiting faculty. May be repeated for credit.

The Staff

FINANCE**230A. Money and Capital Markets.**

(Numbered 230B in 1966-67.) Prerequisite: Economics 135, and course 130 or 408, or consent of the instructor. Application of interest theory and flow of funds analysis to the price determination process in the markets for bonds, mortgages, stocks and other financial instruments. An historical and cross-sectional study of the role of financial markets in economic development.

Mr. Andersen, Mr. Case, Mr. Zwick

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. Kaufman, Mr. Zwick

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. Zwick

231A. Business Financial Policies.

(Formerly numbered 232.) Prerequisite: course 130 or 408, or consent of the instructor. Application of principles of finance to the financial management of business enterprises. The program includes reading assignments on principles and methods of finance, analysis of business case problems, and individual student reports of financial problems of particular corporations.

Mr. Goudzwaard, Mr. Kaufman, Mr. Woods

231B. Business Finance Theory.

(Formerly numbered 231.) Prerequisite: courses 130 or 408, or consent of the instructor. Normally taken after course 231A. The social and economic consequences of business financial policies. Projections of aggregate sources and uses of business funds, dividend policy and business saving, possible financing gaps, business and social aspects of mergers and reorganization.

Mr. Shelton, Mr. Woods

232A. Investment Analysis.

(Formerly numbered 134.) Prerequisite: 130 or 408 or consent of the instructor. Examination of specific industries, companies, and securities from an investment point of view; sources of information; techniques of analysis; measurement of risks, returns, and investment values; evaluation of corporate credit; preparation of reports. Annual reports of business corporations and current cases are studied.

Mr. Eiteman, Mr. Ricks, Mr. Shelton

232B. Investment Portfolios.

Prerequisite: course 130 or 408 or consent of the instructor. Normally taken after course 232A. Focus on entire portfolios rather than individual securities. Review of existing literature on portfolio selection, revision, and measurement and evaluation. Term report involves empirical testing of a portfolio strategy or hypothesis. Mr. Shelton, Mr. Smith

232C. Investment Theory.

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

233A. International Business Finance.

(Formerly numbered 231C.) Prerequisite: courses 130 or 408 and 205A, or consent of the instructor. Financial problems of multi-national businesses are studied. Included are the international financial environment, problems surrounding the decision to commit long-term capital to an international venture, and financial techniques for the operation of a multi-national firm. Mr. Eiteman

RISK-BEARING AND INSURANCE**235A. Problems in Insurance Management.**

(Formerly numbered 235.) Prerequisite: course 135, or consent of the instructor. Advanced consideration of the problems of insurance management. Treats the actuarial, underwriting, investment, marketing, and regulatory problems relating to insurance activities. Mr. 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. Hofflander, 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. Hofflander, 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. Hofflander, Mr. Pfeffer

238. Selected Topics in Finance and Insurance.

Selected topics in the study of financial theories and policies. Models of financial behavior. Study of financial institutions. Relations between theory and institutional practices. May be repeated for credit. The Staff

OPERATIONS MANAGEMENT**240A. Deterministic Models of Operational Systems.**

Prerequisite: Mathematics 11C. The use of deterministic models for the analysis of operational systems. Formulation and application of linear, network, and dynamic models. Optimization and heuristic solution techniques. The Staff

240B. Stochastic Models of Operational Systems.

Prerequisite: courses 116A and 240A. Analytic techniques for stochastic operational systems. Formulation and application of stochastic programming, probabilistic dynamic programming, Markovian, waiting line and information models. The Staff

240C. Synthesis of Operational Systems.

Prerequisite: Mathematics 11C and course 115A. Examination of the design process, alternative design methodologies, value systems and search techniques. Special emphasis on broad aspects of the synthesizing processes underlying the creation of operational systems. Mr. Andrews

240D. Simulation of Operational Systems.

Prerequisite: FORTRAN programming. Fundamentals of modeling and simulation of systems with special attention devoted to business applications of digital computer simulation. Group and individual student projects offer direct experience with computer simulation. Mr. Nelson

240E. Research Methods in Socio-Technical Analysis.

Prerequisite: consent of the instructor. Conceptual foundations for socio-technical analyses of operational systems. Analytical methods for identification and measurement of elements of socio-technical systems, relationships among elements and changes over time in elements and their relationships. Mr. Davis, Mr. McWhinney

241A. Work Design and Measurement, I.

Design of work systems; human engineering; job simplification and motion study; job enlargement and methods change programs; motion study, mechanization, and automation; motivation of workers; psycho-sociological implications of technological systems. Mr. Barnes

241B. Work Design and Measurement, II.

Work measurement by time study, elemental data, and systems of motion-time data; measuring work by statistical methods; work physiology; labor cost control; and the compensation of labor. Mr. Barnes

242A-242B. Design of Processes and Facilities.

Prerequisite: courses 240A-240B-240C. Design of intermittent and continuous processes and facilities to transform inputs into desired products or services. Examination of spatial economics, material flow, relative location of facilities, and line balancing. Mr. Andrews, Mr. Davis

242C. Design of Socio-Technical Systems.

Prerequisite: consent of the instructor. Discussion and interpretations field studies leading to the design of socio-technical systems. To be taken concurrently with course 292B. The Socio-Technical Staff

243A. Operations Planning and Control.

Prerequisite: courses 240A and 240B or equivalent. Planning and control models and methods

applicable in continuous, intermittent and one-time systems for both manufacturing and nonmanufacturing situations. Forecasting, the role of inventories, aggregate planning, and scheduling. Mr. Buffa

243B. Inventory Theory.

(Formerly numbered 245B.) Prerequisite: courses 240A-240B or equivalent. It is not necessary to have credit for course 243A before taking course 243B. Single product inventory systems are studied using analytic mathematical models. Demands are assumed to be known only statistically. Mr. Lippman

243C. Production Scheduling.

(Formerly numbered 242.) Prerequisite: courses 240A-240B or equivalent. Determination of production schedules, product mixes, man-machine combinations and sequences of products and operations for continuous and intermittent production systems. Determination of in-process inventories. Use of network scheduling methods. Mr. Buffa

243D. Integrated Operational Systems.

(Formerly numbered 242.) Prerequisite: courses 243A-243B. Design and analysis of models of integrated operational systems. Business games and applications of simulation techniques. Mr. Nelson

244A. Research and Development Policy.

Examination of research and development as a process and as an element of a goal oriented organization. Factors affecting invention and innovation; transfer of technology; organizational and behavioral considerations; coupling of science, technology and organizational goals; assessing and forecasting technological futures. Mr. Goodman

244B. Project Management.

Management of development projects. Decision making environment, economic analysis, network analysis, scheduling and control of development projects. Sequential and aggregate development decisions. 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. The Staff

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 de-

velopments 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

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

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. Mitchell

255. Comparative Industrial Relations.

Prerequisite: course 150 or an elementary knowledge of labor economics. At national and international level historical and contemporary analytical comparison of industrial relations systems within their political, social and economic environments. Included are: the institutions, philosophies and ideologies of labor, management and government and the interaction of their power relationships; the substance and manner of determination of "web of rules" governing the rights and obligations of the parties, and the resolution of conflicts. Mr. Hutchinson

256. Technological Bases of Jobs and Organizations.

Prerequisite: consent of the instructor. Technological determinants of operating systems and jobs; productive system design models; behavioral models underlying operating system design; technology and social system design; operating system variability, control and measurement.

Mr. Davis, Mr. Kleingartner

257. Labor Relations, Law and Industrial Organization.

Given every third year. Prerequisite: course 251, 252, or 253 or consent of the instructor. An examination at an advanced level of the legal, managerial and economic factors relevant to union-management relations. Investigation in depth of specific labor relations problems from the point of view, simultaneously, of law, management and economics.

Mr. Meyers

258. Selected Topics in Industrial Relations.

(Formerly numbered 259.) Prerequisite: open primarily to Ph.D. candidates, but also to others with consent of the instructor. An examination in depth, of problems or issues of current concern in industrial relations. Emphasis on recent contributions to theory, research, and methodology of special interest to advanced doctoral candidates, the academic staff, or distinguished visiting faculty. May be repeated for credit.

The Staff

MARKETING**260A. Marketing Management Theory.**

Prerequisite: B.S. in business administration or courses 401, 407, 120M, and 411 or equivalent, or consent of the instructor. An analysis of marketing management concepts developed from economic, sociological, psychological and organization theory. These concepts will be applied in a comprehensive view of the more difficult problems arising in product, price, channel, and promotion policy and decision-making.

Mr. Dalrymple, Mr. Garrison

261A. Marketing Institutions: Retail.

Prerequisite: course 260A or consent of the instructor. A study of special issues associated with the retail sector of the distribution process. Includes a discussion of the importance and impact of current research studies on retailing efficiency. Individual projects and reports.

Mr. Brown, Mr. Dalrymple

261B. International Marketing Management.

Prerequisite: course 260A, Economics 190 or consent of the instructor. Opportunities, distinctive characteristics, and emerging trends in foreign markets are analyzed. Including an exploration of alternative methods and strategies, organizational planning and control, impact of social, cultural, economic, and political differences, and problems of adapting American marketing concepts and methods.

Mr. Yoshino

262. Price Policies.

Prerequisite: course 260A or consent of the instructor. Consideration of such concepts as product classification, demand, competition, and costs, as they apply to price-making. The theory of price leadership, geographical pricing, price discrimination, price warfare, and leader pricing are also studied in relation to the price-making process. In addition, some attention is given to the price policies of individual firms in which these concepts are applicable.

Mr. Brown

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. Kassarijan

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. Kassarijan

264A. Techniques of Marketing Measurement.

Prerequisite: courses 115A, 160 or consent of the instructor. Methods of measuring and predicting the forces affecting marketing, including quantitative aspects of demand, consumer reaction to product characteristics, effectiveness of advertising and other promotional devices, influence of rewards and organizational systems on sales efficiency, and effectiveness of competitors' strategies.

Mr. Dalrymple, Mr. Kassarijan, Mr. Nakanishi

264B. Mathematical Models in Marketing.

Prerequisite: course 260A, or equivalent or consent of the instructor. A study of the utilization of models for the solution of marketing problems. Discussion will be focused on models concerned with such problems as brand switching, media selection, pricing, competitive strategy, scheduling, allocation problems, and waiting time.

Mr. Jones

265A. Marketing and the Law.

Prerequisite: course 260A, completion of screening examination for doctoral candidates, or consent of the instructor. A detailed study of the legislative enactments (federal, state, or local) which influence the operation of institutions engaged in marketing activities, together with an analysis of the judicial decisions which have interpreted these laws.

Mr. Brown

266A. Product and Channel Policies.

Prerequisite: course 260A. A study of the influence of technique and marketing variables on the adaptation of product design to market requirements and on the selection of channels of distribution.

Mr. Brown

266B. Advertising Policy.

Prerequisite: courses 260A, 263A, or consent of the instructor. A study of the formulation of advertising policies, involving an analysis of cases dealing with: the role of advertising in marketing, the definition of advertising objectives, strategy, appropriation policy, media selection, evaluating advertising results, and the organization of the advertising function.

Mr. Garrison

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 knowledge and thought. Specific subjects discussed to be changed each semester depending on the particular interests of the instructor and students. Individual projects and reports. May be repeated for credit.

The Staff

TRANSPORTATION**270. Physical Distribution Management.**

Prerequisite: Economics 175 or consent of the instructor. Advanced analysis of spatial problems of firms, including transportation problems of physical distribution.

Mr. Quinn

271. Transportation Management.

Prerequisite: Economics 175 or consent of the instructor. Application, through individual research, analysis, and group discussion of management principles and techniques applicable to transportation enterprises.

Mr. Quinn

URBAN LAND ECONOMICS**275. The Urban Environment and Business.**

Prerequisite: consent of the instructor. Extent of urbanization in the U. S., forces causing urbanization, impact of urbanization on land uses, patterns of residential, industrial, and commercial development, management impact on city growth and structure impact on management, government and urbanization.

Mr. Burns, Mr. Case, Mr. Ratajczak

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. Case, Mr. Granfield, Mr. Rabin

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. Rabin

277. Real Estate Finance.

(Numbered 277A-277B in 1966-67.) Prerequisite: course 175 or consent of the instructor. The market for real estate funds as part of the capital market. Instruments of equity and mortgage investment. The major mortgage lenders. Competitive market structure. Government policies. Investment analysis for equity and loan investments.

Mr. Case, Mr. Granfield, Mr. Ricks

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, Mr. Rabin

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

279A. Comparative and International Urban Land Studies.

Prerequisite: course 175 or Economics 120 or consent of the instructor. Analysis of private and public decision making shaping urban development and redevelopment in selected countries. Emphasis on the economic, social and institutional factors which determine urban growth, structure, and patterns on the land in developed and underdeveloped nations.

Mr. Burns, Mr. Case, Mr. Mittelbach

279B. Studies in Urban Land Economics.

Prerequisite: post-screening examination status in urban land economics. An examination in depth of problems or issues of current concern in urban land economics. Emphasis on recent contributions to theory, research, and methodology of special interest to advanced doctoral candidates, the academic staff, or distinguished visiting faculty. May be repeated for credit.

The Staff

279X-279Y-279Z. Urban Research and Development—Compton. (½ course each)

Prerequisite: consent of the instructor and graduate status. Exploration of urbania and its problem; prospects and prescriptions for the delivery of a quality life. The exploration will be both macroscopic and microscopic as related to the problems of Compton, California

The Interdisciplinary Staff

BEHAVIORAL SCIENCE**280A-280B-280C. Foundations in Managerial Behavioral Science. (2 courses each)**

Prerequisite: successful completion of Ph.D. screening examinations. Credit and grade given upon completion of the full sequence. An integrated and interdisciplinary study of behavioral science for management. Content areas include the person, dyad, group, intergroup, organization and society. Processes of concept formation, change, and research are examined for these human units and their interrelationships.

The Staff

280D. Behavioral Science Research Seminar.

Prerequisite: enrollment in the Behavioral Science Ph.D. program and completion of the 280A-280B-280C sequence. Survey of behavioral science research methodologies. Seminar reports and class critique of course members' dissertation research and methodology. May be repeated for credit.

Mrs. Lasko

261. Behavioral Foundations of Socio-Technical Systems.

(Formerly numbered 281A.) Prerequisite: consent of the instructor. Study of task groups, intergroup relations, and organizations in context of socio-technical systems. Structure and dynamics of these social units in relation to their physical/technical environment. Emphasis on the design of technologies and formal structures to enhance the emergence of viable social structures. Consideration of the impact of technological change on social relations.

Mr. Vaill

262A. 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.

Mr. Peters

282B. Leadership Training: Theory and Practice.

(Formerly numbered 256.) Problems in the application of scientific knowledge for the development of effective leaders. Comparative analysis of the research findings, theories, and practices of different approaches to leadership training. Critical analysis of the role of the training specialist.

Mr. Clark, Mr. Peters

283. Organizational Change Processes.

(Formerly numbered 206A-206B.) Prerequisite: courses 180, 404 or consent of the instructor. Analysis of research, theory and practice relevant to behavioral change processes at many social levels to illuminate these processes in an organizational setting. Concepts and methods will be examined and tested by laboratory and field experiences.

Mr. Goodman, Mr. Tannenbaum

285. Advanced Behavioral Science.

(Formerly numbered 207.) Prerequisite: consent of the instructor. Focuses on advanced theory, integration and application of knowledge concerning individual, group, organizational, subcultural and cultural behavior. The student explores in depth selected theoretic positions, extending and consolidating behavioral science knowledge and its application to specialized business administration fields.

Mr. Massarik

286. Field Studies in Socio-Technical Systems.

Prerequisite: consent of the instructor. Basic concepts, principles and methodologies of socio-technical analysis applied to operational problems of organizations. Emphasis will be on the conduct of empirical studies.

The Socio-Technical Staff

288. Special Topics in Behavioral Science.

Prerequisite: open primarily to Ph.D. candidates, but also to others with consent of the instructor. An examination, in depth, of problems or issues of current concern in behavioral science. Emphasis on recent contributions to theory, research and methodology of special interest to advanced doctoral candidates, the academic staff, or distinguished visiting faculty. May be repeated for credit.

The Staff

MANAGEMENT THEORY**290. Organization Theory.**

Prerequisite: course 423 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. Schollhammer, Mr. Trist

291. Planning and Control.

Prerequisite: course 423 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

292A. Environmental Settings of Socio-Technical Systems.

Prerequisite: consent of the instructor. Complexity, interdependence and uncertainty of organizational environments. Analysis of environments along socio-cultural, political and economic dimensions, their interrelationships and relations to technology. Organizational responses to various environments.

Mr. Trist

292B. Models of Organizational Behavior.

Prerequisite: consent of the instructor. Theoretical frameworks for developing explanatory and predictive models of complex organizations. Exercises in constructing formal models, usually in mathematical or stochastic form, and where appropriate, using materials from field studies to develop empirical tests. These models may be used to discover implications for the systems changes recommended in the socio-technical field study.

Mr. McWhinney

293. The Philosophy of Enterprise Control.

Prerequisite: courses 190A-190B or 409 or consent of the instructor. A study of the business enterprise as a social institution, with emphasis on the changing purposes of social action. Adjustments of the firm to changes in the social environment. Ethical problems in management. Social responsibilities of the business manager.

Mr. 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. Carrabino, Mr. Mason

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. International Business Management.

Prerequisite: course 205A or consent of the instructor. Identification, analysis, and resolution of managerial issues of policy and action within the context of an international corporation, with emphasis on problems of adaptation to different sociological, cultural, legal, political, and economic environmental characteristics.

Mr. R. H. Mason, Mr. Schollhammer, Mr. Yoshino

297A. Comparative and International Management.

Prerequisite: courses 190A-190B or 409. A comparative study of the practice of management in selected foreign countries, as affected by their social environments and the development of management theory.

Mr. Richman, Mr. Schollhammer, Mr. Yoshino

297B. International Business Policy.

Prerequisite: course 205A and consent of the instructor. Analysis of key managerial problems encountered in a multinational corporation. Concepts and theories acquired in other courses in International Business and Comparative Management will be applied to a series of complex cases and simulations of international business operations.

Mr. Schollhammer, Mr. Richman, Mr. Yoshino

298A. Special Topics in Management Theory.

Prerequisite: open primarily to Ph.D. candidates or with consent of the instructor. An examination in depth of problems or issues of current concern in management theory. Emphasis on recent contribution to theory, research, and methodology. Of special interest to advanced doctoral candidates, the academic staff, or distinguished visiting faculty. May be repeated for credit.

The Staff

298B. Special Topics in International and Comparative Management.

Prerequisite: open primarily to Ph.D. candidates or with consent of the instructor. An examination in depth of problems or issues of current concern in international and comparative management. Emphasis on recent contributions to theory, research, and methodology. Of special interest to advanced doctoral candidates, the academic staff, or distinguished visiting faculty. May be repeated for credit.

The Staff

298C. Special Topics in Socio-Technical Systems.

Prerequisite: open primarily to Ph.D. candidates or with consent of the instructor. An examination in depth of problems or issues of current concern in socio-technical systems. Emphasis on recent contributions to theory, research, and methodology. Of special interest to advanced doctoral candidates, the academic staff, or distinguished visiting faculty. May be repeated for credit.

The Staff

298D. Special Topics in Business Administration.

Prerequisite: open primarily to Ph.D. candidates or with consent of the instructor. An examination in depth of problems or issues of current concern in Business Administration. Emphasis on recent contributions to theory, research, and methodology. Of special interest to advanced doctoral candidates, the academic staff, or distinguished visiting faculty. May be repeated for credit.

The Staff

INTERNATIONAL AND COMPARATIVE MANAGEMENT STUDIES

See courses 205A, 205B, 205C, 226, 233A, 255, 261B, 296, 297A, 297B, 298B.

SOCIO-TECHNICAL SYSTEMS STUDIES

See courses 240C, 240E, 242C, 256, 281, 283, 286, 292A, 292B, 298C.

MASTER OF BUSINESS ADMINISTRATION CURRICULUM**401. Business Economics.**

(Formerly numbered 100G.) Analysis of decision-making in the firm, competitive policies and market structure, revenue and cost behavior.

The Staff

402. Mathematics for Management.

(Formerly numbered 110G.) Fundamental mathematics for business, including topics from matrix algebra, probability, and calculus; with applications to model building and decision-making in business firms.

The Staff

403. Survey of Financial and Managerial Accounting. (1½ courses)

(Formerly numbered 120G.) An introduction to fundamental systems and procedures in financial and managerial accounting, with an emphasis on income measurement, marginal analysis, standard and direct costing. The laboratory includes computer programming and case problems in managerial accounting.

The Staff

404. Behavioral Science Foundations.

(Formerly numbered 180G.) Fundamental concepts in behavioral science; their integration and ap-

plication to management. Theoretical and practical aspects of organization, group, cultural and individual behavior. The managerial environment as a field for systematic behavioral science investigation.

The Staff

405. 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 non-union firms.

The Staff

422. Business Economic Policies.

Prerequisite: Completion of first year of MBA Curriculum. Major government policies affecting the economic environment of the business firm. Monetary and fiscal policies to achieve economic stability and growth. Public policies toward competition and its regulation. Social and economic rationale for regulation. Measuring competition and monopoly.

The Staff

423. Advanced Management Theory.

Prerequisite: Completion of first year of MBA Curriculum. Advanced study of management theory in formally organized enterprise through significant readings; discussing advanced approaches and techniques developed from applying theory; using theory to integrate methods and findings of quantitative and behavioral sciences; lectures on sophisticated application of management theory in practice.

The Staff

424. Business and Society.

Prerequisite: Completion of first year of MBA Curriculum. Study of the broad evolving interrelationships between business and society, the changing role of the businessman in his environment, the ethical problems and social responsibilities of business managers, and the business enterprise as a social institution.

The Staff

425A-425B. Business Policy.

Prerequisite: Completion of first year of MBA Curriculum. Case course dealing with basic policy decisions, executive action, and administrative behavior involved in managing total enterprises. The student is confronted with single company situations to develop ideas essential to overall managerial direction.

The Staff

Professional Courses

450. Field Work in Behavioral Science Management Development.

Prerequisite: course 282B and consent of the instructor. Supervised practical work in all phases of

laboratory education for management development, such as sensitivity training laboratories, creativity and personal growth laboratories, simulated managerial behavior laboratories, etc.

The Staff

451. Field Work in Organizational Development.

Prerequisites: courses 282B, 283 and/or consent of the instructor. Supervised practical field work in organizational development consultation in interpersonal, group, intergroup, total organization and interorganizational settings.

The Staff

Individual Study and Research

596A-596N. Research in Business Administration.

(¼ to 2 courses)

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

The Staff

597. Preparation for Examinations in Business Administration. (1 or 2 courses)

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

The Staff

598. Thesis Research in Business Administration.

(1 or 2 courses)

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

The Staff

599. Dissertation Research in Business Administration. (1 or 2 courses)

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

The Staff

■ BUSINESS EDUCATION

(Department Office, 244 Moore Hall)

Samuel J. Wanous, Ph.D., *Professor of Education.*Lawrence W. Erickson, Ed.D., *Associate Professor of Education.*Marilyn Kourilsky, Ph.D., *Assistant 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 re-

quirement. A fifth year is necessary for the completion of the credential requirements.

Lower Division Requirements. (1) Language: five courses in one or two languages (or placement examination); (2) Mathematics: Mathematics 1 (if less than three years of high school mathematics); (3) English and Speech: English 1 (or proficiency examination—in addition to Subject A examination) and Speech 1; (4) American History and Institutions: Economics 10 or approved alternative; (5) Physical sciences: Physical Sciences 1, 2, Mathematics 2B or 3A or 11A; (6) Life Sciences: Biology 2; one course from

Anthropology 11, Bacteriology 6, Biology 21, Botany 10, Geography 5, Geology 115, or Psychology 115; Psychology 10, 12; Humanities and Electives: three courses from Humanities 1A, 1B, 1C-1G or English 10A, 10B, 10C or English 100, 101, 102, 103, 104, 110, 113, 115, 116, 117. One additional course from art, history, literature, music, or philosophy.

Lower Division Requirements for Major. Economics 1, 2, Business Administration 1A, 1B.

Upper Division Requirements. (1) Economics 101A, 101B, 102, 160; three courses from Economics 107, 130, 150, 170, 180, 190; (2) Business Administration 108, 109, 113A; 115A or Economics 140; Business Administration 120, 130; three courses from Business Administration 113B, 122, 135, 160, 180, 190A.

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 or 108, 112, 130, 137A; 137B or 137C; (2) Fifth Year Courses: two courses in 200 or 400 series in major; student teaching: Education 330A, 330B, 330C; or internship.

Graduate Division

Students in business education may earn the following graduate degrees: Master of

Business Administration or Doctor of Philosophy in the School of Business Administration; Master of Education, Master of Arts, Doctor of Education or Doctor of Philosophy in the Graduate School of Education. For further information see the ANNOUNCEMENT OF THE GRADUATE SCHOOL OF BUSINESS ADMINISTRATION, THE ANNOUNCEMENT OF THE GRADUATE SCHOOL OF EDUCATION, and the announcement of the Graduate Division, GRADUATE STUDY AT UCLA. †

Requirements for Teaching Credentials

Candidates for the teaching credentials with a major or minor in business education should consult the UCLA ANNOUNCEMENT OF THE GRADUATE SCHOOL OF EDUCATION. †

Upper Division Course

199. Special Studies. (¼ to 1 course)

Prerequisite: senior standing and consent of the instructor. The Staff

Professional Course

410. Case Studies in Office Management.

Mr. Erickson

Individual Study and Research

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.*

Mostafa A. El-Sayed, Ph.D., *Professor of Chemistry.*

Paul S. Farrington, Ph.D., *Professor of Chemistry.*

Clifford S. Garner, Ph.D., *Professor of Chemistry.*

*Theodore A. Geissman, Ph.D., *Professor of Chemistry.*

E. Russell Hardwick, Ph.D., *Professor of Chemistry.*

M. Frederick Hawthorne, Ph.D., *Professor of Chemistry.*

*Thomas L. Jacobs, Ph.D., *Professor of Chemistry.*

† For further information, see Professor Erickson or Professor Wanous.

* In residence fall quarter only, 1969-1970.

* Absent on leave, fall quarter, 1969-1970.

Daniel Kivelson, Ph.D., *Professor of Chemistry.*

**Willard F. Libby, Ph.D., D.Sc., *Professor of Chemistry.*

James D. McCullough, Ph.D., *Professor of Chemistry.*

William G. McMillan, Jr., Ph.D., *Professor of Chemistry.*

Robert L. Pecsok, Ph.D., *Professor of Chemistry (Vice-Chairman of the Department).*

Howard Reiss, Ph.D., *Professor of Chemistry.*

Verne N. Schumaker, Ph.D., *Professor of Molecular Biology in Chemistry.*

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

Roberts A. Smith, Ph.D., *Professor of Chemistry.*

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

Charles A. West, Ph.D., *Professor of Chemistry.*

Saul Winstein, Ph.D., D.Sc., *Professor of Chemistry.*

Francis E. Blacet, Ph.D., D.Sc., *Emeritus Professor of Chemistry.*

Max S. Dunn, Ph.D., LL.D., *Emeritus Professor of Chemistry and Biological Chemistry.*

G. Ross Robertson, Ph.D., *Emeritus Professor of Chemistry.*

William G. Young, Ph.D., D.Sc., *Emeritus Professor of Chemistry.*

Mario E. Baur, Ph.D., *Associate Professor of Chemistry.*

*Kyle D. Bayes, Ph.D., *Associate Professor of Chemistry.*

Christopher S. Foote, Ph.D., *Associate Professor of Chemistry.*

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

**John T. Wasson, Ph.D., *Associate Professor of Chemistry.*

Alan L. Balch, Ph.D., *Assistant Professor of Chemistry.*

John Birely, Ph.D., *Assistant Professor of Chemistry.*

Craig W. Deutsche, Ph.D., *Assistant Professor of Chemistry.*

David S. Eisenberg, 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.*

Andrew U. Hazi, 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, Ph.D., *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.

Preliminary Examination in Chemistry

Students who wish to enroll in course 1A or in course 1AH must take the Preliminary Examination in Chemistry during the enroll-

ment period for the quarter in which they intend to enroll in these courses. Enrollment usually will be limited to students who have passed the examination. During 1969-1970, the Preliminary Examination in Chemistry is scheduled on June 19, 1969 for the Summer Quarter; September 29, 1969 for the Fall Quarter; January 5, 1970 for the Winter Quarter; and April 1, 1970 for the Spring Quarter. The time and location of the examination will be posted on the Chemistry 1A Bulletin Board located near Room 1054 in the Chemistry Building.

† Absent on leave, 1969-1970.

* Absent on leave, winter quarter, 1970.

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

Preparation for the Major

Required: Chemistry 1A, 1B, 1C, 4A, 4B, 4C, 6A, 6B, 6C; Physics 7A, 7B, 7C, 7D; Mathematics 11A, 11B, 11C, and either 12A and 12B or 13A and 13B; English I and one other English course involving composition; 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 110A, 110B, 113, 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 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, 116, 123A, 123B, 136, 143A, 153, 173, and 175.

Biochemistry. Courses 153, 154, and others selected from 123A, 136, 143A, and certain courses in microbiology, genetics, and other life sciences.

Inorganic Chemistry. Courses 114B, 173, 175, and others selected from 116, 123A, 123B, 143A, 143B, 144, and 184.

Organic Chemistry. 143A, 143B, 136 or 144, and others selected from 116, 123A, 153, 173, and 175.

Physical Chemistry. 114B, 115A, 115B, 123A, 123B, and others selected from 143A, 153, 173, 175, and certain advanced courses in physics and mathematics.

Chemistry majors are urged to seek help and advice in the Chemistry Undergraduate Adviser's Office, Room 1037, Chemistry Building.

Transfer Students

An entering transfer student who has satisfactorily completed a year course in general college chemistry should enter courses 4A

and 6A. However, if he has not completed the equivalent of one quarter of quantitative analysis, which is a prerequisite for course 6B, he must also enroll in course 5. If he has completed one or more semesters of quantitative analysis and one or two semesters of organic chemistry, he should enter courses 4C and 6C.

An entering transfer student who has satisfactorily completed two years of chemistry courses, including an introductory course in organic chemistry, but has not had instruction in spectroscopic methods of organic chemistry at the level of courses 6A and 6B, should take course 131. For such students, course 131 is required for admission to courses 133A, 133D, 136, and 144, although it may be taken concurrently with course 133A or 133D. 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 139. The Department of Chemistry makes use of the Thesis Plan. The General University requirements for the Ph.D. degree are given on page 143. 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 $1\frac{1}{2}$ courses of credit will be allowed.

Physical Sciences 2. Chemistry.

See Physical Sciences, page 410

1A. General Chemistry.

Lecture and quiz, four hours; laboratory, four hours. Prerequisite: three years of high school mathematics; high school chemistry and physics are strongly recommended. All students who intend to take this course must take the Preliminary Examination in Chemistry which will normally be given

within about 10 days before instruction begins. Enrollment usually will be limited to those students who have passed that examination. Students appearing for the examination must be prepared to identify themselves. This course is required of all majors in chemistry and most other fields of science or technology. Knowledge of calculus will be useful for this course, but is not required. Lecture: stoichiometry and atomic theory; atomic structure and periodic table; molecular structure and chemical properties; kinetic molecular theory of gases and the gas laws; solutions and colligative properties; volumetric analysis. Laboratory: use of the balance; stoichiometry; molecular and equivalent weights; use of volumetric equipment; precise gravimetric analysis.
The Staff in Freshman Chemistry

1AH. General Chemistry—Honors Sequence.

Lecture and quiz, four hours; laboratory, four hours. Prerequisite: An outstanding high school record in either chemistry or physics, and in at least three years of high school mathematics. Mathematics 11A should be taken concurrently. All students who intend to take this course must take the Preliminary Examination in Chemistry which will normally be given within about 10 days before instruction begins. Enrollment in this course will be open only to students who have passed that examination. An honors course parallel to course 1A. Mr. Kivelson

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: solutions; chemical and phase equilibria; thermochemistry and thermodynamics. Laboratory: precise volumetric analysis; thermochemistry; solution equilibria.
The Staff in Freshman Chemistry

1BH. General Chemistry—Honors Sequence.

Lecture and quiz, four hours; laboratory, four hours. Prerequisite: course 1AH with the grade C or higher, or course 1A and consent of the instructor. An honors course parallel to course 1B. Mr. Kivelson

1C. General Chemistry.

Lecture and quiz, four hours; laboratory, four hours. Prerequisite: course 1B or 1BH with the grade C or higher, or consent of the instructor. Lecture: redox systems; electrochemistry; chemical kinetics; nuclear chemistry; systematic descriptive chemistry. Laboratory: qualitative analysis; rate experiments; quantitative electrochemical determinations.
The Staff in Freshman Chemistry

1CH. General Chemistry—Honors Sequence.

Lecture and quiz, four hours; laboratory, four hours. Prerequisite: course 1BH with the grade C or higher, or course 1B and consent of the instructor. An honors course parallel to course 1C. Mr. Libby

4A. Elementary Organic and Biochemistry.

(½ course)

Lecture and quiz, two hours. Prerequisite: course 1C with the grade C or higher, or consent of the instructor. Students enrolled in course 4A must be enrolled concurrently in course 6A unless they have passed course 6A previously or have had another course beyond the freshman level which involved laboratory work in Organic Chemistry. All transfer

students (from junior colleges and four-year colleges) and others who wish to take course 4A without 6A should discuss this with the instructor in course 4A, but this need not be done prior to registration. Organic structure; the functional and hydrocarbon groups; compounds with saturated functional groups; compounds with unsaturated functional groups; reactions. Mr. Evans, Mr. Geissman, Mr. Lightner

4B. Elementary Organic and Biochemistry.

(½ course)

Lecture and quiz, two hours. Prerequisite: courses 4A and 6A with grades C or higher, or consent of the instructor. Students enrolled in course 4B must be enrolled concurrently in course 6B unless they have passed course 6B previously or have had an equivalent course which involved laboratory work in Organic Chemistry. Transfer students and others who have not taken course 6A at UCLA and wish to take course 4B without course 6B should discuss this with the instructor in course 4B, but this need not be done prior to registration. Stereochemistry; structure and reactivity; substitution, addition, and elimination reactions; synthesis; special topics. Mr. Evans, Mr. Geissman, Mr. Jacobs

4C. Elementary Organic and Biochemistry.

(½ course)

Lecture and quiz, two hours. Prerequisite: courses 4B and 6B with grades C or higher, or consent of the instructor. Students enrolled in course 4C must be enrolled concurrently in course 6C unless they have passed course 6C previously or have had an equivalent course which involved laboratory work in Biochemistry. Transfer students and others who wish to take course 4C without 6C should discuss this with the instructor of course 4C, but this need not be done prior to registration. Enzymes, amino acids, peptides and proteins; nucleic acids and nucleotides; RNA, DNA, and genetic code; metabolism; glycolysis and citric acid cycle; carbon transformation. Mr. Fahrney, Mr. Smith

5. Quantitative Analysis. (½ course)

Lecture, two hours; laboratory, four hours. Prerequisite: one year of college chemistry involving laboratory work. This course is intended for transfer students and others who have not had at least 40 hours of laboratory instruction in quantitative analysis (this is now included in courses 1B and 1C at UCLA); for such students course 5 is required for admission to course 6B. Course 5 is not open to students who have completed courses 1A, 1B, and 1C at UCLA with grades C or higher. Principles and techniques of gravimetric and volumetric analysis. Mr. McCullough, Mr. Sudmeier

6A. Analytical Methods of Organic and Biochemistry. (½ course)

Lecture and quiz, two hours; laboratory, four hours. Prerequisite: course 1C with the grade C or higher, or consent of the instructor. Students enrolled in course 6A must be enrolled concurrently in course 4A unless they have passed course 4A previously or have had an equivalent course in Organic Chemistry beyond freshman level. Transfer students and others who wish to take course 6A without 4A should discuss this with the instructor of course 6A, but this need not be done prior to registration. Students are warned that enrollment in course 6A is often limited in the Fall Quarter by the laboratory spaces available; the Winter and Spring Quarters have been far less crowded. Where

possible, students should plan to take courses 4A and 6A in these less crowded quarters. Phase equilibria; chromatography; spectra; structure determinations.
Mr. Lightner

6B. Analytical Methods of Organic and Biochemistry. (½ course)

Lecture and quiz, two hours; laboratory, four hours. Prerequisite: course 1C or 5 taken at UCLA or 40 hours of laboratory instruction in quantitative analysis; courses 4A and 6A with grades C or higher, or consent of the instructor. Students enrolled in course 6B must be enrolled concurrently in course 4B unless they have passed course 4B previously or have had an equivalent course in Organic Chemistry. Transfer students and others who wish to take course 6B without 4B should discuss this with the instructor of course 6B, but this need not be done prior to registration. Polarimetry; mass spectrometry; isotopic labeling; electrochemistry; acidity; chelates; reaction kinetics.

Mr. Farrington, Mr. Pecsok, Mr. Sudmeier

6C. Analytical Methods of Organic and Biochemistry. (½ course)

Lecture and quiz, two hours; laboratory, four hours. Prerequisite: courses 4B and 6B with grades C or higher, or consent of the instructor. Students enrolled in course 6C must be enrolled concurrently in course 4C unless they have passed course 4C previously or have had an equivalent course in Biochemistry. Transfer students and others who wish to take course 6C without 4C should discuss this with the instructor of course 6C, but this need not be done prior to registration. Enzyme kinetics; radioisotope applications; macromolecules; ion exchange; viscosity.

Mr. Atkinson, Mr. Fahrney, Mr. Konrad

Upper Division Courses

110A. Physical Chemistry: Chemical Thermodynamics.

(Formerly numbered 113B.) Lecture and quiz, four hours. Prerequisite: courses 4C and 6C, Physics 7C, Mathematics 12B or 13B or, for life science majors, Mathematics 3C. Laws of thermodynamics; free energy and entropy; kinetic theory of gases; Boltzmann factor; statistical concept of entropy; heat capacities; changes of state.

The Staff in Physical Chemistry

110AG. Physical Chemistry: Chemical Thermodynamics.

(Formerly numbered 113E.) Lecture and quiz, four hours. Open only by consent of the Chemistry Graduate Adviser to graduate students who have not taken course 110A in this institution.

The Staff in Physical Chemistry

110B. Physical Chemistry: Chemical Equilibrium, Electrochemistry, and Kinetics.

(Formerly numbered 113C.) Lecture and quiz, four hours. Prerequisite: course 110A. Chemical and phase equilibria; solutions; colligative properties; electrochemistry; chemical kinetics.

The Staff in Physical Chemistry

110BG. Physical Chemistry: Chemical Equilibrium, Electrochemistry, and Kinetics.

(Formerly numbered 113F.) Lecture and quiz: four hours. Open only by consent of the Chemistry

Graduate Adviser to graduate students who have not taken course 110B in this institution.

The Staff in Physical Chemistry

113. Physical Chemistry: Introduction to Quantum Chemistry.

(Formerly numbered 113A.) Lecture and quiz, four hours. Prerequisite: courses 4C and 6C, Mathematics 12B or 13B, Physics 7D. An introduction to the principles and applications of quantum chemistry; atomic structure and spectra; harmonic oscillator; rigid rotor; molecular spectra.

Mr. Deutsche, Mr. El-Sayed

113G. Physical Chemistry: Introduction to Quantum Chemistry.

(Formerly numbered 113D.) Lecture and quiz, four hours. Open only by consent of the Chemistry Graduate Adviser to graduate students who have not taken course 113 at this institution.

Mr. Deutsche, Mr. El-Sayed

114A. Physical Chemistry Laboratory.

Lecture, two hours; laboratory, eight hours. Prerequisite: courses 110A, 110B, and 113 or consent of the instructor. Lecture: techniques of physical measurement, error analysis and statistics, special topics. Laboratory: spectroscopy, thermodynamic measurements, and chemical dynamics.

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.

Mr. Birely

115A-115B. Quantum Chemistry.

Lecture, four hours. Prerequisite: course 113; Mathematics 12C or 13C; Mathematics 130A or 130B or Physics 131, which may be taken concurrently with course 115A. Physics 105A is also recommended. Course 115A or Physics 115B is prerequisite for course 115B. Postulates and systematic development of non-relativistic quantum mechanics; expansion theorems; wells; oscillators; angular momentum; hydrogen atom; matrix techniques; approximation methods; time dependent problems; atoms; spectroscopy; magnetic resonance; chemical bonding. Students entering course 115A will normally be expected to take course 115B the following quarter. These two courses are designed for chemistry students, primarily physical chemistry students, with a serious interest in quantum chemistry.

Mr. Hazi

116. Quantum Theory of Chemical Structure.

Lecture, four hours. Prerequisite: course 113. Brief review of fundamental postulates. Expansions and approximation techniques; atoms; molecular orbital and valence bond approaches; ligand field theory, molecular spectroscopy. A terminal course which emphasizes principles, limitations, and chemical applications without a detailed discussion of mathematical and quantum mechanical techniques. Not open to students who have received credit for course 115B.

Mr. El-Sayed

123A. Classical and Statistical Thermodynamics.

Lecture and quiz, four hours. Prerequisite: course 110B. Fundamentals of classical and statistical ther-

modynamics; 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. 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. Scott

131. Spectroscopic Methods of Organic Chemistry. (½ course)

Lecture, two hours. Prerequisite: a course in elementary organic chemistry equivalent to courses 4A and 4B. Course 131 is not open to students who have completed course 6B at UCLA. This course is intended for transfer and graduate students who have not had instruction in spectroscopic methods at the level of courses 6A and 6B. For such students, this course is required for admission to courses 133A, 133D, 136, and 144, although it may be taken concurrently with courses 133A and 133D. Interpretation of infrared, ultraviolet, nuclear magnetic resonance and mass spectra in organic chemistry; introduction to other spectroscopic methods.

133A. Intermediate Organic Chemistry.

Lecture and quiz, three hours; laboratory, four hours. Prerequisite: courses 6A and 6B or course 131 (which may be taken concurrently) or equivalent instruction in spectroscopic methods of organic chemistry; courses 4C and 6C. Lecture: organic reactions; synthesis; classes of compounds. Laboratory: methods of organic reactions and synthesis; techniques of product isolation. Mr. Foote

133B. Intermediate Organic Chemistry.

Lecture, three hours; laboratory, eight hours. Prerequisite: course 133A. Lecture: organic reactions and synthesis. Laboratory: methods of organic reactions, synthesis and isolation. Mr. Foote

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. Foote

133E. 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 133B in this institution. Mr. Foote

136. Qualitative Organic Analysis.

Lecture, two hours; laboratory, eight hours. Prerequisite: courses 6A and 6B or course 131 taken at UCLA or equivalent instruction in spectroscopic methods of organic chemistry; course 133B. Identification of unknown organic compounds; separations of mixtures; derivatives; instrumental methods; micro techniques. Mr. Foote

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. Cram

143B. Advanced Organic Chemistry.

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

144. Organic Synthesis.

Lecture; two hours; laboratory, eight hours. Prerequisite: courses 6A and 6B or course 131 taken at UCLA or equivalent instruction in spectroscopic methods of organic chemistry; course 133B. Methods of organic synthesis.

153. Biochemistry.

Lecture, four hours. Prerequisite: courses 4C and 6C; 133A recommended. Survey of biochemistry, with emphasis on chemical properties associated with biological function. Mr. Atkinson, Mr. West

154. Biochemical Methods.

Lecture and quiz, two hours; laboratory, eight hours. Prerequisite: courses 133B, 153, or consent of the instructor. Applications of biochemical procedures to metabolic reactions; properties of living systems; enzymes; proteins; nucleic acids and other tissue constituents. Mr. Konrad

173. Structural Inorganic Chemistry.

Lecture and quiz, three hours. Prerequisite: courses 113, 110A (110A 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. Hawthorne

175. Inorganic Reaction Mechanisms.

Lecture and quiz, three hours. Prerequisite: courses 110A, 110B and 113 or consent of the instructor. Survey of inorganic reactions; mechanistic principles; electronic structure of metal ions; transition-metal coordination chemistry; inner- and outer-sphere and chelate complexes; substitution, isomerization and racemization reactions; stereochemistry; oxidation-reduction, free-radical, polymerization and photochemical reactions of inorganic species. Mr. Balch

184. Chemical Instrumentation.

Lecture and quiz, two hours; laboratory, eight hours. Prerequisite: course 110A. 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. 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. Mr. Deutsche

215. Molecular Spectra, Diffraction and Structure.

Lecture and quiz, four hours. Prerequisite: course 115B, Physics 131. Selected topics from electronic spectra of atoms and molecules; vibrational, rotational and Raman spectra; magnetic resonance spectra; x-ray, neutron and electron diffraction; coherence effects. Mr. Trueblood

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.

226A-226F. Physical-Inorganic Chemistry Seminar. (½ course each)

Seminars will be presented by staff, outside speakers, postdoctoral fellows and each graduate student enrolled in this course. Each student carrying out research in physical or inorganic chemistry enrolls in this course, usually during his second year of graduate study.

The Staff in Physical and Inorganic Chemistry

231A-231F. Advanced Topics in Organic Chemistry. (½ course each)

Prerequisite: consent of the instructor. Each course will encompass a recognized specialty in organic chemistry, and will be taught by a staff member whose research interests embrace that specialty.

The Staff in Organic Chemistry

233A. Physical Organic Chemistry. (½ course)

Lecture, two hours. Prerequisite: course 143A. Kinetics and mechanisms of organic reactions; linear free energy relationships; correlations between structure, equilibria and reactivity. Mr. 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

236. Organic Chemistry Student Seminar (½ course)

Each student enrolled presents at least one seminar on a timely and significant topic outside of his immediate research specialty. Each student carrying out research in organic chemistry enrolls in this course, usually in his second year of graduate work.

The Staff in Organic Chemistry

247A-247F. Physical Organic Seminar. (½ course each)

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

Mr. Anet, Mr. Cram, Mr. Winstein

248A-248F. Natural Products Seminar. (½ course each)

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

Mr. Evans, Mr. Geissman

253. Proteins and Nucleic Acids.

(Same as Biological Chemistry 253.) Lecture and quiz, four hours. Prerequisite: courses 110A, 110B, 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.

The Staff in Biochemistry and Biological Chemistry

254. Advanced Biochemical Methods.

Lecture and quiz, two hours; laboratory, eight hours. Prerequisite: course 153 or consent of the instructor. Theoretical and practical basis of metabolic, chromatographic, kinetic, electrophoretic, ultracentrifugal, isotopic and other techniques as applied to biochemical systems.

Mr. Schumaker

255. Biological Catalysis.

(Same as Biological Chemistry 255.) Lecture and quiz, four hours. Prerequisite: courses 110A, 110B, 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

257. Physical Chemistry of Biological Macromolecules. (½ course)

(Same as Biological Chemistry 257.) Lecture, two hours. Prerequisite: Chemistry 110A or consent of the instructor. Theory of hydrodynamic, thermodynamic, optical and x-ray techniques used to study the structure and function of biological macromolecules.

Mr. Schumaker

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

* Not to be given, 1969-1970.

263. Cellular Metabolism.

(Same as Biological Chemistry 263.) Lecture, three hours. Prerequisite: course 110A or equivalent; course 153 or Biological Chemistry 101B. Patterns of biological degradation and synthesis; metabolic interrelationships and control; energetics of metabolism. Mr. Atkinson, Mr. West and the Staff in Biological Chemistry

267. Nucleic Acid and Protein Biosynthesis.

(½ course)

(Same as Biological Chemistry 267.) Lecture, two hours. Prerequisite: course 110A or equivalent; course 153 or Biological Chemistry 101B. Mechanisms in nucleic acid and protein biosynthesis; molecular genetics. The Staff in Biochemistry

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 speciality in inorganic chemistry, and will be taught by a staff member whose research interests embrace that speciality. 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

281A-281F. Advanced Topics in Analytical Chemistry. (½ course each)

Lecture, two hours. Prerequisite: consent of the instructor. Each course will encompass a recognized speciality in analytical chemistry, and will be taught by a staff member whose research interests embrace that speciality. The Staff in Analytical Chemistry

Individual Study and Research

596A-596ZZ. Directed Individual Study or Research. (½ to 2 courses)

To be arranged with the member of the faculty who will direct the study or research. The member of the faculty directing the study or research will be identified by the same two-letter code used to iden-

tify his 599 research course. Prerequisite: consent of the Chemistry Graduate Adviser. With the consent of the Chemistry Graduate Adviser, courses of directed individual study, but not research courses may be used to fulfill the departmental requirement for the Master's degree of three courses selected from courses 115A, 115B, 123A, 123B, 143A, 143B, or any graduate level course. Graded on a satisfactory/unsatisfactory basis. The Staff

597. Preparation for the Doctoral Qualifying Examination or the Master's Comprehensive Examination. (½ to 2 courses)

Prerequisite: consent of the Chemistry Graduate Adviser. Course 597 may not be used to fulfill any of the course requirements for the Master's or Doctor's degrees. Graded on a satisfactory/unsatisfactory basis. The Chemistry Graduate Adviser

598A-598ZZ. Research for and Preparation of the Master's Thesis. (½ to 4 courses)

Each member of the faculty supervises research of master's students and holds research group meetings, seminars, and discussions with the students that take his master's research course which is identified by the same two-letter code used to identify his 599 research course. Research courses in the 596A-ZZ, 598A-ZZ, and 599A-ZZ series may be used to fulfill not more than six of the nine quarter courses required for the M.S. Degree. The Staff

599A-599ZZ. Research for and Preparation of the Doctoral Dissertation. (½ to 4 courses)

Each member of the faculty supervises research of doctoral students and holds research group meetings, seminars, and discussion with the students that take his doctoral research course. Each faculty member has his own doctoral research course identified by a two-letter code as follows:

F. A. K. Anet, 599FA; D. E. Atkinson, 599DA; A. L. Balch, 599AB; M. E. Baur, 599MB; K. D. Bayes, 599KB; J. Birely, 599JB; P. D. Boyer, 599PB; D. J. Cram, 599DC; C. W. Deutsche, 599CD; D. Eisenberg, 599DE; M. A. El-Sayed, 599ME; D. E. Fahrney, 599DF; P. S. Farrington, 599PF; C. S. Foote, 599CF; C. S. Garner, 599CG; T. A. Geisman, 599TG; E. W. Graham, 599EG; E. R. Hardwick, 599RH; M. F. Hawthorne, 599FH; A. U. Hazi, 599AH; T. L. Jacobs, 599TJ; H. D. Kaesz, 599HK; J. V. V. Kasper, 599JK; D. Kivelson, 599DK; C. M. Knobler, 599CK; M. W. Konrad, 599MK; W. F. Libby, 599WL; D. A. Lightner, 599DL; J. D. McCullough, 599JM; W. G. McMillan, 599WM; M. F. Nicol, 599MN; R. L. Pecsok, 599RP; H. Reiss, 599HR; V. N. Schumaker, 599VS; R. L. Scott, 599RS; R. A. Smith, 599AS; J. L. Sudmeier, 599JS; K. N. Trueblood, 599KT; J. T. Wasson, 599JW; C. A. West, 599CW; S. Winstein, 599SW.

CLASSICS

(Department Office, 7347 Bunche Hall)

Milton V. Anastos, Ph.D., *Professor of Byzantine Greek and History.*Paul A. Clement, Ph.D., *Professor of Classics and Classical Archaeology.*Philip Levine, Ph.D., *Professor of Classics.*Bengt T. M. Löfstedt, Ph.D., *Professor of Mediaeval Latin.*Jaan Puhvel, Ph.D., *Professor of Indo-European Studies (Chairman of the Department).*

Albert H. Travis, Ph.D., *Professor of Classics.*

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

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

J. Norman H. Austin, Ph.D., *Assistant Professor of Classics.*

David W. Packard, Ph.D., *Assistant Professor of Classics.*

Steven Lattimore, Ph.D., *Assistant Professor of Classics and Classical Archaeology.*

—————, *Assistant Professor of Classics.*

—————, *Assistant Professor of Classics.*



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

Daniel E. Gershenson, Ph.D., *Acting Associate Professor of Classics.*

Frank A. Lewis, M.A., *Acting Assistant Professor of Classics.*

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

Evangelos B. Petrounias, Ph.D., *Acting Assistant Professor of Ancient and Modern Greek.*

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

INDO-EUROPEAN STUDIES

(Section Office, 11359 Bunche Hall)

Marija Gimbutas, Ph.D., *Professor of Indo-European Studies.*

Jaán Puhvel, Ph.D., *Professor of Indo-European Studies (Chairman, Section of Indo-European Studies).*

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

Hanns-Peter Schmidt, Ph.D., *Associate Professor of Indo-European Studies.*

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

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

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



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

Inkeri A. Rank, M.A., M.Ed., B.L.S., *Lecturer in Finno-Ugric Studies.*

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

Major Fields

The student may take the major in Greek, in Latin, or in the Classics (i.e., Greek and Latin). Students considering a major in the Department should consult the adviser as soon as possible in their University career, but in no case later than the point at which they are about to take upper division courses.

Preparation for the Major

Required: 10 language courses, five in Greek and five in Latin.

The Major

Greek. Required: 7½ upper division language courses in Greek; three courses in the history of Graeco-Roman literature; two courses in Greek or in Roman history; three courses in one or several of the following areas: Classical archaeology, Byzantine civilization, Mediaeval Latin literature, Mediaeval history. Total required; 15½ courses.

Latin. Required: 7½ upper division lan-

guage 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 require-

ments, the minimum requirements for a Bachelor of Arts degree from this University, or its equivalent, with a major in Greek or in Latin or in the Classics (Greek and Latin).

Special Requirements for the Secondary

Teaching Credential in Latin

Students preparing for this credential are required to take Latin 100 and Latin 370.

The Master's Degree

The degree is offered in Greek, in Latin, and in the Classics (Greek and Latin). In order to qualify, the candidate must satisfy (1) the general University requirements, (2) the general departmental requirement, and (3) the special departmental requirements for the degree in one of the three fields. For the outline of departmental requirements, see below; for *complete* data, students must consult the department.

General University Requirements for the Master's Degree

See page 139. 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 and philology or in Classical archaeology, Patristic or Byzantine studies, Mediaeval Latin studies, Classical linguistics, or Ancient history. 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 143-145.

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, 166A, 166B, 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. Packard

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

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. Travis

144. A Survey of Mediaeval Latin Literature in English.

(Formerly numbered Latin 181.) A study of the Latin literature of Europe from the end of antiquity to the beginning of the Renaissance, with readings in English.

145A. Byzantine Civilization: Political Theory, Roman Law, and Conflicts with Paganism.

(Formerly numbered 181A-181B.) Mr. Anastos

145B. Byzantine Civilization: Theology and Relations with Rome.

(Formerly numbered 181A-181B.) Mr. Anastos

145C. Byzantine Civilization: Literature, Art, Science, and the Renaissance.

(Formerly numbered 181A-181B.) Mr. Anastos

146. Ancient Greek Literary Criticism.

The following works will be read in translation: Plato, *Ion*, *Symposium*, and selections from *Phaedrus*, *Republic*, and *Laws*; Aristophanes, *Frogs*; Aristotle, *Poetics* and selections from *Rhetoric*.

151A. Classical Archaeology: Graeco-Roman Architecture.

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

151B. Classical Archaeology: Graeco-Roman Sculpture.

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

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. Mr. Lattimore

162. Classical Myth in Literature.

The use of myth in the principal authors and genres of Greek and Roman literature with examples of its influence in later literatures. Miss Caldwell

166A. Greek Religion.

A study of the religion of the ancient Greeks.

166B. Roman Religion.

A study of the religion of the ancient Romans.

199. Special Studies in Classics.

(½ to 2 courses)

Prerequisite: senior standing and consent of the instructor.

Graduate Courses

251A. Seminar in Classical Archaeology.

The Aegean Bronze Age. Mr. Clement, Mr. Lattimore

251B. Seminar in Classical Archaeology.

Graeco-Roman architecture. Mr. Clement

251C. Seminar in Classical Archaeology.

Graeco-Roman sculpture. Mr. Clement, Mr. Lattimore

251D. Seminar in Classical Archaeology.

Graeco-Roman painting. Mr. Clement, Mr. Lattimore

252. Topography and Monuments of Athens.

(Formerly numbered 210.) Detailed studies in the topography and monuments of Athens combining the evidence of literature, inscriptions, and actual remains. Mr. Clement, Mr. Lattimore

253. Topography and Monuments of Rome.

(Formerly numbered 211.) Detailed studies in the topography and monuments of ancient Rome combining the evidence of literature, inscriptions, and actual remains. Mr. Clement, Mr. Lattimore

254. Field Archaeology in Greece.

Prerequisite: consent of the instructor. The methodology of field work in Greece with intensive study of the archaeological work in a selected area of the country. 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.

Mr. Packard, Miss Smith

2. Elementary Greek.

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

Mr. Packard, Miss Smith

3. Elementary Greek.

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

Mrs. Mohr

4. Selected Prose and Composition.

Prerequisite: course 3.

Mr. Lewis

5. Homer: *Odyssey*.

Prerequisite: course 4.

Mrs. Mohr

10. Introduction to Modern Greek.

A study of forms, syntax, and vocabulary. A knowledge of Ancient Greek is desirable, but is not a prerequisite.

Mr. Petrounias

11. Readings in Modern Greek.

Prerequisite: course 10. Selected texts in prose and poetry with emphasis on the demotic language.

12. Advanced Readings in Modern Greek.

Prerequisite: course 11.

Mr. Petrounias

13. Modern Greek Conversation and Composition.

Prerequisite: course 11.

Mr. Petrounias

40. The Greek Element in English.

(½ course)

A knowledge of Greek is not required. A study of the derivation and usage of English words of Greek origin; analysis into their component elements directed toward understanding of form and meaning.

Miss Smith

Upper Division Courses

Note: Greek 5 is a prerequisite to all 100-series language courses in Greek.

100. Greek Prose Composition.

(½ course)

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

Mr. Lewis

101. Homer: *Iliad*.

(Formerly numbered 102.)

Mrs. Mohr

102. Lyric Poets.

(Formerly numbered 107.) Selections from Archilochus to Bacchylides.

Mr. Lewis

103. Aeschylus.

(Formerly numbered 104.)

Mr. Hoffleit

104. Sophocles.

(Formerly numbered 104.)

Mr. Lattimore

105. Euripides.

(Formerly numbered 105.)

Mrs. Mohr

106. Aristophanes.

(Formerly numbered 105.)

Mr. Travis

107. Theocritus.

Mr. Austin

111. Herodotus.

(Formerly numbered 103.)

112. Thucydides.

(Formerly numbered 103.)

Mr. Hoffleit

113. Attic Orators.

(Formerly numbered 108.)

Mr. Lattimore

121. Plato.

(Formerly numbered 101.)

Mr. Lewis

122. Plato: Republic.

(Formerly numbered 106.)

Mr. Hoffleit

123. Aristotle: Poetics and Rhetoric.

(Formerly numbered 109.)

124. Aristotle: Ethics.

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

Mr. Hoffleit

190A-190B-190C. Readings in Greek Literature.

Prerequisite: senior standing or consent of the instructor. An intensive reading course in Greek literature in the original, covering the principal authors and periods, with lectures on Greek literary history.

Mr. Hoffleit, Mr. Travis

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.)

Mr. Packard

202A-202B. Homer: The *Odyssey* and the Epic

Cycle.

(Formerly numbered 201B.)

Mr. Packard

203. Hesiod.

204. Homeric Hymns.

205. Seminar in Aeschylus.

Mr. Petrounias

206A-206B. Sophocles.

(Formerly numbered 202.)

Mr. Hoffleit

207A-207B. Euripides.

(Formerly numbered 205.)

Mr. Travis

208A-208B. Aristophanes.

(Formerly numbered 204.)

Mr. Travis

209. Seminar in Hellenistic Poetry. Mr. Austin

210. Advanced Greek Prose Composition.
Prerequisite: course 100 or the equivalent.
Mr. Hoffleit

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. Gershenson

222A-222B. Plato.
(Formerly numbered 261.) Mr. Hoffleit, Mr. Lewis

223A-223B. Aristotle. Mr. Gershenson

224. Seminar in Post-Aristotelean Philosophy.

231A-231B-231C. Seminar in Patristic and Byzantine Literature.

Prerequisite: consent of the instructor. Course does not need to be taken in the A-B-C sequence.
Mr. Anastos

232. Seminar in the History of Classical Scholarship of the Byzantine Period.
Mr. Anastos

241. Greek Epigraphy.
(Formerly numbered 212.) A survey of Greek historical inscriptions, chiefly Attic. Mr. Clement

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

(Formerly numbered 225 and same as Indo-European Studies 215A-215B.) Prerequisite: consent of the instructor. Credit is given only upon completion of both quarters. Readings in epigraphic Greek texts, both Mycenaean and Classical; the various literary dialects (e.g., Epic, Aeolic, Doric); Greek grammar in the context of Common Greek and Indo-European linguistics. Mr. Puhvel

Individual Study and Research

596. Directed Individual Study or Research.
(½ to 2 courses) The Staff

597. Study for the M.A. Comprehensive Examination or the Ph.D. Qualifying Examination.
(½ to 2 courses) The Staff

599. Research for the Doctoral Dissertation.
(½ to 2 courses) The Staff

Latin

Lower Division Courses

1. Elementary Latin.
Lecture, four hours per week. The Staff

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

3. Elementary Latin.
Lecture, four hours per week. Prerequisite: course 2. The Staff

4. Ovid.
Prerequisite: course 3. Miss Caldwell, Miss Smith

5. Selected Prose and Grammatical Review.
Prerequisite: course 4. Miss Caldwell, Mrs. Mohr

10. Introduction to Mediaeval Latin.
Prerequisite: course 3 or consent of the instructor. Reading of easy prose texts, with interest centered on basic language training. Mr. Löfstedt

14. Elementary Latin (Intensive). (2 courses)
The intensive course in Latin will cover all the declensions of nouns and adjectives, all conjugations in the indicative mood and the primary uses of the subjunctive mood. Emphasis will be given to the development of the ability to read easy selections of classical prose. Miss Smith

40. The Latin Element in English. (½ course)
A knowledge of Latin is not required. A study of the derivation and usage of English words of Latin origin: analysis into their component elements directed toward understanding of form and meaning. Mrs. Mohr, Miss Smith

Upper Division Courses

Note: Latin 5 is prerequisite to all 100-series language courses in Latin.

100. Latin Prose Composition. (½ course)
(Formerly numbered 165A-165B.) A study of Latin prose style, with exercises in translation from English into Classical Latin. Mrs. Mohr

101. Plautus.
(Formerly numbered 102.) Miss Caldwell

102. Terence.
(Formerly numbered 102.) Mr. Lewis

103. Lucretius. Mr. Hoffleit

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

105. Vergil: The Aeneid. Mrs. Mohr

106. Catullus.
(Formerly numbered 101.) Mr. Levine

107. Horace: Odes and Epodes.
(Formerly numbered 101.) Mr. Levine

108. Roman Elegy.
(Formerly numbered 105.) Selections from Catullus, Tibullus, and Propertius. Miss Caldwell, Mr. Levine

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. Packard
- 112. Tacitus.**
(Formerly numbered 104.) Miss Caldwell
- 113. Cicero: The Orations.** Mrs. Mohr, Mr. Travis
- 114. Roman Epistolography: Cicero and Pliny.**
Mr. Hoffleit
- 115. Caesar: The Civil War.** Mr. Austin
- 116. Petronius.** Mrs. Mohr
- 117. Sallust.** Mr. Hoffleit
- 131. Medieval Latin Prose.**
(Formerly numbered 120.) Prerequisite: course 10 or consent of the instructor. Extensive reading of selected texts in prose; interest is centered on the idiosyncrasies of Medieval Latin. Mr. Löfstedt
- 133. Mediaeval Latin Poetry.**
(Formerly numbered 123.) Prerequisite: one upper division language course in Latin or consent of the instructor. Emphasis varies from year to year between Christian and secular poetry. Mr. Löfstedt
- 190A-190B-190C. Readings in Latin Literature.**
Prerequisite: senior standing or consent of the instructor. An intensive reading course in Latin literature in the original, covering the principal authors and periods, with lectures on Latin literary history. Mr. Levine
- 199. Special Studies in Latin. (½ to 2 courses)**
Prerequisite: senior standing and consent of the instructor. The Staff
- Graduate Courses
- The 200-series courses which are designated A and B (e.g., 203A and 203B) are double courses. Course A is a preseminar and is normally prerequisite to course B, a seminar.
- 201. Seminar in the Roman Epic: Ennius to Silius Italicus.**
(Formerly numbered 206.) The fragments of Ennius and selected readings from the minor epic poets (Lucan, Valerius Flaccus, Statius, Silius Italicus). Mr. Hoffleit
- 202. Seminar in Catullus.**
(Formerly numbered 207.) A detailed consideration of the entire Catullan corpus. Mr. Levine
- 203A. Elegiac Poetry.**
(Formerly numbered 255.) Mr. Levine
- 203B. Propertius.**
(Formerly numbered 255.) Mr. Levine
- 204A. Vergil's Aeneid.**
(Formerly numbered 210.) Mr. Austin
- 204B. The Aeneid.**
(Formerly numbered 210.) Mr. Travis
- 205. Seminar in Vergil's Bucelics.** Mr. Gershenson
- 206. Horace.** Mr. Austin
- 210. Advanced Latin Prose Composition.**
Prerequisite: course 100 or the equivalent.
- 211A. Seminar in the Roman Historians.**
A study of considerable portions of the writings of Sallust. Mr. Hoffleit
- 211B. Seminar in the Roman Historians.**
A study of considerable portions of the writings of Livy. Mr. Hoffleit
- 211C. Seminar in the Roman Historians.**
A study of considerable portions of the writings of Tacitus. Mr. Hoffleit
- 215. Apuleius: The Metamorphoses.** Mr. Gershenson
- 220. Cicero's Rhetorical Works.**
(Formerly numbered 211.) Mr. Travis
- 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.
- 231A-231B. Seminar in Mediaeval Latin.**
(Formerly numbered 221.) Prerequisite: at least one upper division course in Latin or consent of the instructor. Studies in various areas of the language and literature of Mediaeval Latin. Mr. Löfstedt
- 232. Vulgar Latin.**
(Formerly numbered 220.) Prerequisite: consent of the instructor. History and characteristics of popular Latin; its development into the early forms of the Romance languages. Mr. Löfstedt
- 240. History of the Latin Language.**
Prerequisite: consent of the instructor. The development of Latin from the earliest monuments until its emergence in the Romance languages. Mr. Löfstedt
- 242A-242B. Italic Dialects and Latin Historical Grammar. (½ course each)**
(Formerly numbered 225 and same as Indo-European Studies 218A-218B.) Prerequisite: consent of the instructor. Credit is given only upon completion of both quarters. The linguistic situation in early Italy; readings in Oscan, Umbrian, and early Latin texts; Latin grammar in the context of Italic and Indo-European linguistics. Mr. Fuhvel
- 243. Seminar in Latin Palaeography.**
(Formerly numbered 253.) Studies in the development of the book hand in Latin manuscripts earlier than the invention of printing. Mr. Levine
- 244. Seminar in Textual Criticism.**
(Formerly numbered 257.) Studies in the preparation of a critical edition of a Latin author. Mr. Travis

Professional Course in Method

370. The Teaching of Latin.

Prerequisite: graduate standing or consent of the instructor. Techniques for teaching; organization of courses; review of the content of the curriculum offered in junior and senior high schools.

Miss Smith

Individual Study and Research

596. Directed Individual Study or Research.

(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.

250A-250B. Seminar in Ancient History.

252A-252B-252C. Seminar in Byzantine History.

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

Required: three courses of Latin; three courses of Greek; three courses of German or Russian.

The Major

Required: (1) Indo-European Studies 131, 132, 140, 150, 160, 161; (2) one course chosen from Indo-European Studies 170, 180, 185; (3) two courses chosen from Indo-European Studies 168, 171, 178, 181, 186, 188; (4) Greek 5 and one upper division course in Greek; (5) one course chosen from Indo-European Studies 133, 134, Anthropology 130A, 130B, 131A, 131B, Linguistics 100; (6) one course chosen from Indo-European Studies 149, 179, 189, Linguistics 120.

Admission to Graduate Status

Students admitted to graduate status must have an A.B. degree with a major in Indo-European Studies from UCLA, or a major in an Indo-European language field (e.g., German, Slavic, Latin, Greek, Romance Languages), or a major in Linguistics (with emphasis on historical linguistics), or a major in Anthropology (with concentration on Europe and Asia). If deficiencies exist in prerequisites to specific work at the graduate level, a student may be admitted condition-

ally and will be expected to remove these deficiencies as soon as possible upon enrollment.

Requirements for the Doctor's Degree

General Requirements. See page 143.

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 three alternative major emphases: (1) Indo-European linguistics, (2) Indo-Iranian studies, and (3) European and related archaeology. 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. (1) The emphasis in Indo-European linguistics 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. (2) The emphasis in Indo-Iranian studies requires a concentration in Indic languages from Vedic to Middle Indic, and in Iranian languages from Avestan to Middle Iranian. Modern forms of Indo-Aryan and Iranian languages may also be included. Minor fields include Indo-European linguistics and mythology. In the former, basic competence is expected in comparative grammar, Homeric Greek, and two other ancient Indo-European languages. (3) The archaeological emphasis requires a concentration in European and related (Near Eastern, Western and 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 in the Department of Anthropology and to gain some experience in archaeological field work. Minor

fields include Indo-European linguistics and mythology. In the former, basic competence is expected in comparative grammar, Vedic Sanskrit, Homeric Greek, and two other ancient Indo-European languages (e.g., Old Iranian, Hittite, Classical Armenian, Lithuanian, or Old Church Slavonic for a student with an "eastern" archaeological emphasis, or Italic, Celtic, and Germanic languages for those whose researches will stress Western Europe).

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.

136. European Paleodemography.

Populations of Europe from Paleolithic to early historical times; skeletal material, statistical methods, bio-demography; the role of paleodemography in tracing the prehistorical movements of peoples.

140. Introduction to Indo-European Mythology.

(Formerly numbered 145.) Recommended preparation: Classics 161. A basic comparative survey of the mythic and religious traditions of ancient India, Iran, Anatolia, and the early Baltic, Slavic, Germanic, Italic, and Celtic peoples.

Mr. Puhvel

149. Introduction to Historical Linguistics.

(Same as Linguistics 110 and Anthropology 113.) Prerequisite or corequisite: Linguistics 100 or equivalent. The methods and theories appropriate to the historical study of language, such as the comparative method and method of internal reconstruction. Sound change, grammatical change, semantic change.

Mr. Anttila, Mr. Hoijer

150. Introduction to Indo-European Linguistics.

(Same as Linguistics 150.) Prerequisite: one year of college-level study (course 3 or better, 8 units minimum) of either Greek or Latin and either German or Russian. A survey of the Indo-European languages from ancient to modern times; their relationships and their chief characteristics.

Mr. Anttila, Mr. Puhvel

160. Elementary Sanskrit.

Introduction to script and grammar, with reading exercises and attention to the significance of Sanskrit for the understanding of other Indo-European languages.

Mr. Scharfe

161. Intermediate Sanskrit.

Prerequisite: course 160 or equivalent. Advanced aspects of grammar and the reading of literary texts.

Mr. Scharfe

162. Advanced Sanskrit.

Prerequisite: course 161 or equivalent. In this course the entire Bhagavadgita or a comparable amount of other Sanskrit literature is read.

Mr. Scharfe

163. Readings in Sanskrit.

Prerequisite: course 162 or equivalent. Extensive reading in such texts as best serve the students' needs.

Mr. Scharfe

167. Introduction to Indic Philosophy.

A survey of the main trends in Indian philosophy from ancient to modern times.

Mr. Scharfe

168. Survey of Sanskrit Literature in Translation.

A general course dealing with Sanskrit literature of India from Vedic times to the present. No knowledge of Sanskrit is required.

Mr. Scharfe

170. Elementary Lithuanian.

Introduction to pronunciation and grammar, with reading exercises. Mr. Tinišis

171. Intermediate Lithuanian.

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

172. Advanced Lithuanian.

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

177. Baltic Languages and Cultures. (½ course)

A general survey of the peoples speaking Old Prussian, Lithuanian, and Latvian; their linguistic, historical, and ethnic affiliations. Mrs. Gimbutas

178. Survey of Lithuanian Literature in Translation.

A general course dealing with literature in Lithuania from the beginnings to the present. No knowledge of Lithuanian is required. Mr. Tinišis

179. Introduction to Baltic and Slavic Folklore and Mythology.

(Same as Folklore 126.) A general course for students interested in folklore and mythology and for those interested in Indo-European mythic antiquities. Mrs. Gimbutas

180. Elementary Modern Irish.

Introduction to script, pronunciation, and grammar, with reading exercises.

181. Intermediate Modern Irish.

Prerequisite: course 180 or equivalent. Grammar and readings.

182. Advanced Modern Irish.

Prerequisite: course 181 or equivalent. Readings in Irish texts, with grammatical and stylistic considerations.

185. Elementary Modern Welsh.

Introduction to pronunciation and grammar, with reading exercises.

186. Intermediate Modern Welsh.

Prerequisite: course 185 or equivalent. Grammar and readings.

187. Advanced Modern Welsh.

Prerequisite: course 186 or equivalent. Readings in Welsh texts, with grammatical and stylistic considerations.

188. Survey of Irish Literature.

A general course dealing with literature in Ireland from the earliest times to the present. No knowledge of Irish is required.

189. Introduction to Celtic Folklore and Mythology.

(Same as Folklore 122.) A general course for the student in folklore, with emphasis on the types of folklore research currently practiced in Eire and the mythic traditions of the Irish and Welsh.

199. Special Studies. (½ to 2 courses)

Graduate Courses

The Staff

209. Historical Linguistics.

(Same as Linguistics 202.) Prerequisite: course 149 or equivalent. Advanced study of the com-

parative method, historical and internal reconstruction, internal and external borrowing.

Mr. Anttila, Mr. Holzer

210. Indo-European Linguistics: Advanced Course.

Prerequisite: course 150 or equivalent. Comparative study of phonology, morphology, syntax, and lexicon. Problems in analysis and reconstruction.

Mr. Anttila, Mr. Puhvel

215A-215B. Greek Dialects and Historical Grammar. (½ course each)

(Same as Greek 242A-242B.) Credit is given only upon completion of both quarters. Prerequisite: consent of the instructor. Readings in epigraphic Greek texts, both Mycenaean and classical; the various literary dialects (e.g., Epic, Aeolic, Doric); Greek grammar in the context of Common Greek and Indo-European linguistics. Mr. Puhvel

218A-218B. Italic Dialects and Latin Historical Grammar. (½ course each)

(Same as Latin 242A-242B.) Credit is given only upon completion of both quarters. Prerequisite: consent of the instructor. The linguistic situation in early Italy; readings in Oscan, Umbrian, and early Latin texts; Latin grammar in the context of Italic and Indo-European linguistics. Mr. Puhvel

220A-220B. Hittite. (½ course each)

Credit is given only upon completion of both quarters. Prerequisite: consent of the instructor. Introduction to cuneiform Hittite script and 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

222A-222B. Vedic.

Prerequisite: a knowledge of Sanskrit equivalent to course 162, and consent of the instructor. Characteristics of the Vedic dialect and readings in the Rig-Vedic hymns. Mr. Schmidt

223A-223B. Pali and Prakrits.

Prerequisite: a knowledge of Sanskrit equivalent to course 161, and consent of the instructor. Grammatical studies and reading of texts. Comparative considerations. Mr. Scharfe

224. Old Irish.

Prerequisite: consent of the instructor. Studies in grammar. Readings in the glosses and other texts. Comparative considerations.

225. Mediaeval Welsh.

Prerequisite: consent of the instructor. Studies in grammar. Readings in the Mabinogi and other texts. Comparative considerations.

226. Celtic Linguistics.

(Formerly numbered 213.) Prerequisite: course 224, or 225, or consent of the instructor. A survey of salient features of the Celtic linguistic stock in its Gaelic and British branches, with reference to the position of Celtic within Indo-European languages.

230A-230B. Old Iranian.

(Formerly numbered 223.) Prerequisite: consent of the instructor. Studies in the grammars and texts of Old Persian and Avestan. Comparative considerations. Mr. Schmidt

231A-231B. Middle Iranian.

Prerequisite: consent of the instructor. Studies in the grammars and texts of such Middle Iranian languages as best serve the students' needs (e.g., Pahlavi, Sogdian, Sakan).
Mr. Schmidt

250A-250B. Seminar in European Archaeology.

(½ course each)

(Formerly numbered 255A-255B. Same as Anthropology 268A-268B.) Credit is given only upon completion of both quarters. Prerequisite: consent of the instructor. Studies in ancient European archaeological materials, and their relationship to the Near East, Western Siberia, and Central Asia.
Mrs. Gimbutas

251. Seminar in Early Iron Age Archaeology.

(Formerly numbered 256.) Prerequisite: consent of the instructor. Studies in Villanovan, Hallstatt, La Tène, Early Germanic, Scythian, and other cultures and art.

252. Seminar in Eastern Mediterranean Archaeology.

(Formerly numbered 257.) Prerequisite: consent of the instructor. Studies in Eastern Mediterranean and Anatolian cultures, throughout the sixth, fifth, fourth, third, and second millennia B.C.

253. Seminar in European Paleodemography.

Prerequisite: consent of the instructor. Problems in prehistoric population movements, studied with the aid of skeletal material, statistical methods, biodemography, and other recent techniques.

259. Field Work in Old World Archaeology.

Prerequisite: consent of the instructor. Participation in archaeological excavations or other archaeological research in Europe or the Near East under the auspices of the UCLA Museum or other institutions. Excavations in the Americas may be substituted with the consent of the instructor in charge. Minimum one month.
Mrs. Gimbutas in Charge

260A-260B. Seminar in Indo-European Mythology.

(½ course each)

Credit is given only upon completion of both quarters. Prerequisite: consent of the instructor. Studies in ancient Indo-European mythic and religious traditions and their relationship to the myths of the Mediterranean, the Near East, and the Finno-Ugric area.
Mr. Puhvel

270A-270B. Seminar in Historical Linguistics.

(Same as Linguistics 270A-270B.) Prerequisite: course 209 or equivalent. Problems in the use of the comparative method in historical linguistics and in the internal reconstruction of the history of languages.
Mr. Anttila

280A-280B. Seminar in Indo-European Linguistics.

Prerequisite: course 210. Selected topics in Indo-European comparative grammar for advanced graduate students.
Mr. Anttila, Mr. Puhvel

Individual Study and Research

596. Directed Individual Studies. (½ to 2 courses)

(Formerly numbered 297.)

The Staff

597. Preparation for Doctoral Qualifying Examination. (½ to 2 courses)

The Staff

599. Research for Dissertation. (½ to 2 courses)

(Formerly numbered 299.)

The Staff

FINNO-UGRIC STUDIES

Upper Division Courses

130. Elementary Finnish.

(Formerly numbered 101.) Introduction to grammar and reading exercises.
Mrs. Rank

131. Intermediate Finnish.

(Formerly numbered 102.) Prerequisite: course 130 or equivalent. Grammatical exercises and reading of texts.
Mrs. Rank

132. Advanced Finnish.

(Formerly numbered 103.) Prerequisite: course 131 or equivalent. Readings in literary texts.
Mrs. Rank

133. Readings in Finnish.

(Formerly numbered 104.) Prerequisite: course 132 or equivalent. Large selections of Finnish prose and poetry read in the original.
Mrs. Rank

135. Finnish Folk Art and Technology.

(Formerly numbered 139B and same as Folklore 124.) Material manifestations of Finnish folk culture: village layout and architecture, folk technology, arts and crafts, textiles, costume and design, etc.
Mrs. Rank

138A-138B. 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.

(Formerly numbered 139A and same as Folklore 123A-123B.) The methods and results of Finnish folklore studies and the mythic traditions of the Finns. In 139A, special attention is paid to the oral epic and the Kalevala; in 139B, the lyric folk poetry, ballads, folktales and legends.
Mrs. Rank

150. Elementary Hungarian.

(Formerly numbered 105.) Introduction to grammar and reading exercises.
Mrs. Birnbaum

151. Intermediate Hungarian.

(Formerly numbered 106.) Prerequisite: course 150 or equivalent. Grammatical exercises and reading of texts.
Mrs. Birnbaum

152. Advanced Hungarian.

(Formerly numbered 107.) Prerequisite: course 151 or equivalent. Readings in literary texts.
Mrs. Birnbaum

153A-153B. Readings in Hungarian.

(Formerly numbered 108.) Prerequisite: course 152 or equivalent. Large selections of Hungarian prose and poetry read in the original. Mrs. Birnbaum

158A-158B. Survey of Hungarian Literature in Translation.

(Formerly numbered 111.) Intended for students in general and comparative literature as well as stu-

dents 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.) Survey of the traditions of the smaller Finno-Ugric nationalities (Estonians, Lapps, Mordvins, Cheremis, Voguls, Ostyaks, etc.).
Mrs. Rank

199. Special Studies. (½ to 2 courses)

The Staff

Graduate Courses

210. Finno-Ugric Linguistics.

(Formerly numbered 217. Same as Linguistics 225L.) Prerequisite: consent of the instructor. Survey of the history and structure of the chief representatives of the Finno-Ugric language group.

251. Seminar in Finno-Ugric Folklore and Mythology.

(Same as Folklore 251.) Prerequisite: course 169 or consent of the instructor. Advanced studies in the folk traditions and mythologies of the Finno-Ugric speaking nations.

Related Courses in Other Departments

Ancient Near East (Near Eastern Languages)

160A-160B. Introduction to Near Eastern Archaeology.

161A-161B-161C. The Archaeology of Mesopotamia.

250. Seminar in Ancient Near Eastern Archaeology.

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

131A-131B. Old Stone Age Archeology.

138A-138B. The Strategy of Archeology.

139. Dating Techniques in Archeology.

163. History of Archeology.

181. Methods and Techniques of Field Archeology.

182. Methods and Techniques of Archeology.

230. Analytical Methods in Archeological Studies.

271. Historical Reconstruction and Archeology.

273. Problems in Old World Archeology.

Armenian (Near Eastern Languages)

130A-130B-130C. Elementary Classical Armenian.

131A-131B-131C. Intermediate Classical Armenian.

132A-132B-132C. Advanced Classical Armenian.

Classics 161. Introduction to Classical Mythology.

251A. Seminar in Classical Archaeology.

English 210. Readings in Old English literature.

German 230. Survey of Germanic Philology.

231. Gothic.

232. Old High German.

233. Old Saxon.

245A. Germanic Religions and Mythology.

245B. Germanic Antiquities.

252. Seminar in Historical and Comparative Germanic Linguistics.

Hindi (South Asian Languages)

171A-171B-171C. Hindi.

Linguistics 100. Introduction to Linguistics.

103. Introduction to General Phonetics.

120. Linguistic Analysis.

160. History of Linguistics.

200A. Phonology I.

225A. Linguistic Structures: Indo-European.

225E. Linguistic Structures: Indo-Aryan.

Scandinavian 151. Elementary Old Icelandic.

152. Intermediate Old Icelandic.

Slavic 201. Introduction to Old Church Slavic.

202. Introduction to Comparative Slavic Linguistics.

241A-241B. Advanced Old Church Slavic.

242A-242B. Comparative Slavic Linguistics.

Urdu (Near Eastern Languages)

101A-101B-101C. Elementary Urdu.

COMPUTER SCIENCES

Studies related to computer science are possible in several academic departments. Detailed information is given in the announcements of the individual departments that are listed below.

Biomathematics

Course work in mathematical modeling,

simulation and other computer techniques in the health sciences, including computer graphics.

Business Administration

Master of Science, and Ph.D. degree programs with specialization in computer methods and information systems.

Engineering

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

Library Service

Master of Science degree in Information Science (Documentation).

Linguistics

Course work in mathematical linguistics and computational linguistics.

Mathematics

Course work in numerical analysis, logical design, and programming.

Psychology

Course work in mathematical psychology, factor analysis and multivariate analysis, and in computer techniques in the behavioral sciences.

Public Health

Master of Science and Ph.D. degree programs in Biostatistics with specializations in data processing and computer assisted statistical analysis.

■ COUNCIL ON EDUCATIONAL DEVELOPMENT

The Council on Educational Development (CED), created by the Los Angeles Division of the Academic Senate in May 1968, is charged to study and encourage educational reforms and innovations; "to sanction with the consent of directly concerned departments, colleges or schools, extra-departmental courses and programs; and to monitor and

evaluate such courses and programs. . . ." Courses and/or programs sponsored by the CED such as student-faculty courses conducted by the Committee for the Study of Education and Society (CSES) are listed in current Class Schedules. Information on offerings may be obtained from the Academic Senate Office, Murphy Hall, UCLA.

■ DANCE

(Department Office, 205 Women's Gym)

Juana de Laban, Ph.D., *Professor of Dance.*

Alma M. Hawkins, Ed.D., *Professor of Dance (Chairman of the Department).*

Pia Gilbert, *Associate Professor of Dance.*

Carol Scothorn, M.A., *Associate Professor of Dance.*

Penelope Leavitt, M.A., *Assistant Professor of Dance.*

Malcolm McCormick, M.A., *Assistant Professor of Dance.*



Carolyn Bloom, M.A., *Lecturer in Dance.*

Elsie Dunin, M.A., *Lecturer in Dance.*

Elizabeth Greenhut, M.A., *Lecturer in Dance.*

Hazel Hood, *Lecturer in Dance.*

Margalit Oved Marshall, *Lecturer in Dance.*

John Martin, *Lecturer in Dance.*

Emilio Pulido-Huizar, *Lecturer in Dance.*

William Ross, *Lecturer in Dance.*

Doris Siegel, *Lecturer in Dance.*

Allegra Snyder, M.A., *Lecturer in Dance.*

Mary Whitehouse, *Lecturer in Dance.*

The dance major offered in the College of Fine Arts leads to the Bachelor of Arts degree. For requirements of the College of Fine Arts, see page 86.

Preparation for the Major

Dance 35, 36A-36B-36C, 37A-37B-37C, 38 and 70A; Psychology 10, and two courses (including at least one course with an aster-

isk) chosen from Art 1A-1B-1C, 10A°-10B,° 25,° 30B,° Humanities 1A-1B, Music 2A-2B, and Theater Arts 5B.

The Major

A total of 14% courses including Dance 150A-150B-150C, 151A-151B, 152A-152B, 153A-153B-153C, 154, 158A-158B, and 159; Physical Education 111A-111B, three courses (12 units) chosen from Art 110A-110B-110C, 112A-112B, 118A-118B, Dance 140A-140B-140C, English 103, 111, Folklore 101, 105, Music 140A-140B, 135A-135B, Philosophy 160, Theater Arts 102A-102B, 118A-118B, 122, 145.

Admission to Graduate Status

In addition to meeting the requirements of the Graduate Division as stated in the announcement of the Graduate Division, the student must have an undergraduate major in dance or equivalent preparation with a minimum of 9 upper division courses in the dance concentration. Students whose preparation is deficient, as determined by Graduate Admissions, will be required to make up such deficiencies in addition to the degree program. For more detailed information, write to the Chairman of the Department of Dance and enclose a transcript or summary of academic record.

Requirements for the Master's Degree

Graduate students may follow the thesis plan or the comprehensive examination plan (see page 142). 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, dance therapy, 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.

20. Movement for the Stage. (½ course)

(Formerly numbered 34.) Three hours lecture and laboratory. Movement for the theater specifically designed to extend the actor's creation of a role. **Miss Laban**

35. Music Analysis for Dance. (½ course)

Study of the elements of music, music structures, and their relationship to dance, with emphasis on rhythmic analysis, dance accompaniment and teacher-accompanist roles. **Mrs. Gilbert**

36A-36B-36C. Fundamentals of Creative Dance. (½ course each)

Open only to dance majors and minors. Courses must be taken in sequence. Study of dance through varied experience in movement including historical and contemporary forms with emphasis on increasing ability to use movement creatively and to relate to dance the principles and elements of other arts. **Miss Leavitt**

37A-37B-37C. Creative Dance. (½ course each)

Prerequisite: course 36C. A continuing study of dance with emphasis on movement principles and choreography.

38. Dance Notation. (½ course)

Prerequisite: courses 35 and 36C. Study of Labanotation with experiences in recording and interpreting dance scores. **Mrs. Scothorn**

70A-70B. Introduction to Performance in Ethnic Dance. (½ course each)

Study of basic movement in ethnic dance forms. **Mrs. Dunia**

71A-71P. Performance Courses in Ethnic Dance. (½ course each)

Each course may be repeated for a maximum of four units. (A) Dance of Bali; (B) Dance of Ghana; (C) Dance of Greece; (D) Dance of Hawaii; (E) Dance of India; (F) Dance of Israel; (G) Dance of Japan; (H) Dance of Java; (J) Dance of Mexico; (K) Dance of Philippines; (L) Dance of Scotland; (M) Dance of Spain; (N) Dance of Thailand; (P) Dance of Yugoslavia. **The Staff**

Upper Division Courses

112A-112B. Advanced Dance. (½ course each)

For non-dance majors. Prerequisite: course 11C. Synthesis of previous dance experience, advanced technique, and individual and group choreography.

121. Movement for the Stage. (½ course)

Prerequisite: course 20. Styles and forms of period movement and their media of expression. **Miss Laban**

140A-140B-140C. Dance Cultures of the World.

(Formerly numbered 170.) A survey of dance in selected cultures, the role of dance in society; consideration of style, rhythmic structure, historical background and related folklore. Lectures illustrated with demonstrations, film, slides and recordings: (A) Asia and Oceanic (art, folk and tribal traditions);

- (B) Africa and America (tribal and folk traditions);
 (C) Europe and America (art, and folk traditions).
 Mrs. Snyder and the Staff

141. Dance of Africa.

An introduction to the dance of Africa, factors influencing its development and social functions, consideration of relationship of dance to other art forms. Concurrent enrollment in a performing group.

142. Dance in the Balkans.

An introduction to dance of the Balkans, including factors influencing development and social functions, and consideration of relationship of dance to other art forms. Concurrent enrollment in a performing group. Mrs. Dunin

143. Dance in India.

An introduction to the dance of India, including factors influencing development and social functions, and consideration of relationship of dance to other art forms. Concurrent enrollment in a performing group.

144. Dance in Indonesia.

An introduction to the dance of Indonesia, including factors influencing development and social functions, and consideration of relationship of dance to other art forms. Concurrent enrollment in a performing group. Mrs. Hood

145. Dance in Japan.

An introduction to the dance of Japan, including factors influencing development and social functions, and consideration of relationship of dance to other art forms. Concurrent enrollment in a performing group.

146. Dance in Latin America.

An introduction to the dance of Latin America, including factors influencing its development and social functions and consideration of the relationship of dance to other art forms. Concurrent enrollment in a performing group. Miss Laban

147. Dance in Indian Cultures of Americas.

An introduction to the dance of the Indian cultures of the Americas, including factors influencing development and social functions and consideration of the relationship of dance to other art forms. Concurrent enrollment in a performing group.

148. Dance in the United States and Canada.

An introduction to the dance of the United States and Canada, including factors influencing the development and social functions and consideration of the relationship of dance to other art forms. Concurrent enrollment in a performing group.

150A-150B-150C. Advanced Dance.

(½ course each)

Prerequisite: course 37C. Choreography with emphasis on the use of composed music, the group composition, and the theatrical environment; synthesis of previous dance experience, theories and technique of outstanding dance artists; principles of human movement related to dance. Mrs. Scothorn

151A. History of Dance—Primitive to Renaissance.

The evolution of the dance as an art form and its cultural implications from the primitive through the Renaissance periods. Miss Laban

151B. History of Dance—Baroque to 20th Century.

A study of changing concepts in the styles and forms of dance from the Baroque to the 20th Century. Miss Laban

152A-152B. Organization of Dance Performances.

(½ course each)

Prerequisite: senior standing or consent of the instructor. Consideration of purpose and materials for dance productions. Mrs. Scothorn

153A-153B-153C. Dance Composition.

(½ course each)

Prerequisite: course 150C. Choreographic problems in historical styles and contemporary trends. Independent work in solo and group composition.

154. Music as Dance Accompaniment.

Prerequisite: course 35 or consent of the instructor. Piano and percussion improvisation for dance. Choreographer-composer relationships. History of music for the dance with emphasis on contemporary trends. Music for the dance performance. Mrs. Gilbert

158A-158B. Philosophical Bases and Trends in Dance. (1, ½ course)

Prerequisite: course 150C. Critical analysis of dance as a creative experience and the role of professional and educational dance in our society. Study of selected approaches to current development in dance. Miss Hawkins

159. Advanced Dance Notation.

Prerequisite: course 38. Study of advanced Labanotation, history of various other systems, and survey of notated literature. Mrs. Scothorn

160. Creative Dance for Children.

Prerequisite: consent of the instructor. Study of dance as an expressive medium for children with emphasis on concepts and principles.

170A-170B. Introduction to Performance in Ethnic Dance. (½ course each)

Study of basic movement in ethnic dance forms. The Staff

171A-171P. Performance Courses in Ethnic Dance.

(½ course each)

Each course may be repeated for a maximum of four units. (A) Dance of Bali; (B) Dance of Ghana; (C) Dance of Greece; (D) Dance of Hawaii; (E) Dance of India; (F) Dance of Israel; (G) Dance of Japan (H) Dance of Java; (J) Dance of Mexico; (K) Dance of Philippines; (L) Dance of Scotland; (M) Dance of Spain; (N) Dance of Thailand; (P) Dance of Yugoslavia. The Staff

190. Advanced Dance Performance. (½ to 1 course)

Prerequisite: consent of the instructor. The study of performance of major choreography. Mrs. Scothorn

197A-197B. Proseminar: Dance Perspectives.

(½ course each)

Prerequisite: upper division standing or consent of the instructor. Consideration of the aesthetic evolving from the work of the great artists of our time. Mr. Martin

198A-198B-198C. Special Courses in Dance.
(½ to 1 course)

Prerequisite: consent of the instructor.

199. Special Studies in Dance. (½ to 1 course)

Prerequisite: senior standing and consent of the instructor. Miss Hawkins

Graduate Courses

200. Dance Notation. (½ course)

Prerequisite: course 159. Advanced study of dance notation. Mrs. Scothorn

202. Research Methods and Bibliography in Dance.

Miss Laban

204A-204B-204C. Advanced Choreography.

(½, 1, ½ course)

Prerequisite: course 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

221. The History of Ballet.

Prerequisite: courses 151A, 151B. The development of ballet in its various stages: Renaissance,

Baroque, Romantic Period; stylistic differences in Italy, France, Spain, and England; influence of the other arts; and problems of ballet as an art form. Miss Laban

226. Dance Expressions in Selected Cultures.

Prerequisite: consent of instructor. Dance as a social and cultural experience in the life of man.

227. Advanced Studies in Dance Education.

Prerequisite: consent of the instructor. Concepts relating to the development of creativity and artistic integrity in dance. Miss Hawkins

251A-251B-251C. Dance in Rehabilitation.

Prerequisite: consent of the instructor. Dance in the therapeutic setting. A year course including a study of related research and literature, theoretical foundations for movement therapy, and individual research projects. Miss Hawkins, Mrs. Whitehouse

Professional Courses

327A-327B. Principles of Teaching Dance.

(½ course each)

Prerequisite: senior standing or consent of the instructor. A study of methods, curricular materials, and evaluation procedures as related to the teaching of dance in the secondary schools. Mrs. Dunin, Miss Leavitt

Individual Study and Research

596. Directed Individual Study or Research.

(½ to 2 courses)

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 2 courses)

ECONOMICS

(Department Office, 2263 Bunche Hall)

Armen A. Alchian, Ph.D., *Professor of Economics.*

William R. Allen, Ph.D., *Professor of Economics.*

George W. Hilton, Ph.D., *Professor of Economics.*

Werner Z. Hirsch, Ph.D., *Professor of Economics and Director, Institute of Government and Public Affairs.*

Jack Hirshleifer, Ph.D., *Professor of Economics.*

Warren C. Scoville, Ph.D., *Professor of Economics.*

Harold M. Somers, Ph.D., LL.B., *Professor of Economics.*

Paul A. Dodd, Ph.D., LL.D., *Emeritus Professor of Economics.*

Paul T. Homan, Ph.D., *Emeritus Professor of Economics.*

Jacob Marschak, Ph.D., *Emeritus Professor of Economics and Business Administration.*

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

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

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

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

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

Michael D. Intriligator, Ph.D., *Associate Professor of Economics.*
 J. Clayburn LaForce, Jr., Ph.D., *Associate Professor of Economics.*
 Axel Leijonhufvud, Ph.D., *Associate Professor of Economics.*
 George G. S. Murphy, Ph.D., *Associate Professor of Economics.*
 Sven W. Arndt, Ph.D., *Assistant Professor of Economics.*
 Charles W. Baird, Ph.D., *Assistant Professor of Economics.*
 Ronald Britto, Ph.D., *Assistant Professor of Economics.*
 Joseph M. Burns, Ph.D., *Assistant Professor of Economics.*
 Barry R. Chiswick, Ph.D., *Assistant Professor of Economics.*
 William E. Gibson, Ph.D., *Assistant Professor of Economics.*
 Bruce Herrick, Ph.D., *Assistant Professor of Economics.*
 Larry J. Kimbell, Ph.D., *Assistant Professor of Economics.*
 Charles T. Nisbet, Ph.D., *Assistant Professor of Economics.*
 Sam Peltzman, Ph.D., *Assistant Professor of Economics.*
 David L. Shapiro, Ph.D., J.D., *Assistant Professor of Economics.*
 Earl A. Thompson, Ph.D., *Assistant Professor of Economics.*



Bryan C. Ellickson, B.A., *Acting Assistant Professor of Economics.*
 Benjamin Klein, A.M., *Acting Assistant Professor of Economics.*
 Robert T. Michael, B.A., *Acting Assistant Professor of Economics.*
 Joseph M. Ostroy, B.S., *Acting Assistant Professor of Economics.*
 Douglas D. Shetler, M.A., *Acting Assistant Professor of Economics.*
 Richard J. Sweeney, A.B., *Acting Assistant Professor of Economics.*
 Firouz Vakil, M.A., *Acting Assistant Professor of Economics.*
 Alice John Vandermeulen, Ph.D., *Senior Lecturer in Economics.*

Objective of the Major in Economics

The requirements for and offerings in the major are intended to provide a well-rounded education based on a broad foundation of economics and related subjects, and to supply basic training for students who plan to enter high school and junior college teaching in the social sciences or business education, law, social work, or government service. The major provides training for professional graduate studies in economics and in business administration. Economics majors wishing also to obtain a business teacher's credential should see "Business Education," page 203. Upper division programs are worked out in consultation with departmental advisers.

Preparation for the Major

Required: Economics 1 and 2; one course in calculus (e.g., Mathematics 2B, 3A, or 11A, which may be taken pass/fail); and four lower or upper division courses in the social sciences other than economics, which may be taken pass/fail. (Upon petition, a student in upper division standing may be permitted to substitute Economics 100 for Economics 1 and 2.) Those who wish additional work in economics or in closely related fields while still in lower division standing can take Economics 10 and Business Administration 1A.

The Major

Nine upper division courses in economics, which must include (1) Economics 101A-101B, 102,* (2) Economics 140 or its equivalent; and (3) at least one course in each of three fields in economics listed below other than Economics 101A, 101B, 102, and 140. Economics 100 may not be included among the nine upper division courses. One or two of the nine courses may be chosen from the following courses in the department of Business Administration: 115A, 120A, 120B, 120M and 130. A 2.0 average is required in all economics courses and in all major courses (including any in business administration). Upon consent of the instructor, students may take an upper division course for which they do not have prerequisites.

Fields

Economic Theory (courses 101A-101B, 102, 105, 107); Economic Development (courses 108, 109, 110, 111, 112); Regional Economics (courses 120, 121, 122); Public Finance (courses 130, 132, 133); Statistics, Mathematical Economics, and Econometrics

* 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.

(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, 173, 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 139), the departmental requirements are nine upper division and graduate level courses. These must include, if not taken previously, Economics 101A-101B, 102 (or their equivalent) which must be taken (or retaken) with grade B or better, effective for new admission as of Fall 1966; and Economics 107 (or its equivalent) passed with a grade of at least C. At least five of the nine courses must be strictly graduate courses in economics, spread over at least two "subject" fields (see above). If the student elects to follow the examination plan rather than the thesis plan, he will be given a single four-hour written examination in his field of concentration.

With the consent of the graduate adviser, candidates may offer a maximum of two courses of acceptable upper division and/or graduate courses in other social sciences, in history, in business administration, in mathematics, in psychology, in education, or in philosophy in partial satisfaction of the requirements for the degree. This will not, however, relieve the student from taking five graduate courses in the Department of Economics.

Students entering graduate work beginning with Fall Quarter 1966 will be required to complete three courses in mathematics and statistics: at least one course in calculus, at least one course in statistics, and a third in either mathematics or statistics. The mathematics courses may be Economics 145 or 146 or any appropriate lower or upper division courses offered by the Department of Mathematics. Economics 140 or an equivalent introductory course in statistics should be one of the statistics courses chosen. Work in the student's prior record will be counted toward this requirement.

Requirements for the Ph.D. Degree

Basic Requirements. See general University regulations, pages 143-145.

Accounting, Mathematics, Statistics, Eco-

nomics History, and History of Theory. A quarter course or its equivalent in (a) accounting, (b) American economic history, (c) European economic history, (d) History of Economic Theory. In addition, each student must have completed work in mathematics and statistics, equivalent to three quarter courses, distributed as follows: at least one in calculus, at least one in statistics, and a third in either mathematics or statistics. The mathematics courses may be Economics 145 or 146 or any appropriate lower or upper division courses offered by the Department of Mathematics. Economics 140 or an equivalent introductory course in statistics should be one of the statistics courses chosen. Work in the student's prior record will be counted toward all the above requirements. In any case, they must be completed at the earliest possible date and prior to admission to candidacy.

Language. The student will either (a) pass examinations in two foreign languages or (b) pass one language examination and submit a mathematics substitution for the second language. The substitution will consist of three appropriate courses taken in the Department of Mathematics in addition to the courses which are used to satisfy the mathematics requirement for all candidates.

General Qualifying Examination. In order to gain admission to candidacy, graduate students shall pass written and oral examinations. The written examinations will cover the fields of micro and macro economic theory, and three additional fields to be selected from those listed in the field offerings of the department. A student, upon petition, may be allowed to substitute a field outside the Department of Economics for one of his three elective fields.

A student has four options for taking the written examinations: 1) all four examinations may be taken simultaneously, or 2) three examinations (one being theory) may be taken at one time and the remaining one taken at some subsequent examination time, or 3) two examinations (one being theory) may be taken at one time and the remaining two taken at some subsequent examination time, or 4) the theory examination may be taken separately and the remaining three taken at some subsequent examination time. The oral examination will cover the student's preparation in economics in general and can be taken only after all the written examinations have been passed and all other basic requirements satisfied.

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, Mr. Shetler

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. 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.) Laws of demand, supply, returns and costs; price and output determination in different market situations. Mr. Hirschleifer, Mr. Ostroy, Mr. Thompson

101B. (Numbered 100B in 1966-67.) Theory of factor pricing and income distribution; general equilibrium; implications of the pricing process for optimum allocation of resources; interest and capital. Mr. Hirschleifer, Mr. Ostroy, Mr. Thompson

102. Macro Economic Theory.

(Numbered 100C in 1966-67.) Theory of income and employment. Introduction to fiscal and monetary policy. Mr. Arndt, Mr. Britto, Mr. Leijonhufvud

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. Britto, 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. Baird, Mr. Peltzman

108. Economic Demography.

(Numbered 111 in 1966-67.) Theories of population growth and historical evidence. Secular, cyclical and cross sectional analysis of fertility. Economic analyses of migration and labor force participation. Population, human capital and economic growth. Mr. Chiswick

109. Economics of Poverty.

Prerequisite: course 1 or 100. Alternative conceptions and extent of poverty; economic analysis of both the causes of poverty, including discrimination, and the effects of poverty, including crime and unrest; policy implications and remedies. The Staff

110. Economic Problems of Underdeveloped Countries.

A survey of the major issues of development economics. Economic structure of low income countries and primary causes for their limited economic growth. Economic goals and policy alternatives open to their leaders. Possible roles of developed countries. Selected case studies. Mr. Herrick, Mr. Nisbet, Mr. Vakill

111. Theories of Economic Growth and Development.

(Numbered 109 in 1966-67.) Prerequisite: course 101B. Growth models, theory of production under constraints, relative factor prices and their impact on choice of technology, investment criteria, role of the market, economic planning in less developed areas. Mr. Herrick, Mr. Nisbet, Mr. Vakill

112. Policies for Economic Development.

(Numbered 110 in 1966-67.) Prerequisite: course 111 or 102. Suggested strategies for economic development: inflation, balanced growth, industry vs. agriculture, import substitution, export oriented expansion, foreign aid, and others will be considered. Selected case studies. Mr. Herrick, Mr. Nisbet, Mr. Vakill

120. Regional and Urban Economics: Survey.

Economic analysis as applied to significant, current regional and urban problems and policy. Mr. Ellickson, Mr. Hirsch

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. Ellickson, Mr. Hirsch

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. Ellickson, Mr. Hirsch

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, Mrs. Vandermeulen

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.

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. Shapiro, Mr. Shetler

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. Ellickson, 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. Ellickson, Mr. Intriligator, Mr. Kimbell

145. Introduction to Mathematical Economics.

(Numbered 143 in 1966-67.) Prerequisite: a course in calculus. A review of calculus and differential equations, with applications to economics, specifically the theory of the household and the firm, capital theory, macroeconomic systems, and cycles and growth. Mr. Ellickson, Mr. Intriligator, Mr. Kimbell

146. Linear Models in Economics.

(Numbered 144 in 1966-67.) Prerequisite: a course in calculus. An introduction to matrices and matrix algebra, with applications to economics, specifically input-output, Markov chains and linear models of econometrics. Mr. Ellickson, Mr. Intriligator, Mr. Kimbell

147. Introduction to Econometrics.

(Numbered 145 in 1966-67.) Prerequisites: courses 145 and 146 or equivalents. An introduction to econometrics, including model building, data collection, estimation and hypothesis testing, and the use of econometric models for economic analysis and policy. Mr. Ellickson, Mr. Intriligator, Mr. Kimbell

150. Wage Theory.

The supply and demand for labor. Analysis of government, union and other constraints on the competitive system of wage determination. Wage level and structure. Wages and human capital theory. Mr. Chiswick, Mr. Herrick, Mr. Michael

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. Herrick, Mr. Michael

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. Herrick, Mr. Michael

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 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. Burnas, Mr. Gibson, Mr. Sweeney

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. Baird, Mr. Burnas, Mr. Gibson

170. Economics of Industrial Control.

Economic and institutional foundations of public regulation; the pricing process and public policy; public control of competition, monopoly, transportation, and public utilities; the rationale of a private enterprise economy. Mr. Barron, Mr. Klein, Mr. Peltzman

171. Industrial Organization.

Prerequisite: course 101A. Study of the structure and operation of American industry. Topics covered: pricing and output decisions of firms under different market structures; determinants of market structure; theories of oligopoly and monopolistic competition. Empirical evidence of structure and performance of markets discussed. Mr. Klein, Mr. Shapiro

173. Public Utilities.

(Numbered 171 in 1966-69.) 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. Shapiro

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, petro-

leum, and land; private and social costs; cost benefit analysis; analysis of government resource policies. Mr. Shapiro

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. LaForce, Mr. Scoville

182. Economic Problems of the U.S.S.R.

(Numbered 112 in 1966-67.) An introduction to the organization and policies of the economy of the U.S.S.R.

Mr. Murphy

190. International Economics.

(Numbered 195 in 1966-67.) A general introduction to international economics, based upon an examination of the theory of trade and the means and significance of balance of payments adjustments, with analysis of major issues of international commercial and monetary policy confronting national and international agencies.

Mr. Allen, Mr. Arndt, Mr. Heller

191. International Trade Theory.

Prerequisite: course 101B. The theory of international trade. Determination of the direction of trade, international prices, and quantities of commodities traded. The effects of tariffs, quotas, customs unions, and common markets. The effects of free and restricted trade on economic welfare.

Mr. Arndt, Mr. Heller, Mr. Sweeney

192. International Finance.

(Numbered 196 in 1966-67.) Prerequisite: course 102. Emphasis on interpretation of the balance of payments and the adjustment to national and international equilibria, through changes in price levels, exchange rates, and national income. Other topics include: making international payments, determination of exchange rates under various monetary standards, capital movements, exchange controls, and international monetary organization.

Mr. Allen, Mr. Arndt, Mr. Heller

199. Special Studies in Economics. (½ to 1 course)

Prerequisite: senior standing and consent of the instructor. A student may count this course only once in satisfying his major in economics; he may take it a second time to meet University graduation requirements.

Graduate Courses

201A. Theory of Consumption and Exchange.

Mr. Alchian, Mr. Hirschleifer

201B. Theory of Production and Distribution.

Mr. Alchian, Mr. Hirschleifer

201C. Theory of Interest and Capital.

Mr. Alchian, Mr. Hirschleifer, Mr. Leijonhufvud

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

(Formerly numbered 201C and 202.)

Mr. Gibson, 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.)

The Staff

205. Fluctuations and Growth: Measurement and Theory.

(Numbered 254A in 1966-67.)

Mr. Britto, Mr. Thompson

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

(Numbered 254B in 1966-67.)

Mr. Britto, Mr. Thompson

207. History of Economic Theory.

(Numbered 250 in 1966-67.) Mr. Allen, Mr. Baird

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

(Numbered 268A in 1966-67.)

Mr. Herrick, Mr. Nisbet, Mr. Vakil

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

(Numbered 268B in 1966-67.)

Mr. Herrick, Mr. Nisbet, Mr. Vakil

213A-213E. Selected Problems of Economic Development.

213A. Selected Problems of Underdeveloped Areas.

213B. Selected Problems of Underdeveloped Areas: Economic and Political Change.

213C. Selected Problems of Underdeveloped Areas: Africa.

213D. Selected Problems of Underdeveloped Areas: Latin America.

213E. Selected Problems of Underdeveloped Areas: Demography and Economic Development.

Mr. Herrick, Mr. Nisbet, Mr. Vakil

221. Urban and Regional Economic Analysis I.

(Numbered 220A in 1966-67.)

Mr. Ellickson, Mr. Hirsch

222. Urban and Regional Economic Analysis II.

(Numbered 220B in 1966-67.)

Mr. Ellickson, Mr. Hirsch

- 231. Public Finance.**
(Numbered 261 in 1966-67.)
Mr. Chen, Mr. Somers
- 232. Economics of Government Expenditures.**
Mr. Chen
- 234. Economics of Federalism.**
Mr. Thompson
- 245. Mathematical Economics.**
(Numbered 243 in 1966-67.)
Mr. Intriligator, Mr. Kimbell
- 247. Econometrics I.**
(Numbered 242A in 1966-67.)
Mr. Intriligator, Mr. Kimbell
- 248. Econometrics II.**
(Numbered 242B in 1966-67.)
Mr. Intriligator, Mr. Kimbell
- 249. Econometrics III.**
(Numbered 242C in 1966-67.)
Mr. Intriligator, Mr. Kimbell
- 251. Labor Economics I.**
(Numbered 270A in 1966-67.)
Mr. Chiswick, Mr. Herrick, Mr. Michael
- 252. Labor Economics II.**
(Numbered 270B in 1966-67.)
Mr. Chiswick, Mr. Herrick, Mr. Michael
- 253. Labor Problems.**
(Numbered 271 and 272 in 1966-67.)
Mr. Herrick
- 261. Monetary Economics I.**
Mr. Burns, Mr. Gibson, Mr. Thompson
- 262. Monetary Economics II.**
Mr. Burns, Mr. Gibson, Mr. Thompson
- 271. Industrial Organization, Price Policies, and Regulation: Theory.**
(Numbered 260A in 1966-67.)
Mr. Klein, Mr. Pegrum, Mr. Peltzman
- 272. Industrial Organization, Price Policies, and Regulation: Policy.**
(Numbered 260B in 1966-67.)
Mr. Pegrum, Mr. Peltzman, Mr. Shapiro
- 275. National Transport Policy.**
(Numbered 265 in 1966-67.)
Mr. Hilton
- 276. Urban Transportation.**
Mr. Hilton
- 281. Evolution of Economic Institutions in Western Europe.**
(Numbered 263 in 1966-67.)
Mr. LaForce, Mr. Scoville
- 282. Soviet Economic Theory and Organization.**
(Numbered 212 in 1966-67.)
Mr. Murphy
- 283. Evolution of Economic Institutions in the United States.**
(Numbered 282 in 1966-67.)
Mr. Murphy, Mr. Scoville, Mr. Shetler
- 291. International Trade Theory.**
(Numbered 266A in 1966-67.)
Mr. Arndt, Mr. Heller
- 292. International Finance.**
(Numbered 266B in 1966-67.)
Mr. Allen, Mr. Arndt, Mr. Heller
- 293. International Economics: Selected Topics.**
(Numbered 267 in 1966-67.)
Mr. Allen, Mr. Arndt, Mr. Heller
Individual Study and Research
- 596. Individual Study. (½ to 2 courses)**
Directed individual study or research. The Staff
- 597. Individual Study: Graduate Examinations.**
(½ to 2 courses)
Directed individual study in preparation for the M.A. comprehensive examination or the Ph.D. qualifying examination. The Staff
- 598. Individual Research: M.A. Thesis.**
(½ to 2 courses)
Directed individual research in preparation of M.A. thesis. The Staff
- 599. Individual Research: Ph.D. Dissertation.**
(½ to 2 courses)
Directed individual research in preparation of Ph.D. dissertation. The Staff

■ EDUCATION

(Department Office, 244 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 (Vice-Chairman of the Department).*
- Claude W. Fawcett, Ph.D., *Professor of Education.*
- Clarence Fielstra, Ph.D., *Professor of Education.*
- John I. Goodlad, Ph.D., L.H.D., *Professor of Education and Director of University Elementary School.*
- C. Wayne Gordon, Ph.D., *Professor of Education and Sociology (Chairman of the Department).*
- B. Lamar Johnson, Ph.D., *Professor of Education.*

- Evan R. Keislar, Ph.D., *Professor of Education.*
 George F. Kneller, Ph.D., Litt.D., LL.D., *Professor of Education.*
 Erick L. Lindman, Ph.D., *Professor of Education.*
 William H. Lucio, Ph.D., *Professor of Education.*
 John D. McNeil, Ed.D., *Professor of Education and Head of Supervised Teaching.*
 Lynne C. Monroe, Ed.D., *Professor of Education.*
 C. Robert Pace, Ph.D., *Professor of Education.*
 Rosemary Park, Ph.D., *Professor of Education.*
 May V. Seagoe, Ph.D., *Professor of Education.*
 Paul H. Sheats, Ph.D., LL.D., *Professor of Education.*
 A. Garth Sorenson, Ph.D., *Professor of Education.*
 Lawrence E. Vredevoe, Ph.D., *Professor of Education.*
 Samuel J. Wanous, Ph.D., *Professor of Education.*
 Charles Z. Wilson, Ph.D., *Professor of Education.*
 Merlin C. Wittrock, Ph.D., *Professor of Education.*
 Jesse A. Bond, Ed.D., *Emeritus Professor of Education.*
 William S. Briscoe, Ed.D., *Emeritus Professor of Education.*
 Watson Dickerman, Ph.D., *Emeritus Professor of Education.*
 John A. Hockett, Ph.D., *Emeritus Professor of Education.*
 David F. Jackey, Ph.D., *Emeritus Professor of Education.*
 Dorothy M. Leahy, Ed.D., *Emeritus Professor of Education.*
 Malcolm S. MacLean, Ph.D., *Emeritus Professor of Education.*
 F. Dean McClusky, Ph.D., *Emeritus Professor of Education.*
 Lloyd N. Morrisett, Ph.D., *Emeritus Professor of Education.*
 Francis M. Obst, Ed.D., *Emeritus Professor of Education.*
 Corrinne A. Seeds, M.A., *Emeritus Professor of Education.*
 Lorraine M. Sherer, Ed.D., *Emeritus Professor of Education.*
 J. Harold Williams, Ph.D., *Emeritus Professor of Education.*
 Frederic P. Woellner, Ph.D., Litt.D., LL.D., *Emeritus Professor of Education.*
 Marvin C. Alkin, Ed.D., *Associate Professor of Education.*
 Charlotte Crabtree, Ph.D., *Associate Professor of Education.*
 Lawrence W. Erickson, Ed.D., *Associate Professor of Education.*
 Frank M. Hewett, Ph.D., *Associate Professor of Education and Psychiatry.*
 Theodore R. Husek, Ph.D., *Associate Professor of Education.*
 Wendell P. Jones, Ph.D., *Associate Professor of Education.*
 Frederick C. Kintzer, Ed.D., *Associate Professor of Education.*
 W. James Popham, Ed.D., *Associate Professor of Education.*
 Louise L. Tyler, Ph.D., *Associate Professor of Education.*
 Carl Weinberg, Ed.D., *Associate Professor of Education.*
 Eva L. Baker, Ed.D., *Assistant Professor of Education.*
 Clarence H. Bradford, Ph.D., *Assistant Professor of Education.*
 James E. Bruno, Ph.D., *Assistant Professor of Education.*
 Webster R. Callaway, Ph.D., *Assistant Professor of Education.*
 Arthur M. Cohen, Ph.D., *Assistant Professor of Education.*
 Sol Cohen, Ph.D., *Assistant Professor of Education.*
 Diana M. Drake, Ed.D., *Assistant Professor of Education.*
 Norma J. Feshbach, Ph.D., *Assistant Professor of Education.*
 Simon Gonzales, Ed.D., *Assistant Professor of Education.*
 Barbara K. Keogh, Ph.D., *Assistant Professor of Education.*
 Carol H. Kipps, Ed.D., *Assistant Professor of Education.*
 Marilyn H. Kourilsky, Ph.D., *Assistant Professor of Education.*
 James R. Liesch, Ph.D., *Assistant Professor of Education.*

Bruce A. Reinhart, Ph.D., *Assistant Professor of Education.*
 Thomas G. Robischon, Ph.D., *Assistant Professor of Education.*
 Jay D. Scribner, Ed.D., *Assistant Professor of Education.*
 Merron S. Seron, Ph.D., *Assistant Professor of Education.*
 Rodney W. Skager, Ph.D., *Assistant Professor of Education.*
 James W. Trent, Ph.D., *Assistant Professor of Education.*
 Cornelius J. Troost, Ed.D., *Assistant Professor of Education.*
 Dolores W. Warner, Ph.D., *Assistant Professor of Education.*
 Richard C. Williams, Ph.D., *Assistant Professor of Education.*
 James Yelvington, Ph.D., *Assistant Professor of Education.*



David Allen, Ed.D., *Lecturer in Education.*
 Byron H. Atkinson, Ed.D., *Lecturer in Education.*
 Frank H. Bowles, M.A., *Acting Professor of Education.*
 Gary D. Fenstermacher, B.A., *Acting Assistant Professor of Education.*
 Shirley Hansen, Ed.D., *Lecturer in Education.*
 Allen Hogle, Ph.D., *Lecturer in Education.*
 Robert Kindred, Ed.D., *Lecturer in Education.*
 Donald H. Layton, M.Ed., *Acting Assistant Professor of Education.*
 Jerrold Novotney, Ed.D., *Lecturer in Education.*
 David W. O'Shea, M.A., *Acting Assistant Professor of Education and Sociology.*
 Phillip A. Reidford, M.A., *Acting Assistant Professor of Education.*
 Glenn W. Watts, M.Ed., *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.*
 Mortimer H. Chambers, Ph.D., *Associate Professor of History.*
 Margherita Cottino-Jones, Ph.D., *Assistant Professor of Italian.*
 David G. Farrelly, Ph.D., *Associate Professor of Political Science.*
 Archine Fetty, M.A., *Professor of Art.*
 Maurice Gerow, Ph.D., *Associate Professor of Music.*
 John W. Green, Ph.D., *Professor of Mathematics.*
 Donald T. Handy, Ed.D., *Associate Professor of Physical Education.*
 Peter C. L. Hodgson, M.A., *Acting Assistant Professor of Slavic Languages.*
 Andrew H. Horn, Ph.D., *Professor of Library Service.*
 Gregory J. Jann, Ph.D., *Associate Professor of Bacteriology.*
 Wendell E. Jeffrey, Ph.D., *Professor of Psychology.*
 Edward B. Johns, Ed.D., *Professor of Public Health.*
 David Kaplan, Ph.D., *Associate Professor of Philosophy.*
 Erwin M. Keithley, Ed.D., *Associate Professor of Business Administration.*
 Walter 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.*
 Philip Newman, Ph.D., *Associate Professor of Anthropology.*
 Charles T. Nisbet, Ph.D., *Assistant Professor of Economics.*
 Waldo Phelps, Ph.D., *Professor of Speech.*
 James E. Phillips, Jr., Ph.D., *Professor of English.*
 Bernard O. Phinney, Ph.D., *Professor of Botany.*
 Daniel M. Popper, Ph.D., *Professor of Astronomy.*
 Oreste F. Pucciani, Ph.D., *Professor of French.*

Barbara E. Smith, M.A., *Lecturer in Classics.*
 Muriel Uprichard, Ph.D., *Lecturer in Nursing and Associate Research Psychologist.*
 Norman A. Watson, Ph.D., *Professor of Physics.*
 Charles A. West, Ph.D., *Professor of Chemistry.*
 Russell A. Westmann, Ph.D., *Associate Professor of Engineering.*

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.

Uses source materials from the humanities and the social sciences to examine the problems of education today. Special emphasis is placed on the nature and aims of education within a context of contemporary social issues. Mr. Kneller, Mr. Liesch, and Staff

101. Education in Black and White.

Provide teachers and prospective teachers with an opportunity to understand the unique problems of being black in urban America.

Mr. Weinberg and the Staff

102. Education of the Mexican-American Child.

Help prospective teachers acquire an understanding of the social values and ethnic characteristics of people of Mexican descent residing in the United States.

Mr. Gonzalez

108. Sociology of Education.

(Same as Sociology 143.) Prerequisite: Sociology 1A or 101. Study of social processes and interaction patterns in educational organizations; the relationship of such organizations to aspects of society, social class and power; social relations within the school, college and university; formal and informal groups, subcultures in educational systems; roles of teachers, students and administrators.

Mr. Gordon, Mr. Weinberg

112. Psychological Foundations of Education.

(Formerly numbered 110A-110B.) Prerequisite: Psychology 10 and 12 or 101. The learning process in school situations, the evaluation of learning, the development of motor and intellectual abilities, and social and personal development of children in relation to the school; educational measurement and the interpretation of research. Mr. Keislar, Mr. Wittrock

116. The Education of Exceptional Children.

Two class hours, four hours field work. Prerequisite: Psychology 10 and 12 or 101; limited to graduate students and qualified seniors. The characteristics of educational provisions for exceptional children, including the mentally and physically handicapped, the gifted, the emotionally disturbed, and the socially disadvantaged.

124A-124B-124C. Curriculum in Elementary Schools.

124A. The Elementary Curriculum: Social Studies.

Prerequisite: courses 100 and 112. Critical examination of the elementary school curriculum; principles and methods in developing instructional

programs in social studies; participation in schools; two hour laboratory by arrangement.

Miss Crabtree

124B. The Elementary Curriculum: Language Arts and Reading.

Prerequisite: course 124A. Principles and methods in developing instructional programs in language arts and reading; participation in schools; two hour laboratory by arrangement.

Miss Warner

124C. The Elementary Curriculum: Mathematics and Science.

(Formerly numbered 124B.) Prerequisite: Mathematics 38. Principles and methods in developing instructional programs in mathematics and science; participation in schools; two hour laboratory by arrangement. Mr. Dutton, Mrs. Kipps, Mr. Troost

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.

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.

128D. Programs for the Educationally Handicapped.

Two class hours, four hours field work. Prerequisite: course 116; limited to graduates and qualified seniors. Developmental and learning needs of emotionally disturbed and minimally neurologically impaired children; curriculum, procedures and materials; observation and participation at the Neuropsychiatric Institute School.

Mr. Hewett, Mrs. Keogh

128E. Programs for the Gifted.

Prerequisite: course 116; limited to graduates and qualified seniors. Developmental and learning needs of gifted children; curriculum, procedures and materials; observation and participation in programs.

Mr. Callaway

130. Curriculum and Instruction in Secondary Schools.

Analysis of curricular and instructional procedures, observation, and participation in secondary schools.

Mrs. Baker, Mr. Popham

† All courses four class hours except where otherwise indicated.

137A-137B-137C. Business Education.**137A. The Curriculum in Business Education.**

(Formerly numbered 137.) The curriculum in business education in secondary schools, including instructional techniques, course content, prognosis of achievement, standards, error analyses, transfer of training, remedial techniques, and evaluation. Mr. Erickson

137B. The Teaching of Secretarial Subjects.

(Formerly numbered 370A and 370D.) A survey and evaluation of procedures and materials used in teaching typewriting, secretarial subjects, office practice and business machines. Mr. Erickson

137C. The Teaching of Bookkeeping, General Business, and Economics.

(Formerly numbered 370B-370C.) A survey and evaluation of the procedures and materials used in teaching bookkeeping, general business, and economics in secondary schools. Mr. Erickson

199. Special Studies. (½ to 2 courses)

Prerequisite: senior standing and consent of the instructor. Independent study of individual problems. The Staff

Graduate Courses:**200A-200B-200C. Research Method in the Cultural Foundations of Education.****200A. Historical Research and Reporting.**

Technique of historical research, independent investigation, and writing on selected topics. For all students planning to pursue nonstatistical research. Mr. S. Cohen

200B. Survey Research Methods in Education.

(Formerly numbered 200A.) Prerequisite: course 210A or the equivalent. Problems of conceptualization, organization and gathering non-experimental and quasi-experimental quantitative data. Mr. O'Shea, 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. Mr. Bradford

201A-201B-201C. History of Education.**201A. History of Western Education.**

The rise of the Western educational tradition; major ideas, institutions, personalities. From the world of the Greeks to that of the Twentieth Century. Mr. S. Cohen

201B. History of American Education to 1860.

Development of American education from the 17th Century to the Civil War. The emergence of the public school system in the context of social, intellectual and political change. Mr. S. Cohen

201C. History of American Education, 1860 to Present.

Emphasis on problems of urbanization, industrialization, immigration and public school reform; contemporary school reform movements in context of social change. Mr. S. Cohen

204A-204D. Comparative Education.**204A. Comparative Education.**

(Formerly numbered 104 and 204A-204B.) Analysis of the educational systems of representative developed and emerging nations in relation to national cultures and characteristics; consideration

of the problems of educational borrowing and adaptation among nations. Mr. W. Jones

204B. African Education.

(Formerly numbered 253C-253D.) Prerequisite: course 204A. Historical development and comparative analysis of educational policies and practices in sub-Saharan Africa with special attention to the impact of social, political, and economic factors. Mr. W. Jones

204C. Asian Education.

(Formerly numbered 253F.) Prerequisite: course 204A. Analysis of recent developments in education in South and East Asia as they are influenced by political, economic and cultural changes. Mr. Liesch

204D. Latin American Education.

(Formerly numbered 253E.) Prerequisite: course 204A. Status of education in relation to historical, social, political and economic factors; the educational programs of the Organization of American States and UNESCO in Latin America.

206A-206D. Philosophy of Education.

A comprehensive introduction to the entire field: systematic philosophy, including theories of knowledge, value, and ethics; existentialism; and analytic philosophy, including the logic and language of educational thought and practice. Though conceived as a unit, the course is divisible. Mr. Kneller and Staff

207. Economics and Education.

Analysis of the relationship between investment in education and the development of human resources.

208A-208B. Sociology of Education.**208A. The Organization of Education.**

Prerequisite: course 108. Analysis of the social and cultural systems of education; emphasis on the classroom and its environment; large organizational units and their relationships to societies. Mr. Gordon, Mr. O'Shea

208B. Sociological Paradigms in Education.

Prerequisite: course 108 or equivalent. The adaptation of sociological paradigms to the analysis of educational systems. Models, typologies and conceptual systems on the subject of formal and informal organization, social disorganization, system functions, social change, role conflict, and the interaction of institutions are considered. Mr. Weinberg

209A-209B. Junior College and Higher Education.**209A. The Junior College.**

Study of the history and role of the junior college, and of problems and issues in junior college education. Mr. Yelvington

209B. Higher Education in the United States.

An examination and appraisal of the scope and diversity of higher education; varieties of students, institutions, purposes, and programs; trends and current issues. Mr. Pace

210A-210B-210C. Educational Research and Experimental Design.**210A. Analysis of Educational Research Data.**

(Formerly numbered 114 and 200A-200B.) Basic inferential and descriptive statistics; design of simple educational experiments. Mr. Bradford, Mr. Husek, Mr. Skager

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

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. Bradford, 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. Bradford, Mr. Skager

211A-211B-211C. Measurement in Education.**211A. The Measurement of Educational Achievement and Aptitude.**

(Formerly numbered 119.) Two class hours, 4 hours laboratory. Prerequisite: course 210A. A critical study of tests of achievement and aptitude with an emphasis on group tests; the relation of achievement to aptitude and personality; elements of validity and reliability.

211B. Measurement in Education: Underlying Theory.

(Formerly numbered 214A-214B.) Prerequisite: course 211A. Measurement theory as applied to testing, including classical test theory and other approaches to the nature of testing; implications of theories for test construction and selection; current status of validity and reliability theory.

Mr. Husek, Mr. Skager

211C. Measurement in Education: Special Problems and Techniques.

(Formerly numbered 214A-214B.) Two class hours, four hours laboratory. Prerequisite: course 211B. Introduction to special techniques and problems in measurement, including Q-methodology, the semantic differential, Cloze procedure, cross-cultural measurement problems, item analysis, pattern analysis, Guttman scaling and response sets.

Mr. Husek, Mr. Skager

212A-212B-212C. Learning and Education.**212A. Learning and Education.**

(Formerly numbered 210, 211 and 212.) A review of the literature on school learning, and the development of intellectual abilities in relation to instructional procedures.

Miss Drake, Mr. Reidford

212B. The Teaching of Concepts.

(Numbered 212C in 1966-1967.) Prerequisite: course 210A and Psychology 112C. A critical review of the literature on the learning of concepts and of hierarchically ordered subject matter with emphasis on the stimulus variables involved in teaching.

Mr. Wittrock

212C. The Teaching of Problem Solving Abilities.

(Numbered 212D in 1966-1967.) Prerequisite: course 212B. A critical review of the literature on the cultivation of problem solving abilities, including learning how to learn, remote transfer, savings and creativity.

Mr. Skager, Mr. Wittrock

213A-213B-213C. Pupil Personnel Services.**213A. Fundamentals of Student Personnel Work.**

(Formerly numbered 215A.) The formulation of objectives, analysis of ways of implementing guidance programs, and evaluation of the outcomes; emphasis on congruence between objectives, implementation, and evaluation. Mr. Seron

213B. Legal and Ethical Bases of Student Personnel Work.

(Formerly numbered 215B.) Prerequisite: course 213A. Ethical and legal codes relevant to pupil personnel services; relation of value systems and personality; case studies in the implications of personal values in counseling situations.

Mr. Seron

213C. Group Process in Education.

(Formerly numbered 258C.) Group productivity, leadership, social perception and attitude formation, decision-making, determination of group interaction variables and the effect of behavior changes in individuals and groups.

214A-214B. Counseling Theory and Practice.

(Formerly numbered 258A-258B.) Prerequisite: limited to candidates for advanced degrees whose major interest is counseling, and to selected high school and college counselors. Counseling procedures, educational planning, and methods for helping students handle personal problems that interfere with school progress; critical evaluation of procedures.

Mr. Sorenson

214C. Principles of Career Planning.

(Formerly numbered 217.) Prerequisite: courses 112, 211A and 415A. The use of tests and occupational information in helping students in educational and vocational planning.

Mr. Barlow

214D. Vocational Guidance.

Prerequisite: course 214C. Depth study of current interests and needs in vocational guidance; principles, problems, and practices of vocational guidance.

Mr. Reinhart

215. Sociology of Counseling and Guidance.

The role of the counselor in a social system. The social world of education with emphasis on problems and conflicts. The counselor's function in social reconstruction and clinical sociology.

Mr. Weinberg

217A-217B-217C. Development and Personality in the Educational Process.**217A. Child Development and the Educational Process.**

Prerequisite: 212A or equivalent. Biological and familial, school, and other cultural influences on the child; development of the child in the context of current research and theoretical models; relationship between personality factors and cognitive functions in school settings.

Mrs. Feshbach

217B. Intellectual Development and School Performance.

Prerequisite: 210A or equivalent; 211B recommended. Individual differences including birth order, sensory stimulation and deprivation, sex, race and social class in relation to intellectual functioning, school achievement and aptitudes.

Mrs. Feshbach

217C. Personality Development and Motivation in Education.

(Numbered 212B 1966-1967) Personality development and environmental conditions which form motivational patterns; anxiety, dependency, perception, creativity, attitude formation and the self; research and personality theory bearing on motivational problems in school settings.

228A-228D. Research on the Education of Exceptional Children.

228A. Research on the Education of Exceptional Children.

Prerequisite: course 116. Historical-social origins and current social trends affecting the education of the exceptional; analysis of major research on educational programs, with emphasis on the physically handicapped.

Mr. Callaway, Mrs. Keogh

228B. Research on the Education of the Mentally Retarded.

(Formerly numbered 228.) Prerequisite: course 116; 128A recommended. Intensive study of current research in biology, psychology and sociology related to mental retardation; experimental programs; parent and community problems.

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.

229B. Problems in the Education of the Educationally Handicapped.

Two class hours, four hours laboratory. Prerequisite: course 228C. Individual research and participation in school programs for the emotionally disturbed and minimally neurologically impaired. Mr. Hewett

229C. Problems in the Education of the Gifted.

Two class hours, four hours laboratory. Prerequisite: course 228D. Individual research and participation in school programs for the gifted.

Mr. Callaway

232A-232B. Adult Education.

Overview of the field, historical development, agencies and clientele, current problems and issues, including impact of new federal subsidies on adult education policies and programming. Mr. Sheats

240A-240H. Administrative 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. Layton, Mr. Scribner

240C. School Personnel Administration.

(Formerly numbered 244A-244B.) Prerequisite: course 240A or consent of instructor. The formulation and execution of personnel policies from both the organizational and individual basis.

Mr. Fawcett

240D. School Finance.

Prerequisite: course 240A or consent of the instructor. Historical and theoretical background of educational finance; considers principles related to federal and state participation in educational finance; considers other economic factors related to the provision and utilization of financial resources in schools.

Mr. Alkin, Mr. Lindman

240E. Instructional Design and Supervision.

(Formerly numbered 241A-241B-241C.) Prerequisite: course 240A or consent of instructor. Administrative-supervisory aspects of curriculum design and planning; school learning; program evaluation; and in-service training. Mr. Fielstra

240F. Legal Bases of Education.

Prerequisite: course 240A. Theory of laws relating to education; specific laws, court decisions, and legal procedures relating to schools, colleges, and universities.

Mr. Williams

240G. Communication in Educational Organizations.

Prerequisite: course 240A. Communication theory and its application to administrative problems; includes internal communications among board members and among superintendent and staff, and external communication with the community.

Mr. Fawcett

240H. Information and Planning Systems in Education.

Design of management information systems in educational organizations; procedures for organizational research and system analysis in educational systems.

Mr. Bruno

250. Seminar: History of Education.

(Formerly numbered 250A-250B.) Mr. S. Cohen

251A-251D. Seminar: Philosophy of Education.

Mr. Kneller and Staff

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

252A. Educational Organizations.

Mr. Gordon, Mr. O'Shea

252B. Education and Social Change.

Mr. Robischon, Mr. Weinberg

253A-253D. Seminars: Comparative Education.

253A. Current Problems in Comparative Education.

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

253B. African Education.

(Formerly numbered 253C-253D.) Prerequisite: course 204B. Mr. W. Jones

253C. Asian Education.

(Formerly numbered 253F.) Prerequisite: course 204C. Mr. Liesch

253D. Latin American Education.

(Formerly numbered 253E.) Prerequisite: course 204D.

255. Seminar: Special Topics in Measurement and Research Design.
 (Formerly numbered 256A-256B.) Prerequisites: courses 210C and 211C or consent of the instructor.
 Mr. Husek, Mr. Skager

256. Seminar: Special Topics in School Learning and Development.
 (Formerly numbered 255A-255B.) Prerequisite: consent of the instructor.
 Mrs. Feasbach, Mr. Keislar, Mr. Wittrock

257. Seminar: Pupil Personnel Services.
 (Formerly numbered 258A-258B.) Mr. Sorenson

258A-258B. Seminars: Instructional Research and Development.
258A. Problems in Instructional Research.
 (Formerly numbered 257A-257B.)
 Mr. Keislar, Mr. Reidford
258B. Problems in Programmed Instruction.
 (Formerly numbered 257C-257D.) Mr. Keislar

259. Seminar: Social Psychological Research in Higher Education.
 (Formerly numbered 259B-259C.) Mr. Pace

260. Seminar: Principles of Curriculum and Instruction.
 Mr. Goodlad, Mr. McNeil, Mrs. Tyler

261A-261F. Seminars: Levels of Education.
261A. Early Childhood Education.
 (Formerly numbered 261A-261B.) Prerequisite: courses 421A-421B.
261B. Elementary Education.
 (Formerly numbered 262A-262B.) Mr. Dutton
261C. Secondary Education. Mr. Vredevoe
 (Formerly numbered 263 and 280A-280B.)
261D. The Junior College Curriculum.
 (Formerly numbered 264A-264B.)
 Mr. Johnson, Mr. Yelvington
261E. Technical Education in the Junior College.
 (Formerly numbered 264C-264D.) Mr. Barlow
261F. Higher Education.
 (Formerly numbered 254A.) Mr. Pace

262A-262J. 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. Kipp
 (Formerly numbered 262A-262B.)
262D. Language Arts and English.
 (Formerly numbered 262A-262B.)
262E. Science.
 (Formerly numbered 262A-262B.) Mr. Troost
262G. Business Education.
 (Formerly numbered 267A-267B.) Mr. Wanous
262H. Industrial Arts. Mr. Monroe
262I. Vocational Education.
 (Formerly numbered 268A-268B.) Mr. Barlow
262J. Economic Education.

263A-263B-263C. Seminars: Education of Exceptional Children.

263A. Education of Exceptional Children.
 Mr. Hewett, Mrs. Keogh, Mrs. Seagoe
263B-263C. Learning Disorders.
 (Same as Psychology 276A-276B.)
 Mr. Coleman

267. Seminar: Educational Technology.
 (Formerly numbered 269B.) Prerequisite: course 433A; 418A, 419A and 433B recommended.
 Mrs. Baker

269A-269B. Seminar: Inquiry into American Schooling.
 (Formerly numbered 254B.) Mr. Goodlad

270A-270F. Seminars: Administration.
270A. School Government.
 (Formerly numbered 271.) Prerequisite: course 240B.
 Mr. Bruno, 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
270F. Systems Analysis in Education. Mr. Bruno

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: course 324A.
324C. Supervised Teaching: Supplementary Teaching in the Elementary School. (¾ 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

§ 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.

§330A-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.)

§334A-334B. Supervised Teaching: Junior College.

Mr. A. Cohen and Staff

334A. Supervised Teaching: Junior College.

Prerequisite: course 431, or 130 and 209A.

334B. Supervised Teaching: Junior College. (½ course)

Extension of scheduling for 334A to permit articulation with semester system in participating junior colleges.

413A-413B-413C. School Participation in Pupil**Personnel Work.**

413A. School Participation in Pupil Personnel Works: Part I. (1 to 1½ courses)

Prerequisite: Consent of the instructor. Limited to majors in pupil personnel services. Two class hours, four to eight hours field work. Laboratory experience in counseling students in public schools.

Mr. Seron

413B. School Participation in Pupil Personnel Works: Part II. (1 to 1½ courses)

Prerequisite: Consent of the instructor. Limited to majors in pupil personnel services. Two class hours, four to eight hours field work. Laboratory experience in counseling students in public schools.

Mr. Seron

413C. School Participation in Pupil Personnel Works: Part III. (1 to 1½ courses)

Prerequisite: Consent of the instructor. Limited to majors in pupil personnel services. Two class hours, four to eight hours field work. Laboratory experience in counseling students in public schools.

Mr. Seron

415A-415B. Appraisal of Individuals in Schools.

415A. The Appraisal of Intelligence.

(Numbered 215A in 1966-67.) Prerequisite: courses 210A and 211A. The development of cognitive functioning in relation to intelligence testing; laboratory experience in individual testing.

Mrs. Feahbach

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. Feahbach

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 physi-

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cally 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. Mrs. Baker

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.

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.

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, Mr. Riedford

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.

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. Kippis

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-228E-228C-228D, 416A and one course from 229A through 229C.

430. The Secondary School Curriculum.

(Numbered 230A in 1966-67.) Prerequisite: course 420A. Development of newer curriculum offerings in the light of the purposes of secondary education; analysis of philosophical, psychological and sociological bases for selection of learning experiences.

Mr. McNeill

431. The Junior College Curriculum.

(Numbered 231 in 1966-67.) Trends, practices, problems, and issues in the development and implementation of junior college curricula and instructional procedures as they relate to the functions of the two-year college and the characteristics of junior college students.

Mr. A. Cohen

433A-433B. Educational Technology.

433A. Instructional Product Development.

Prerequisite: course 112 or 130. An examination of the procedures employed in the systematic development of instructional products. Students acquire competencies associated with those procedures.

Mr. Popham

433B. Technological Development in Educational Media.

(Numbered 233B in 1966-67.) Two class hours, four hours laboratory. Prerequisite: courses 112 and 433A; 210A and 212A recommended. Theory, current problems, and anticipated trends in instrumentation and systems development for instructional applications and research; including computer-aided instruction, communication satellites, and other advanced systems; theory and laboratory practice with instrumentation in educational research.

436A-436E. Business Education.

436A. Principles and Problems of Business Education.

(Numbered 236A in 1966-67.) Historical development and principles, practices, and problems in business education in secondary schools and colleges.

Mr. Erickson

436B. Business Education in Secondary and Higher Education: Advanced.

(Numbered 236B in 1966-67.) Advanced study in business education with a critical analysis of significant research applicable to curriculum and teaching practices.

Mr. Erickson

436C-436D. Education in Family Finance.

Prerequisite: credit toward advanced degrees by petition only. Theories, principles, concepts and research relating to sound personal and family financial management.

Mr. Erickson

436E. Evaluation and Field Research in Family Finance Education.

Concepts and principles relating to family finance education and their application to teaching situations.

Mr. Erickson

437A-437B-437C. Technological Change and Business Education.

437A. Principles of Curriculum in Economic Education.

(Numbered 237A in 1966-67.) Theories, principles and concepts relating to an understanding of the business and economic system; their application to teaching in the secondary school.

Mr. Erickson, Mrs. Kourilsky

437B. Corporate Educational Programs.

(Numbered 237B in 1966-67.) History and scope of corporate training programs; current educational problems in training programs within industry as they are affected by automation and technological change.

437C. Curriculum in Electronic Computers.

This course deals with courses of study, instructional materials, methods of presentation and evaluation of a number of programs in automated information processing for high schools and junior colleges.

Mr. Wanous

438A-438B. Vocational Education.

(Formerly numbered 238A-238B.) Prerequisite: course 100 or the equivalent. An advanced course in the principles of vocational education from the point of view of supervisory and administrative personnel.

Mr. Barlow

439A-439B. Industrial Arts Education.

439A. Industrial Arts Education: Principles and Programs.

(Formerly numbered 239A.) Prerequisite: baccalaureate degree with background of industrial arts instruction. The purposes and processes in industrial arts in the secondary school with their implications in a technological society. Mr. Monroe

439B. The Industrial Arts Curriculum in Secondary Schools.

(Formerly numbered 239B.) Objectives, organization and presentation of subject matter in industrial arts; adaptation to individual interest.

Mr. Monroe

440. Internship in Administration.

(Formerly numbered 441, 442, 446 and 447.) Two class hours, six hours field work. Prerequisite: approval of the Area of Administrative Studies.

Mr. Williams, Mr. Yelvington

441A-441D. Administration Specializations.

441A. Elementary School Administration.

(Numbered 241A in 1966-67.) Prerequisite: course 240A or consent of instructor. Theoretical and functional aspects of elementary school administration and supervision in varied organizational structures.

Mr. Lacio

441B. Secondary School Administration.

(Numbered 241B in 1966-67.) Prerequisite: course 240A or consent of instructor. Theoretical and functional aspects of secondary school administration and supervision in varied organizational structures.

Mr. Vredevoe, Mr. Williams

441C. School District Administration.

(Numbered 241C in 1966-67.) Prerequisite: course 240A or consent of instructor. Theoretical and functional aspects of school district administration and supervision in varied organizational structures.

Mr. Fawcett

441D. Junior College Administration.

(Numbered 241D in 1966-67.) Prerequisite: course 240A or consent of instructor. Theoretical and functional aspects of junior college administration and supervision in varied organizational structures.

Mr. Kintzer

449. Internship in Junior College Administration.

($\frac{1}{2}$ to 1 course)

May be repeated twice for credit.

461A-461B-461C. Seminars: Adult Education.

461A. Adult education in other countries: cultural determinants.

Mr. Sheats

461B. Community agencies of adult education and institutional resources; field visitations, consultations with staff in public and private programs.

Mr. Sheats

461C. Community development programs in the U. S.: scope, related research, and field observation.

Mr. Sheats

470A-470B-470C. Seminars: Administration.

470A. Elementary School Administration.

(Numbered 270E in 1966-67.) Prerequisite: course 441A.

Mr. Lacio

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. (1 or 2 courses)

(Formerly numbered 299A-299B.) Research for and preparation of the doctoral dissertation. Maximum credit, no limit.

The Staff

ENGINEERING

(Department Office, 7400 Boelter Hall)

Morris Asimow, Ph.D., *Professor of Engineering.*

Roy Bainer, M.S., *Professor of Engineering and Professor of Agricultural Engineering,*

Resident at Davis.

A. V. Balakrishnan, Ph.D., *Professor of Engineering and Mathematics.*

John L. Barnes, Ph.D., *Professor of Engineering.*

Joseph S. Beggs, D.Eng., *Professor of Engineering.*

Alexander W. Boldyreff, Ph.D., *Professor of Engineering.*

Harry Buchberg, M.S., *Professor of Engineering.*

Albert F. Bush, M.S., *Professor of Engineering and Public Health.*

Harry W. Case, Ph.D., *Professor of Engineering and Psychology.*

Andrew Charwat, Ph.D., *Professor of Engineering.*

Francis F. Chen, Ph.D., *Professor of Engineering.*

Reno R. Cole, M.S., *Professor of Engineering.*

- Edward P. Coleman, Ph.D., *Professor of Engineering.*
 David L. Douglass, Ph.D., *Professor of Engineering.*
 C. Martin Duke, M.S., *Professor of Engineering.*
 Donald K. Edwards, Ph.D., *Professor of Engineering.*
 Robert S. Elliott, Ph.D., *Professor of Engineering.*
 J. Morley English, Ph.D., *Professor of Engineering.*
 Gerald Estrin, Ph.D., *Professor of Engineering.*
 Alan E. Flanigan, Ph.D., *Professor of Engineering.*
 A. Theodore Forrester, Ph.D., *Professor of Engineering and Physics.*
 Kurt Forster, Ph.D., *Professor of Engineering.*
 Louis L. Grandi, M.S., *Professor of Engineering.*
 Warren A. Hall, Ph.D., *Professor of Engineering, Resident at Riverside.*
 John C. Harper, D.Sc., *Professor of Engineering and Agricultural Engineering, Resident at Davis.*
 Samuel Herrick, Ph.D., *Professor of Engineering and Astronomy.*
 W. D. Hershberger, Ph.D., *Professor of Engineering.*
 Thomas E. Hicks, Ph.D., *Professor of Engineering.*
 W. C. Hurty, M.S., *Professor of Engineering.*
 Walter J. Karplus, Ph.D., *Professor of Engineering.*
 William J. Knapp, Sc.D., *Professor of Engineering.*
 Eldon L. Knuth, Ph.D., *Professor of Engineering.*
 Cornelius T. Leondes, Ph.D., *Professor of Engineering.*
 Tung Hua Lin, D.Sc., *Professor of Engineering.*
 John H. Lyman, Ph.D., *Professor of Engineering and Psychology.*
 John D. Mackenzie, Ph.D., *Professor of Engineering.*
 Joseph W. McCutchan, M.S., *Professor of Engineering.*
 William C. Meecham, Ph.D., *Professor of Engineering.*
 Michel Melkanoff, Ph.D., *Professor of Engineering.*
 Antony J. A. Morgan, Ph.D., *Professor of Engineering.*
 Ken Nobe, Ph.D., *Professor of Engineering.*
 Herbert B. Nottage, Ph.D., *Professor of Engineering.*
 Russell R. O'Neill, Ph.D., *Professor of Engineering.*
 Wesley L. Orr, C. E., *Professor of Engineering.*
 Richard L. Perrine, Ph.D., *Professor of Engineering.*
 Russell L. Perry, M.E., *Professor of Engineering and Agricultural Engineering, Resident at Riverside.*
 Arthur F. Pillsbury, Engr., *Professor of Engineering.*
 Louis A. Pipes, Ph.D., *Professor of Engineering.*
 H. L. D. Pugh, D.Sc., *Professor of Engineering.*
 Lawrence B. Robinson, Ph.D., *Professor of Engineering.*
 Thomas A. Rogers, Ph.D., *Professor of Engineering.*
 Allen B. Rosenstein, Ph.D., *Professor of Engineering.*
 George H. Sines, Ph.D., *Professor of Engineering.*
 Chauncey Starr, Ph.D., *Professor of Engineering.*
 Antonin Svoboda, D.Tech.Sci., *Professor of Engineering.*
 Edward H. Taylor, M.S., *Professor of Engineering.*
 Alan S. Tetelman, D.Eng., *Professor of Engineering.*
 Tracy Y. Thomas, Ph.D., *Professor of Engineering in Residence.*
 William T. Thomson, Ph.D., *Professor of Engineering, Resident at Santa Barbara.*
 Ralph M. Barnes, Ph.D., *Emeritus Professor of Engineering and Production Management.*
 Charles T. Boehnlein, Ph.D., *Emeritus Professor of Engineering.*
 W. Julian King, 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.*
 Algirdas Avizienis, Ph.D., *Associate Professor of Engineering.*
 Bertram Bussell, Ph.D., *Associate Professor of Engineering.*
 Bonham Campbell, A.B., E.E., *Associate Professor of Engineering.*
 Jack W. Carlyle, Ph.D., *Associate Professor of Engineering.*
 Traugott H. K. Frederking, Ph.D., *Associate Professor of Engineering.*
 Reinhard K. B. Helbing, Ph.D., *Associate Professor of Engineering.*
 David Isaacs, Ph.D., *Associate Professor of Engineering, Resident at Irvine.*
 Ellis F. King, M.S., E.E., *Associate Professor of Engineering.*
 Leonard Kleinrock, Ph.D., *Associate Professor of Engineering.*
 William Klement, Jr., Ph.D., *Associate Professor of Engineering.*
 Chung-Yen Liu, Ph.D., *Associate Professor of Engineering.*
 Richard C. Mackey, M.S., *Associate Professor of Engineering.*
 Ralph B. Matthiesen, Ph.D., *Associate Professor of Engineering.*
 Rokuro Muki, Ph.D., *Associate Professor of Engineering.*
 Philip F. O'Brien, M.S., *Associate Professor of Engineering.*
 Moshe F. Rubinstein, Ph.D., *Associate Professor of Engineering.*
 Frederick W. Schott, Ph.D., *Associate Professor of Engineering.*
 Edwin B. Stear, Ph.D., *Associate Professor of Engineering.*
 Allen R. Stubberud, Ph.D., *Associate Professor of Engineering.*
 Gabor C. Temes, Ph.D., *Associate Professor of Engineering.*
 William D. Van Vorst, Ph.D., *Associate Professor of Engineering.*
 Jacques J. Vidal, Ph.D., *Associate Professor of Engineering.*
 Cadambangudi R. Viswanathan, Ph.D., *Associate Professor of Engineering.*
 Andrew J. Viterbi, Ph.D., *Associate Professor of Engineering.*
 Paul K. C. Wang, Ph.D., *Associate Professor of Engineering.*
 Russell A. Westmann, Ph.D., *Associate Professor of Engineering.*
 Jack Willis, B.Sci., *Associate Professor of Engineering.*
 Cavour W. Yeh, Ph.D., *Associate Professor of Engineering.*
 Ronald F. Bauer, Ph.D., *Assistant Professor of Engineering.*
 Douglas N. Bennion, Ph.D., *Assistant Professor of Engineering.*
 Ivan Catton, Ph.D., *Assistant Professor of Engineering.*
 Chieh Chu, Ph.D., *Assistant Professor of Engineering.*
 Richard Collins, Ph.D., *Assistant Professor of Engineering.*
 Vernon E. Denny, Ph.D., *Assistant Professor of Engineering.*
 Joseph J. DiStefano, Ph.D., *Assistant Professor of Engineering.*
 Stanley B. Dong, Ph.D., *Assistant Professor of Engineering.*
 John A. Dracup, Ph.D., *Assistant Professor of Engineering.*
 Richard I. Emori, Ph.D., *Assistant Professor of Engineering.*
 Robert C. Erdmann, Ph.D., *Assistant Professor of Engineering.*
 Lewis P. Felton, Ph.D., *Assistant Professor of Engineering.*
 Gary C. Hart, Ph.D., *Assistant Professor of Engineering.*
 William C. L. Hu, Ph.D., *Assistant Professor of Engineering.*
 Y. Marvin Ito, Ph.D., *Assistant Professor of Engineering.*
 Dah-teng Jeng, Ph.D., *Assistant Professor of Engineering.*
 Victor A. Jenschke, Ph.D., *Assistant Professor of Engineering.*
 William E. Kastenbergl, Ph.D., *Assistant Professor of Engineering.*
 Robert E. Kelly, Sc.D., *Assistant Professor of Engineering.*
 Allen Klinger, Ph.D., *Assistant Professor of Engineering.*
 Dieter P. Landolt, Dr.Sc. Tech., *Assistant Professor of Engineering.*
 Kenneth L. Lee, Ph.D., *Assistant Professor of Engineering.*
 Nhan Levan, Ph.D., *Assistant Professor of Engineering.*

Panos A. Ligomenides, Ph.D., *Assistant Professor of Engineering.*
 Peter W. Likins, Ph.D., *Assistant Professor of Engineering.*
 Ajit K. Mal, Ph.D., *Assistant Professor of Engineering.*
 David F. Martin, Ph.D., *Assistant Professor of Engineering.*
 Lawrence P. McNamee, Ph.D., *Assistant Professor of Engineering.*
 Anthony F. Mills, Ph.D., *Assistant Professor of Engineering.*
 D. Lewis Mingori, Ph.D., *Assistant Professor of Engineering.*
 Fereidoun Mobasher, Ph.D., *Assistant Professor of Engineering.*
 Richard E. Mortensen, Ph.D., *Assistant Professor of Engineering.*
 Richard B. Nelson, D.Sc., *Assistant Professor of Engineering.*
 Joachim P. Neumann, Ph.D., *Assistant Professor of Engineering.*
 Ragnar N. Nilsen, Ph.D., *Assistant Professor of Engineering.*
 Jimmy K. Omura, Ph.D., *Assistant Professor of Engineering.*
 Kanji Ono, Ph.D., *Assistant Professor of Engineering.*
 Robert B. Parente, Ph.D., *Assistant Professor of Engineering.*
 David R. Peters, Ph.D., *Assistant Professor of Engineering and Business Administration.*

Sanford B. Roberts, Ph.D., *Assistant Professor of Engineering.*
 John A. Seeger, Ph.D., *Assistant Professor of Engineering.*
 Lawrence G. Selna, Ph.D., *Assistant Professor of Engineering.*
 Aly H. Shabaik, Ph.D., *Assistant Professor of Engineering.*
 Awtar Singh, Ph.D., *Assistant Professor of Engineering.*
 Craig B. Smith, Ph.D., *Assistant Professor of Engineering.*
 Frank W. Spaid, Ph.D., *Assistant Professor of Engineering.*
 Oscar M. Stafsudd, Jr., Ph.D., *Assistant Professor of Engineering.*
 Richard Stern, Ph.D., *Assistant Professor of Engineering.*
 Tien-Fan Tao, Ph.D., *Assistant Professor of Engineering.*
 Ahmed R. Wazzan, Ph.D., *Assistant Professor of Engineering.*
 Gershon Weltman, Ph.D., *Assistant Professor of Engineering.*
 Donald M. Wiberg, Ph.D., *Assistant Professor of Engineering.*
 David A. Wismer, Ph.D., *Assistant Professor of Engineering.*
 Joseph A. Wolf, Jr., Sc.D., *Assistant Professor of Engineering.*
 Kung Yao, Ph.D., *Assistant Professor of Engineering.*



Alan J. Ardell, Ph.D., *Acting Associate Professor of Engineering.*
 Robert M. L. Baker, Jr., Ph.D., *Lecturer in Engineering.*
 Charles R. Boyd, Jr., Ph.D., *Acting Associate Professor of Engineering.*
 John F. Brahtz, Ph.D., *Lecturer in Engineering.*
 Rointan F. Bunshah, D.Sc., *Acting Professor of Engineering.*
 Didier de Fontaine, Ph.D., *Acting Associate Professor of Engineering.*
 John C. Dillon, B.S., *Lecturer in Engineering.*
 Julian S. Hatcher, Ph.D., *Lecturer in Engineering.*
 Slade Hulbert, Ph.D., *Lecturer in Engineering.*
 William B. Kehl, A.M., *Lecturer in Engineering.*
 Melvin B. Kline, Ph.D., *Lecturer in Engineering.*
 Levi J. Knight, Jr., M.S., *Associate in Engineering.*
 Leon Levine, M.S., *Lecturer in Engineering.*
 Melvin W. Lifson, Ph.D., *Lecturer in Engineering.*
 Everard M. Lofting, Ph.D., *Acting Associate Professor of Engineering.*
 Clement J. Melancon, A.B., *Lecturer in Engineering.*
 William Simmons, Ph.D., *Acting Associate Professor of Engineering.*
 Johanna E. Tallman, A.B., Cert. in Lib., *Lecturer in Library Service and Engineering Bibliography.*
 George J. Tauxe, M.S., *Lecturer in Engineering.*

Enrollment in engineering courses is permitted to students from other colleges who have met the prerequisites.

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. Bussell, 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. Yao 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

10. Introduction to Computing.

Lecture, three hours; laboratory, two hours. Not open for full credit to students having taken 6A. Algorithms and programming languages. Description of a higher-level language such as FORTRAN IV. Selected topics in numerical analysis. Organization and characteristics of digital computers. Machine language. Programming and running of several numerical and non-numerical problems.

Mr. Bussell, Mr. Melkanoff in charge

11. Patterns of Problem Solving.

An introduction to patterns of reasoning in the process of problem solution and decision making. Exposure to concepts, theories and techniques in the analysis and synthesis of total systems in our complex technological civilization. Mr. Rubinstein in charge

15A. Elementary Mechanics.

Prerequisite: Physics 7A; 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. Dong, Mr. Westman 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. Dong, Mr. Westman 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 7B. 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. Ono in charge

16B. Introduction to Design.

(Formerly numbered 4B.) Lecture, two hours; laboratory, four hours. Prerequisite: courses 6A–6B, Physics 7A. Introduction to elementary design, including experimental design, of a structure, machine, circuit, or process. Graphical computations and analyses and preparation of working drawings. Introduction to the general method of engineering design. Case studies of engineering designs, including possible field trips.

Mr. McCutchan in charge

*16C. Principles of Measurement and Instrumentation.

(Formerly numbered 4A.) Lecture, one hour; laboratory, seven hours. Prerequisite: courses 6A–6B; course 20A to be taken concurrently. Analysis of experimental data; basic standards and accuracy of measurements; error detection, compensation, and correction; input and output devices, transducers, instrumentation systems; static, steady state and dynamic signals; application to engineering systems.

Mr. Grandi in charge

20A. Circuit Analysis.

(Formerly numbered 100A.) Prerequisite: Physics 7B; 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. Willis in charge

Upper Division Courses

100. Circuit Analysis. (½, 1 or 1½ courses)

Lecture, four hours; laboratory, four hours. Prerequisites: courses 10, 101A, or equivalent; Physics 7B; not open for full credit to students having taken 20A or 100A. Linear time-invariant network elements and equations, introduction to time varying and non-linear elements. Zero-state, zero-input and complete responses. Duality and analogy. General analysis methods. Elementary Laplace transforms, network functions and frequency response. Network theorems. Associated laboratory experiments.

Mr. Willis in charge

100A. Circuit Analysis.

Prerequisite: Physics 7B; 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. Electromagnetics.

Prerequisite: course 100A (may be taken concurrently). A physical and analytical study of electrostatic, magnetostatic, and time-varying electromagnetic fields with engineering applications.

Mr. Elliott in charge

* Not to be given, 1969–1970.

100C. Systems, Signals and Noise.

Prerequisite: courses 6A or 10, 6B, 20A or 100, 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. Levan in charge

100D. Information Processing Systems.

Prerequisite: course 10, Physics 7B. Representation of information. Description of information processing algorithms. Digital storage and operator elements. Boolean algebra. Combinational and sequential logic nets. Technology of digital circuits. Digital computer organization: transfer, storage, arithmetic, control, and input/output operations. Analogue techniques for information processing.

Mr. Avizienis, Mr. Bussell 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

101A. Engineering Analysis.

Prerequisite: Physics 7B and 7C; Mathematics 12C (may be taken concurrently); a course in linear algebra (e.g., Mathematics 12A). This course is open to sophomores in Pre-Engineering. (Not open to students who have taken a course in differential equations.) Introduction to ordinary differential equations encountered in engineering systems. Solution of constant-coefficient differential systems; initial and boundary conditions; operational methods; relevant applications of matrix theory. Series expansions; brief introduction to special functions.

Mr. Carlyle in charge

102A. Engineering Dynamics.

Prerequisite: courses 101A, 108. Fundamental concepts of dynamics; kinematics and dynamics of particles and rigid bodies; impulse-momentum and work-energy relations; conservative and non-conservative systems; simple harmonic motion; motion under a central force; introduction to rigid body kinematics and dynamics in three dimensions; applications in two dimensions.

Mr. Likins 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. Forster in charge

103A. Elementary Fluid Mechanics.

Prerequisite: courses 101A, Physics 7C. An introductory course dealing with the application of the principles of mechanics to the flow of compressible and incompressible fluids. Introduces flow in conduits and boundary layers.

Mr. Meecham in charge

104A. Experimental Engineering.

Lecture, one hour; laboratory, seven hours. Prerequisite: completion of all required lower division engineering courses. Extension of theoretical analysis,

research and design by experimental methods. Problems and projects involving materials and circuits in electrical, mechanical, thermal, structural, acoustical and fluid systems with primary emphasis on lumped parameters. Occasional field trips.

Mr. E. F. King in charge

104B. Experimental Engineering.

Lecture, one hour; laboratory, seven hours. Prerequisite: course 104A. Continuation of course 104A with problems and projects involving energy conversion and engineering systems but with emphasis on distributed parameters. Initiative, judgment and economy in design of experimental methods, instrumentation selection, and use of computer facilities. Occasional field trips.

Mr. E. F. King in charge

104C-104D. Experimental Engineering.

Laboratory, eight hours. Prerequisite: completion of all required junior year engineering courses. The course will be organized into group projects of a design nature. Each project will be conducted by a group of eight students to carry it forward from the initial concept to its final construction and testing.

Mr. Bussell in charge

105A. Engineering Thermodynamics.

Prerequisite: Physics 7C and Mathematics 12C. Phenomenological thermodynamics. Concepts of equilibrium, temperature and reversibility. First law and concept of energy; second law and concept of entropy. Equations of state and thermodynamic properties. Application of these principles in analysis of closed and open systems of engineering interest.

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. Knuth 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

***105D. Transport Phenomena.**

Prerequisite: courses 101A, 105A; not open for full credit to students having taken 105C. Transport properties: viscosity, conductivity, and diffusivity. Formulation of transport rates for mass, momentum, energy, and molecular species. Engineering applications.

Mr. Edwards in charge

106A. Principles of Engineering Economy.

Prerequisite: upper division standing. Economic analysis of engineering projects; value systems; economic decisions on capital investment and choice of engineering alternatives; new projects, replacement and abandonment policies; risky decisions including make/buy policies and research investment; corporate financial practices and accounting.

Mr. English in charge

106B. Theory and Methods of Engineering Design.

Prerequisite: senior standing in engineering. Engineering design fundamentals; methodology and the

* Not to be given 1969-1970.

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

107. Introduction to Science of Materials. (½ or 1½ courses)

Lecture, five hours; laboratory, three hours. Prerequisites: Chemistry 1C; Physics 7D, not open for full credit to students having taken 16A. Relationship between principles of physics and chemistry and properties of technological materials. Microscopic structures. Physical and mechanical properties of solids, emphasizing behavior of dislocations and electrons in crystals. Applications to engineering systems. Laboratory experiments on selected topics.

Mr. Ono 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

108. Introduction to Solid Mechanics.

Prerequisite: Physics 7A, Mathematics 11C; not open to students having taken 15B or 108A. Equilibrium principles; transmission of forces; state of stress; state of strain; stress-strain relationship; work and energy. Structural applications; trusses, beams, columns, shafts and pressure vessels.

Mr. Lin 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 relationships; 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. Dong, Mr. Westmann 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 mag-

* Not to be given, 1969-1970.

netic circuit; energy, force and circuit relations; characteristics of magnetic and permanent magnet materials; analysis of static electromagnetic systems—transformers and magnetic amplifiers, emphasizing the static magnetic amplifier.

Mr. Rosenstein in charge

111B. Electrical Power Operation and Distribution.

(Formerly numbered 118A.) Prerequisite: course 20A or 100A. Electrical power generation and distribution systems from the viewpoint of equipment, operations, transmission, distribution and system economics. Occasional field trips will be scheduled.

Mr. Grandi in charge

115A. Semiconductor Electronics.

Prerequisite: course 140A. Semiconductor theory, intrinsic and extrinsic semiconductors, transport of excess carriers, recombination processes. Semiconductor materials. Semiconductor electronics: p-n junction, transistors, small and large signal models, equivalent circuits. Secondary ionization, tunneling, semiconductor surfaces, inhomogeneous media.

Mr. Tao in charge

116A. Active Electronic Circuits I.

(Formerly numbered 115B.) Prerequisite: course 20A or 100A. Equivalent circuit modeling of electron devices. Device-circuit-environment interactions. Design of single-stage amplifiers. Introduction to cascaded stages, coupling problems and frequency response.

Mr. E. F. King in charge

116B. Active Electronic Circuits II.

(Formerly numbered 115C.) Prerequisite: course 116A. Electron device-circuit-environment interactions with emphasis on multistage amplifiers. Tuned amplifier considerations. Nonlinear situations requiring graphical method of solution. Emphasis on design techniques including economics, reliability and realization of performance specifications.

Mr. Bauer in charge

116C. Pulse and Digital Methods.

(Formerly numbered 115D.) Prerequisite: course 116A. Analysis and design of switching-mode electronic circuits and systems including pulse generation, logic operations, timing and frequency counting.

Mr. E. F. King in charge

117A. Electromagnetics I.

Prerequisite: course 100B or equivalent. Special relativity, static electric fields, potential theory, and boundary-value problems.

Mr. Yeh in charge

117B. Electromagnetics II.

Prerequisite: course 117A or equivalent. Continuation of Engineering 117A. Lorentz transformation of Coulomb's law to yield static magnetic fields. Magnetostatics. Transformation to yield Maxwell's equations. Integral solutions. Plane, cylindrical, and spherical waves. Poynting's theorem.

Mr. Yeh in charge

117C. Applications of Electromagnetic Theory.

(Formerly numbered 117B.) Courses 117A-117B or equivalent is recommended. Transmission lines, basic theorems concerning time harmonic fields and the behavior of electromagnetic radiation, particularly in the microwave range. Mr. Schott in charge

117D. Applications of Electromagnetic Theory.

(Formerly numbered 117C.) Courses 117A-117B or equivalent is recommended. Behavior of fully and

partially guided waves and cavity resonators, particularly in microwave range. Laboratory experiments and demonstrations.

Mr. Schott in charge

120A. Introduction to the Theory of Random Signals.

(Formerly numbered 184A.) Prerequisite: course 100C or equivalent. Basic methods of analysis for random variables and random signals encountered in communication, control, data processing, and analogous engineering fields.

Mr. Levan, Mr. Yao in charge

122A. Introduction to Linear Control and Systems.

(Formerly numbered 186A.) 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. Leonard in charge

122B. State Space Theory of Control and Systems.

(Formerly numbered 186B.) 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. Stabberad in charge

123A. Basic Structures for Data Representation.

Prerequisite: course 10. Linear lists; sequential and linked storage allocation; circular, multi-linked and multi-dimensional lists. Trees, traversing algorithms; representation and mathematical properties of trees. Dynamic storage allocation.

Mr. Melkanoff in charge

123B. Theoretical Models in Computer Science.

Prerequisite: course 100D and senior standing, or consent of the instructor. Sets, strings, and languages. Phrase-structure languages. Finite-state languages and machines. Tape-handling automata and Turing machines. Context-free languages and push-down-store automata. Context-dependent languages and linear-bounded automata. Recursive functions. Universal Turing machines. Computability. Algorithms. Elementary decision problems of automata and languages.

Mr. Martin in charge

124A. Computer Applications: Ordinary Differential Equations.

(Formerly numbered 118A.) Prerequisite: senior standing in engineering; course 100C recommended. A comprehensive survey of the application of analog and digital computers to the solution of engineering problems governed by ordinary differential equations. Formulation of engineering problems, elements of analog and digital computer systems, numerical analysis, and sources of error.

Mr. Karplus, Mr. McNamee, Mr. Vidal in charge

125A. The Logic Design of Digital Nets.

(Formerly numbered 114B.) Prerequisite: course 100D. Application of Boolean algebra to the design of combinational logic nets; minimization procedures. Analysis and synthesis of sequential switching circuits; clocked and asynchronous operation. Effects of microelectronic technology on logic design optimization. Fault masking by redundancy techniques.

Mr. Avizienis, 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

125N. Compiler Construction.

Prerequisite: courses 100D, 125L or consent of the instructor. Modern compiler structure. Syntax analysis. Lexical analysis. Semantic analysis and runtime environment. Program and data structure. Code optimization.

Mr. Martin in charge

127A. Introduction to the Theory of Filtering and Detection.

(Formerly numbered 186C.) Prerequisite: course 120A. An introduction to the modern theory of prediction and filtering of random signals, and some elements of the theory of detection of signals in noise; applications to communication, radar, and data processing.

Mr. Carlyle in charge

127B. Introduction to the Theory of Information.

(Formerly numbered 186B.) Prerequisite: course 120A or equivalent. An introduction to information measures and coding for sources and channels; Shannon's fundamental theorems on coding and channel capacity. Applications to communication systems and data processing.

Mr. Viterbi in charge

130A. Intermediate Thermodynamics.

(Formerly numbered 151A.) Prerequisite: course 105B. Review of fundamental principles and concepts of phenomenological thermodynamics with applications to chemical, physical and engineering systems. Principles and applications of statistical thermodynamics.

Mr. Nobe in charge

131A. Intermediate Heat Transfer.

Prerequisite: course 105C or 105D. Heat transfer by conduction in a stationary medium and by conduction and convection in a laminarily flowing fluid. Steady-state and transient conduction in solids. Heat transfer in laminar entrance flow in ducts and laminar boundary layer flows over surfaces.

Mr. Buchberg in charge

131B. Intermediate Heat Transfer.

Prerequisite: course 131A. Heat transfer by conduction and convection in turbulent flows. Convection involving changes of phase in boiling and condensation. Heat transfer by combined conduction, convection, and thermal radiation through nonabsorbing media.

Mr. Edwards in charge

131C. Radiative Transfer System Design.

(Formerly numbered 150B.) Prerequisite: consent of the instructor. Analysis and synthesis of radiative

transfer systems; radiant geometry among diffuse and specular surfaces; integral and finite-difference representations. Analog simulation; derivation of transfer functions and transfer matrices; analog and digital computers applied to design of thermal and luminous systems. Mr. O'Brien in charge

132A. Mass Transfer.

Prerequisite: course 105C or 105D, and 131A. The principles of mass transfer by diffusion. Mass transfer by convection in laminar and turbulent flows. Simultaneous heat and mass transfer. Applications including combustion of solids and volatile fuels, evaporation and condensation, ablation and transpiration cooling, gas absorption and catalysis. Mr. Mills in charge

133A. Propulsion.

(Formerly numbered 153A.) Prerequisite: courses 103A, 103B. Thermodynamic properties of gases. Flows in channels, nozzles and rocket motors. Power plant cycle analysis. The turbojet engine and its variants. Ramjets and pulse jets. Combustion. Aerodynamic design elements of compressors and turbines. Elements of aircraft and rocket performance. Mr. Spaid in charge

134A. Direct Energy Conversion Systems.

(Formerly numbered 154A.) Prerequisite: courses 100B, 103A, 105B. The physical basis, performance characteristics, and current engineering problems associated with direct energy conversion including thermoelectric, thermionic, photovoltaic, 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 Equilibrium.

Prerequisite: course 105B. Calculation of chemical potentials and activities, chemical reaction equilibrium constants, and phase equilibrium for ideal and real systems. Dynamic interpretation of equilibrium and introduction to chemical reaction rate expressions. Mr. Landolt, Mr. Ferrine

137C. Applied Chemical Kinetics.

Prerequisite: course 137A. Mechanisms of chemical reactions that are of importance to industrial

systems. Measurement of reaction rates and interpretation of kinetic data. Interaction between transport phenomena and chemical kinetics. Introduction to chemical reactor design and control.

Mr. Bannion, Mr. Chu in charge

137D. Thermo-Chemical Processes.

Prerequisite: consent of the instructor, Application of the basic principles, of heat, mass, and momentum transport to the design, operation, and control of thermo-chemical systems. Typical systems include heat exchangers, chemical reactors, high pressure vessels, high vacuum systems, distillation and chromatographic columns.

Mr. Bannion, Mr. Denny 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. Course 117B or equivalent. Dielectric polarization; ferroelectric and piezoelectric materials; magnetization density. Diamagnetism, paramagnetism, ferromagnetism, anti-ferromagnetism, ferrimagnetism. Para- and ferro-magnetic 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

140C. Electronic Structure and Properties of Metals.

Prerequisite: course 140A. Lattice energy and crystal structure. Thermal properties of solids. Binary alloys. Hume-Rothery rules for alloy phases. Order-disorder transformations in solids. Elastic constants, conductivity, and superconductivity of perfect crystals and the effect of defects, impurities and alloying elements upon these properties.

Mr. Robinson in charge

140D. Solid State Technology.

Lecture, two hours; laboratory, six hours. Prerequisite: courses 16A or 107. Rate processes and crystal growth. Technology and preparation of single crystals. Epitaxial growth. Vapor deposition and thin film techniques. Powder metallurgy, sintering processes. Annealing and diffusion techniques of semiconductors. Chemical and mechanical treatments of crystals.

141. Structure, Phase Relations and Thermodynamics of Condensed Matter.

Prerequisite: course 16A or 107. Structure and stability of solids, liquids and glasses. Multicomponent phase diagrams. Relation between thermodynamic and physical properties. Phase changes and chemical reactions. Free energy of binary systems and the construction of phase diagrams. Thermodynamics of interfaces and defects. Mr. Knapp in charge

142. Kinetics of Phase Transformations in Solids.

Lecture, three hours; laboratory, three hours. Prerequisite: course 141. Diffusion, grain growth, recovery and recrystallization, theories of nucleation and growth, solidification, precipitation from solid solution, spheroidization and coalescence of a dispersed phase, eutectoid decompositions, martensite transformations. Mr. Ardell, Mr. Flanigan in charge

143A. Microstructural Control and Mechanical Properties of Solids.

Lecture, three hours; laboratory, three hours. Prerequisite: courses 142, 158A. Yielding and flow properties of solids, dislocation mechanisms, fracture, microstructural effects and their control and design and selection of structural materials.

Mr. Ono in charge

145A. Crystal Structure and X-Ray Diffraction.

Lecture, three hours; laboratory, three hours. Prerequisite: courses 16A or 107. Fundamentals of crystallography, stereographic projection, nature of X-Rays, interaction of X-Rays with crystals, applications of X-Ray-diffraction; determination of crystal structures, crystal imperfections, X-Ray spectroscopy. Electron and neutron diffraction.

Mr. Neumann in charge

146A. Structure and Properties of Ceramics.

Prerequisite: courses 142, 158A. The nature of typical ceramic materials. Bonding in ceramics. The relationship of crystal structure, microstructure and defects to properties including elastic, plastic strength, thermal and electrical. The structure and properties of glasses.

Mr. Knapp in charge

146B. Processing of Ceramics.

Prerequisite: course 146A, or concurrent with 146A. A study of the processes used in fabrication, ceramics; and relationship to structure and properties. Processing operations including materials preparation, forming, sintering. Effects of thermal and chemical treatments.

Mr. Knapp in charge

146C. Properties of Art Ceramic Materials.

(Formerly numbered 146B.) Prerequisite: Art 190. Composition of art ceramic materials and products. Properties of ceramic bodies and glazes, and calculation methods used in expressing composition. Occasional field trips will be scheduled. (For students in Fine Arts.)

Mr. Knapp in charge

147A. Introduction to Physical Metallurgy.

Lecture, three hours; laboratory, three hours. Prerequisite: course 16A or 107. 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. Metal Fabrication Processes.

Prerequisite: courses 16A or 107; 158A. Theoretical basis for cold forming and hot forming processes; rolling, extrusion and forging. Conventional and electrochemical metal removal. Solidification processes and casting. Powder metallurgy.

Mr. Cole in charge

150A. Intermediate Fluid Mechanics I.

Prerequisite: course 103A. Equations of motion for inviscid incompressible flow. Vorticity equation, Kelvin's Theorem. Introduction to complex variable theory. Equations of motion for viscous incompressible flow. Navier-Stokes equations. Exact asymptotic and similarity solutions. Approximate methods of solution. Lubrication theory. Introduction to turbulent flow.

Mr. Charwat, Mr. Meecham in charge

150B. Intermediate Fluid Mechanics II.

Prerequisite: course 103A. Inviscid compressible flow. Concepts from thermodynamics. One-dimensional gas dynamics. Normal and oblique shock waves. Prandtl-Meyer flow. Shock-expansion theory. Flow in ducts and wind-tunnels. Unsteady one-dimensional characteristics. Small perturbation theory in supersonic flow. Similarity rules of high speed flow. General method of characteristics for steady supersonic flow. Introduction to kinetic theory of gases. Maxwell-Boltzmann equation of motion.

Mr. Charwat, Mr. Meecham in charge

153A. Engineering Acoustics.

Prerequisite: upper division standing. General acoustics—wave equation, solutions, reflection, transmission, sources, radiation. Propagation in fluids—viscosity, acoustics as fluid motion, characteristics, aeroacoustics, pulse jet, jet noise, boundary layer noise. Propagation in solids—elasticity, crystal lattices, dislocations, superconductivity. Selected topics—liquid helium, cavitation, etc. Mr. Stern in charge

155A. Introduction to Mechanical Vibrations.

(Formerly numbered 160A.) Prerequisite: course 102A. Fundamentals of vibration theory and applications. Study of forced and transient vibrations. Two and multidegree of freedom systems. Matrix and iteration techniques. Lagrange's equations for small oscillations. Vibration and wave propagation in continuous systems.

Mr. Hurty in charge

158A. Elasticity and Plasticity.

(Formerly numbered 163A.) Prerequisite: Mathematics 13C (may be taken concurrently). Three-dimensional stress and strain. Criteria for prediction of mechanical failure. Differential equations in three dimensions; analytical, numerical, and experimental solutions of plane state and torsion problems. (Stress function, iteration, strain gages, photoelasticity.) Homogeneous plastic flow, fast fracture, plastic tensile instability.

Mr. Sines in charge

159A. Introduction to Continuum Mechanics.

Prerequisite: course 158A, senior standing in engineering or consent of the instructor. Elementary tensor analysis, the stress vector and the stress tensor, kinematics of deformation, material derivative, fundamental laws of continuum mechanics, conservation theorems, constitutive laws, and representative applications.

Mr. Mal, Mr. Morgan, Mr. Westmann

160A. Astrodynamics and Rocket Navigation.

(Formerly numbered 191A.) Prerequisite: Mathematics 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, calcu-

lation, and differential correction of the preliminary orbits of space vehicles, comets, minor planets, and satellites. The Laplacian first approximation. The Leuschner differential correction.

Mr. Herrick in charge

161A. The Reduction of Observations.

(Formerly numbered 192A.) Prerequisite: Mathematics 13A; course 160A recommended. Astronomical photogrammetry, reduction of radar observations, and other techniques employed in the handling of astrodynamical observational data. The theory of space range system, Baker-Nunn cameras, range equipment, and anomalous luminous phenomena.

Mr. Baker, Mr. Herrick in charge

165A. Structures I.

Prerequisite: course 15B or 108A. Introduction to basic structural systems: elementary trussed, flexural, and shell systems. Force-deflection properties. Energy methods, stability analysis. Design assignments.

Mr. Hurty in charge

165B. Structures II.

Prerequisite: course 165A. Extension of material in Structures I. Generalization of energy principles. General formulation of linear equations in structural analysis. Solution by relaxation and iteration. Introduction to matrix methods. Application to frames, rings, arches, cables.

Mr. Rubinstein in charge

166. Structures III.

Prerequisite: course 165B. Elements of stress and strain. Fundamentals of theory of elasticity and relation to mechanics of materials. Applications to plates, thick-walled cylinders, tapered beams, torsion. Unsymmetrical bending, shear analysis of stiffened thin-walled beams. Stability of columns, beam-column effects. Membrane theory of shells.

Mr. Nelson in charge

167. Design of Civil Structures.

Prerequisite: course 165B (may be taken concurrently with consent of the instructor). Design of structural systems such as bridges, buildings, etc. Introduction to optimization principles for components and for complete systems. An individual or group project to design a complete structural system.

Mr. Mathiesen in charge

168. Design of Aerospace Structural Systems.

Prerequisite: course 165B. Design of aircraft, helicopter, and space structures. External loadings and environment factors of safety; internal stresses; allowable stresses; applied theory of thin-walled structures; design for prevention of fatigue; selection of materials; optimization of configuration.

Mr. Felton in charge

170C. Introduction to Optimization Techniques.

Prerequisite: knowledge of some programming and linear algebra. Concept of strategies, unconstrained optimization techniques, constrained optimization techniques, elementary topics in linear dynamic, integer and geometric programming, regression analysis. Students will solve problems on digital computers.

Mr. Aoki in charge

174A. Dynamic Programming.

(Formerly numbered 185B.) Prerequisite: Mathematics 13C. Introduction to mathematical analysis of multistage decision processes occurring in mathematical theory of control, in operations research and system analysis, and in mathematical economics;

analytic formulation and numerical computation stressed; examples.

Mr. Wismer in charge

175A. Quality Engineering.

Lecture, four hours; laboratory, one hour. Prerequisite: courses 193A-193B or consent of the instructor. Statistical design of sampling plans and control procedures for attributes and variables data in accepting products, systems, processes; sample sizes, operating characteristics, other measures of effectiveness are derived and studied; national and international specifications and standards of quality; applications, reports.

Mr. Coleman in charge

175B. Reliability Engineering.

(Formerly numbered 183D.) Lecture, four hours; laboratory, one hour. Prerequisite: courses 193A-193B or consent of the instructor. Probability, statistics, engineering in measuring, apportioning, estimating, predicting reliability; practical reliability applications of binomial, Poisson, exponential, gamma, chi-square, Gaussian and Weibull distributions; life testing, redundancy, design reviews; wear-out, failure rates, maintainability, availability, dependability, derating, stress-strength relations; RISK, confidence, applications, reports.

Mr. Coleman in charge

176A. Engineering Organization and Administration.

(Formerly numbered 171A.) Prerequisite: senior standing in engineering. Principles of organization and administration are applied to engineering. The use of organization charts, the assignment of administrative responsibility, the use of job descriptions, job evaluation, and job analysis, and the selection, training, and supervision of technical employees will be discussed.

Mr. Case, Mr. Kline in charge

177A. Economic Analysis of Engineering

Investment.

Prerequisite: courses 106A and 193A. Extension of course 106A to include more advanced topics. Analysis of risk in engineering ventures, new project studies, economic feasibility analysis, research project selection. Elementary macro-economic principles.

Mr. English in charge

178A. Kinematics of Mechanisms.

(Formerly numbered 161A.) Prerequisite: course 102A. The analysis and synthesis of plane and space mechanisms by means of vectors and geometry. Both graphical and analytical methods are used. The applications of fundamental mechanical movements to a wide variety of problems are considered.

Mr. Beggs in charge

178B. Machine Design.

(Formerly numbered 162A.) Lecture, two hours; laboratory, six hours. Prerequisite: course 102A. Problems in the design of machine elements such as gears, shafts, and bearings, for rigidity, strength, wear, and fatigue life. Each student chooses a machine to be designed. The final design is defended in an oral examination before the class.

Mr. Beggs in charge

179A. Systems Engineering.

(Formerly numbered 185A.) Prerequisite: Mathematics 13C (or former courses 110AB or 110C.) Mathematical bases for decision and programming in industry; models, methods, and objectives of systems engineering; specific methods and problems; emphasis placed upon practical validity and use of common-sense and empirical methods.

Mr. Boldyreff in charge

179B. Operations Research—Problems and Methods.

(Formerly numbered 185C.) Prerequisite: course 179A. A continuation of course 179A, with emphasis on problem solving in operations research and including a number of research-type reports to be prepared by the students during the quarter.

Mr. Stubberud in charge

180A. Environmental Biotechnology.

(Formerly numbered 130A.) Prerequisite: course 107A or consent of the instructor. Physical, physiological, and psychological aspects of the interaction between man and thermal, atmospheric, radiant, and mechanical agents and energies in the environment. Biological and physical requirements for engineering control of the environment; applications to complex systems.

Mr. Weltman in charge

180B. Machine and Systems Biotechnology.

(Formerly numbered 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 181A.) Prerequisite: senior standing or consent of the instructor. Quantitative consideration of the air resource and its management. Air quality measurements and standards. Systems for pollution removal. Industrial, commercial and community air pollution problems. Data analyses and interpretations. Lectures, occasional laboratory, and field trips.

Mr. Bush in charge

182A. Air Conditioning and Refrigeration Principles.

(Formerly numbered 182A.) 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: consent of the instructor. The nature of soils; the weathering process and clay mineralogy; soil physics and chemistry; morphology and development; soil-plant-water relationships and interactions of management. One or two field trips included.

Mr. Pillsbury in charge

184D. Water Resource Quality Control Systems.

Prerequisite: senior standing in engineering or consent of the instructor. Water as a resource; the physical, chemical, and biological bases of pollution and degradation. Potability and chemical aspects of quality control and reclamation; analytical, economic, and performance aspects of systems design for prevention and treatment. Field trips.

Mr. Bush in charge

184E. Water Resources Engineering.

Prerequisite: senior standing in engineering or course 103A or consent of the instructor. Introduction to the hydrology of surface and groundwater supplies; floods, sediment transport, and their regulation; works for water storage, energy conversion, conveyance and distribution; utilization for agricultural and urban purposes; quality management; water law, planning, economics, and institutions.

Mr. Pillsbury in charge

185A. Principles of Soil Mechanics.

(Formerly numbered 164A.) Prerequisite: courses 15A-15B or 108A or Geology 108A. Soil as a foundation for structures and as a material of construction. Soil formation, classification, physical and mechanical properties, compaction, bearing capacity, earth pressures, consolidation and shear strength.

Mr. Duke in charge

185B. Soil Mechanics—Laboratory Practices.

(½ course)

Lecture, one hour; laboratory, three hours. Prerequisite: course 185A may be taken concurrently. Laboratory experiments to be performed by the students to get basic data required for assigned design problems. Soil classification, Atterburg limits, permeability, compaction, shear strength and specific gravity determination.

Mr. Lee in charge

186A. Elements of Construction.

(Formerly numbered 142A.) Lecture, two hours; laboratory, four hours. Prerequisite: senior standing in engineering. Anatomy of the industry, bidding and purchasing strategies, contracts, costs and economics, operations research in construction, planning and scheduling, equipment and materials, construction methods, field engineering techniques, observation and engineering analysis of current construction projects in the vicinity. Field trips.

Mr. Singh in charge

187A. Urban Transportation Systems.

(Formerly numbered 137A.) Lecture, three hours; laboratory, two hours. Prerequisite: junior standing in engineering. Functional analysis of rural and urban transportation needs and modes of accomplishment including private vehicles, trucks, busses, rail rapid transit, helicopter and other aircraft; interrelationships among the various transportation modes and land-use planning.

Mr. Case in charge

187B. Street and Highway Design.

Lecture, two hours; laboratory, four hours. Prerequisite: course 187A (may be taken concurrently). Design of street and highway systems and components including tangent sections, curves, interchanges, access facilities, traffic controls, parking facilities; suboptimizations on utility, safety, cost, properties of materials, maintainability, present needs, future needs; individual and group design assignments.

Mr. Case in charge

187C. Traffic Engineering.

Lecture, two hours; laboratory, four hours. Prerequisite: course 187A (may be taken concurrently). Elements of modern traffic engineering practice, including design, installation, and maintenance of uniform traffic control devices; channelization; parking, surface and multi-level parking structures; traffic flow theory; highway capacity; pedestrian traffic; traffic department management.

Mr. Case in charge

187D. Human Factors in Transportation.

Prerequisite: course 180A or consent of the instructor. Interaction of human and machine factors in land, air, sea, and space transportation; physical, physiological, and psychological performance demands upon human operators; trauma-producing forces, psychological and other stresses upon humans; mitigation by engineering design of these harmful effects upon humans.

Mr. Case in charge

***188A. Principles of Industrial Safety.**

(Formerly numbered 172A.) Prerequisite: junior standing in engineering. Delineation of the industrial accident prevention problem: statistical methods, plant layout, machine and process safeguards, applicable laws and codes, noise and other occupational health hazards, engineering and medical controls, explosion and fire prevention and protection, industrial traffic and safety organization.

Mr. Case in charge

191A. Linear Systems Solutions By Transform Methods.

(Formerly numbered 181A.) Prerequisite: courses 20A or 100 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

* Not to be given 1969-1970.

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-Bogoluboff 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, four hours; laboratory, one hour. Prerequisite: course 193A or consent of the instructor. Fundamental statistical concepts, population (system), sample parameter, statistics; significance tests, confidence limits, efficient computational procedures; risk, power functions, operating characteristic curves; simple and multiple regression, bivariate normal distribution; analysis of variance, applications in engineering and industry.

Mr. Coleman in charge

198. Special Courses. (½ to 1 course)

Prerequisite: senior standing in engineering; enrollment subject to approval of instructor in charge. May be repeated for credit toward the Bachelor's degree provided no duplication exists. Group study of selected topics. Study groups may be organized in advanced engineering subjects upon approval of instructor in charge. Occasional field trips may be arranged.

Mr. O'Neill in charge

199. Special Studies. (½ to 1 course)

Prerequisite: senior standing, superior achievement, and consent of the instructor. May be repeated for credit toward the Bachelor's degree. Application forms for requesting enrollment may be obtained from the Assistant Dean, Undergraduate Studies. Occasional field trips may be arranged.

The Staff in charge

Graduate Courses

210A. Advanced Circuit Theory.

Prerequisite: course 110A. General theory of two terminal pair networks; advanced techniques of transfer function synthesis; approximation in frequency domain; topological concepts; Fourier series techniques; time domain approximations; introduction to active network synthesis. Recent advances in circuit theory. Mr. Bauer, Mr. Levan in charge

215A. Solid-State Electronics I: Quantum Techniques.

Prerequisite: course 140A. Quantum mechanical methods applied to the study of processes within solids. Interaction of radiation and matter, lattice vibrations (phonons), energy levels and bands in solids. Mr. Viswanathan in charge

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. Mr. Tao in charge

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. Mr. Stafrudd in charge

216A. Network Theory in Solid-State Electronics.

Prerequisite: course 116B. Active network theory with particular reference to solid-state electronics. Design of multistage solid-state amplifiers for video, RF and IF; filter networks including negative impedance devices. Optimal system performance and device utilization. Integrated circuits, distributed networks and statistical network theory. Sensitivity considerations. Mr. Willis in charge

216B. Electronic Device Seminar.

Prerequisite: course 116B. The critical examination of various electron devices with respect to their behavior and performance in system usage. Mr. Mackey in charge

216C. Electronic Systems.

(Formerly numbered 215C.) Prerequisite: courses 116C, 216A, 216B. Analysis and synthesis of electronic systems. System design as influenced by signal spectra, modulation forms and characteristics of the propagating media. Mr. Mackey in charge

217A. Electromagnetic Applications: Antennas.

Prerequisite: course 117C. Theory of antennas. Radiation integrals. Array theory. Self and mutual impedance. Aperture antennas. Pattern synthesis. Waveguide radiators. Mr. Elliott in charge

217B. Electromagnetic Applications: Microwave Networks.

Prerequisite: course 117D. General waveguide theory. Variational solutions. Obstacles. Small aperture coupling. Matrix theory of junctions. Periodic structures. Mr. Schott in charge

217C. Electromagnetic Applications: Wave-Particle Interactions.

Prerequisite: course 217B. Electron ballistics; space-charge waves on electron beams; behavior of traveling-wave tubes, backward-wave oscillators, klystrons; crossed-field devices. Waves in plasmas. Gyromagnetic phenomena. Mr. Yeh in charge

218A. Electromagnetics Seminar: Antennas.

Prerequisite: course 217A. Advanced topics in antenna theory and practice. Mr. Yeh in charge

218B. Electromagnetics Seminar: Microwave Circuits.

Prerequisite: course 217B. Advanced topics in guided wave structures. Mr. Schott in charge

218C. Electromagnetics Seminar: Plasmas.

Prerequisite: course 217A. Description of motions of electrons and ions in fields. Boltzmann equation and transport equation. Ionization phenomena in gases. Plasma waves and resonances; the infinite medium and the bounded medium. Microwave plasma physics; diagnostic techniques. Applications. Current literature. Mr. Hersberger 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. Elliott 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; equilibrium results for single and multiple server queues; method of stages. Priority queueing systems. Applications to communication systems; data-processing systems, time-shared processors, networks of computer and communication systems. Mr. Kleinrock in charge

220B. Advanced Queueing Theory and Applications.

Prerequisite: course 220A. Advanced topics in queueing theory, including Lindley's integral equation, Pollaczek method, busy period and virtual waiting time. Method of collective marks. Inequalities and bounds in queueing theory. Tandem queues. An algebra for queues. Applications to communication nets, computer systems and time-sharing systems. Mr. Kleinrock in charge

221A. Functional Analysis of Nonlinear Systems.

Prerequisite: courses 120A and 122B or consent of the instructor. Advanced engineering analysis techniques for linear and nonlinear systems and devices via functional calculus, system algebra, and multidimensional transforms. Exact solutions for nonlinear differential equations. Nonlinear systems' stability, synthesis, stochastic response, and stochastic approximation. Survey of topics for future research. Mr. Parente, Mr. Stubberud 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. Stear, Mr. Wang in charge

222B. Random Processes in Control and Systems.

(Formerly numbered 236A.) Prerequisite: courses 120A and 122B or consent of the instructor. Second order theory of random processes and calculus in the mean; estimation of correlation functions and spectra; error analysis; classical Wiener filters; sequential estimation and filter theory; stochastic optimal control. Application to system analysis and design problems involving random processes.

Mr. 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. McNamee in charge

224B. Computer Applications: Partial Differential Equations.

(Formerly numbered 218B.) Prerequisite: course 124A. A comprehensive survey of the solution of field problems governed by partial differential equations by means of automatic computers. Formulation of engineering problems as partial differential

equations, analog simulation methods, digital simulation methods.

Mr. Karplus, Mr. Vidal 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, Mr. Svoboda in charge

225B. Digital Computer Seminar.

(Formerly numbered 214A.) Prerequisite: course 225A. Advanced topics in the field of digital computer systems. Program analysis, system synthesis, performance measures, formal description of complex systems.

Mr. Bussell, Mr. Estrin in charge

225L. Advanced Topics in Programming Systems.

Prerequisite: course 125L. Detailed and comparative analysis of algebraic languages, commercial languages, simulation languages and list processing languages. Compiler theory and application to certain general purpose languages. Compiler design.

Mr. Martin in charge

225M. Special Topics in Computer Languages and Applications.

Prerequisite: course 225L. Seminar in advanced topics of current interest in non-numerical applications of computers. Topics will include simulation, pattern recognition, advanced compiler theory, on-line time-sharing systems and utilization, multi-processing and processing control.

Mr. Klinger, 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. Yao in charge

227B. Advanced Theory of Information.

(Formerly numbered 286B.) Prerequisite: courses 127B, 227A. (Course 227A may be taken concurrently.) Advanced topics in the theory of information, including mutual information and channel capacity for discrete and continuous systems, coding methods and error bounds.

Mr. Kleinrock in charge

227C. Mean Square Optimization Methods.

(Formerly numbered 286C.) Prerequisite: course 127A; course 291A or equivalent recommended. Linear and non-linear optimization methods for single and multiple random processes in communication systems.

Mr. Viterbi in charge

227D. Special Topics in Communication Systems Engineering.

Prerequisite: courses 227A and 227B. Advanced topics in one or more special fields of current research interest, such as phase-coherent communication systems, optical channels, time-varying channels, feedback channels, algebraic coding, etc. Content of the course varies from quarter to quarter.

Mr. Balakrishnan in charge

228A. Foundations of System Theory and State Space.

Prerequisite: courses 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. Robinson in charge

231A. Advanced Heat Transfer.

Prerequisite: course 131B. Advanced topics on heat transfer from the current literature. Advanced methods for predicting transfer rates in turbulent or hydrodynamically unstable flows. Cellular convection, boiling, heat transfer in two-phase flow. Emphasis will change from year to year.

Mr. Catton in charge

231B. Advanced Heat Transfer.

Prerequisite: course 131B. Advanced topics on heat transfer from current literature. Advanced methods for predicting transfer rates in thermal radiation emitting, absorbing, and scattering media. Radiation transport properties of walls, gases, and clouds of particles. Simultaneous radiation, conduction, and convection in absorbing media.

Mr. Edwards in charge

231C. Advanced Thermal and Luminous Radiation.

(Formerly numbered 254A.) Prerequisite: course 131C or equivalent. Radiative transfer in geometrically complex spaces; non-uniform radiant excitation and properties; spatial distribution of net transfer and radiance; non-gray spectral distributions; emphasis on matrix formulation; problems from current literature of space technology, heat transfer, illumination, colorimetry and photometry.

Mr. O'Brien in charge

231D. Application of Numerical Methods to Transport Phenomena.

Prerequisite: consent of the instructor. Numerical techniques for solving selected problems in heat and mass transfer. Applications include free convection, boundary layer flow, two-phase flow, separated flow, flow in porous media. Effects of concentration and temperature gradients, chemical reactions, radiation, electric and magnetic fields.

Mr. Denny in charge

232A. Aerothermochemistry.

(Formerly numbered 225A.) Prerequisite: courses 130A and 131B. Fundamentals: change equations

for multicomponent reactive mixtures; rate laws; dimensionless parameters and characteristic times. Relaxation phenomena: dynamic equation of state; sound absorption and dispersion; bulk viscosity; relaxation times and reaction-rate constants. Applications: flows with reactions. Macroscopic descriptions are emphasized.

Mr. Knuth in charge

232B. Advanced Mass Transfer.

Prerequisites courses 131A, 132A. The formulation of the general convective heat and mass transfer problem including equilibrium and nonequilibrium chemistry. Similar and nonsimilar solutions for laminar flows; solution procedures for turbulent flows. Multicomponent diffusion. Application to the hypersonic boundary layer, ablation and transpiration cooling, combustion.

Mr. Mills in charge

232C. Kinetic Theory and Molecular Flow.

(Formerly numbered 223A.) Prerequisite: graduate standing. The molecular structure of gases; kinetic foundations of thermodynamics and gas-dynamics; physics of the upper atmosphere; aerodynamics in highly rarefied gases; gas-surface interactions; the Boltzmann equation; methods of analysis; experimental and theoretical results pertaining to the transitional flow regime; experimental techniques for research in rarefied gas dynamics.

Mr. Charwat in charge

232D. Molecular Dynamics.

(Formerly numbered 232B.) Prerequisite: consent of the instructor. Introduction to molecular kinetics; transport and reaction rates; particle-surface collisions. Introduction to quantum mechanics: molecular structure; elastic collisions. Advanced topics: bond energies; inelastic collisions; relaxations of internal degrees of freedom; absolute reaction rates; molecular-beam techniques. Molecular descriptions are emphasized.

Mr. Knuth in charge

233A. Advanced Propulsion.

Prerequisite: course 133A. Lagrange's ballistic problem. Propulsion analysis of the turbojet and ramjet engines. Rocket propulsion and stability of combustion processes in rocket engines. The selection of a propulsion device for accomplishing a specific mission.

Mr. Knuth in charge

235A. Nuclear Reactor Analysis.

Prerequisite: course 135B. The analysis of nuclear reactor systems by analytical methods. Spatial and angularly dependent neutron transport theory in various approximations; P_n , B_n , S_n , and diffusion theory; the use of variational, Case, and Wiener Hopf methods.

Mr. Erdmann in charge

235B. Nuclear Reactor Analysis.

Prerequisite: course 235A. The analysis of nuclear reactor systems by analytical methods. Energy dependent neutron transport theory, slowing down, resonance and thermalization theory by analytical and numerical techniques. Perturbation theory.

Mr. Erdmann in charge

235C. Nuclear Reactor Kinetics and Control.

(Formerly numbered 236C.) Prerequisite: course 235A. Time dependent behavior of nuclear reactor systems. Analysis of the reactor as a lumped and distributed parameter system by modern methods of control theory. Analysis of neutron waves and pulses. Optimal control.

Mr. Kastenber in charge

236A. Nuclear Reactor Materials.

Prerequisite: course 135B. The interaction of charged, uncharged and electromagnetic radiations with matter. Mechanisms and results of radiation damage in materials. Shielding. Mr. Smith in charge

236B. Nuclear Reactor Systems.

Prerequisite: course 135B. The major nuclear reactor systems, including nuclear power plants. Topics include thermal reactors, fast reactors, choice of materials for nuclear applications, energy removal in nuclear environments, fuel cycles and economics. Mr. Hicks in charge

236C. Nuclear Reactor Design.

Prerequisite: consent of the instructor. The design of nuclear reactors by analytical, experimental, and numerical methods. Study of nuclear reactor codes and handling of nuclear data. Numerical analogs of the differential equations governing reactor design. Mr. Smith in charge

237A. Chemical Reactor Analysis.

Prerequisite: course 137C. Principles of chemical kinetics, adsorption and catalysis for application to reactor design. Transport phenomena in reactor media. Mr. Chu, Mr. Perrine in charge

237B. Chemical Reactor Design.

Course 237A recommended. Optimal design of chemical reactors using dynamic programming, maximum principle and other optimization techniques. Transient behavior, stability analysis and optimal control of chemical reactors. Mr. Chu, Mr. Perrine 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. Bennion, Mr. Landolt, Mr. Nobe in charge

238C. Principles of Electrochemical Engineering.

Prerequisite: one year physical chemistry or equivalent. 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, Mr. Landolt, Mr. Nobe 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, Energy and Kinetics 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, Energy and Kinetics 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, Energy and Kinetics 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

241. Oxidation of Metals.

Prerequisite: course 141, equivalent, or consent of the instructor. The kinetics and mechanism of gas-solid reactions. Adsorption and phase-boundary reactions. Nucleation of reaction products, defect structure of oxides, crystal structure and morphology of oxide films, factors influencing adherence of surface films. Mr. Douglass in charge

242A. Plasticity Theory Applied to Metal Working I.

Prerequisite: course 158A. Fundamental concepts describing the mechanics of plastic deformation of homogeneous solids. Yield criteria. Methods of solution, including slip line field, of problems involving plastic deformation, with examples involving plane strain and axisymmetric deformation. Extrusion problem. Application methods of solution. Mr. Shabaik in charge

242B. Plasticity Theory Applied to Metal Working II.

Prerequisite: course 242A. Discussion of various metal working processes and the application of the theory of plasticity to the study of the mechanics. Includes drawing extrusion, forging, rolling with references to newer developments such as cold forging of steel and hydrostatic extrusion. Mr. Shabaik in charge

243. Fracture of Structural Materials.

Prerequisite: course 158A or equivalent. The engineering and scientific aspects of crack nucleation,

slow crack growth and unstable fracture. Fracture mechanics, dislocation models, fatigue, fracture in reactive environments, alloy development, fracture-safe design. Mr. Tetelman in charge

244. Electron Microscopy.

Prerequisite: course 145A or equivalent. Essential features of the electron microscope, geometry of electron diffraction, kinematical and dynamical theories of electron diffraction including anomalous absorption, applications of theory to defects in crystals, Moiré fringes, direct lattice resolutions, Lorentz microscopy, laboratory applications of contrast theory. Mr. Ardell in charge

245A. Theory of Imperfections.

Prerequisite: course 158A. Advanced topics in theory of lattice defects: continuum and atomistic treatments of point defects, dislocations and planar faults; interactions between various defects; selected applications to physical and mechanical behavior of solids. Mr. Ono, Mr. Simes in charge

245B. Electrons in Metals.

Prerequisites: an introductory course in atomic physics and wave mechanics course 140A, Physics 121 or 115. A study of the thermal, electrical and thermo-electrical properties of metals which are based on the energies of electrons. The prediction of alloy phases. Mr. Wazzan in charge

245D. Magnetic Interactions in Solids.

Prerequisite: courses 140B, 245B, 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. Mechanical Properties of Nonmetallic Crystalline Solids.

Prerequisite: course 146A. Material and environmental factors affecting the mechanical properties of nonmetallic crystalline solids, including atomic bonding and structure, atomic-scale defects, microstructural features, residual stresses, temperature, stress state, strain rate, size, and surface conditions. Methods for evaluating mechanical properties. Mr. Knapp in charge

246B. Structure and Properties of Glass.

Prerequisite: course 146A. Structure of amorphous solids and glasses. Conditions of glass formation and theories of glass structure. Mechanical, electrical and optical properties of glass, and relationship to structure. Mr. Knapp in charge

246C. Equilibria of Ceramic Materials at Elevated Temperatures.

Prerequisite: courses 141, 146A. Methods for measuring thermodynamic properties of materials at elevated temperatures. Thermodynamics of melts, including molten metals, ionic salt melts, oxide and silicate melts. Applications in binary systems comprised of oxides. Relationship to phase diagrams and their construction. Mr. Knapp in charge

247A. Solid State Reactions.

Prerequisite: course 142. Phenomenology and atomistic mechanisms of solid-state diffusion. Nuclea-

tion theory. Theory of diffusional growth processes, kinetics of diffusional transformations in solids. Precipitation in solids. Spinodal decomposition.

Mr. Douglass in charge

247B. Advanced Solid-State Transformations.

Prerequisite: course 247A. Classical theories of precipitate nucleation and growth, spinodal decomposition, cellular precipitation, eutectoid decomposition, massive transformations, crystallography and kinetics of martensitic transformations, order-disorder transformations, particle coarsening, role of imperfections in precipitation.

Mr. Ardell, Mr. de Fontaine in charge

248A. Experimental Methods in Materials Research.

Prerequisite: A bachelor's degree in chemistry, physics or engineering. A survey of the techniques used in materials research in vacuum techniques, methods of heating and quenching, consolidation and refining of metals, crystal growth, thin film deposition, fabrication, powder metallurgy, and special machining methods. Mr. Bunshah in charge

248B. Vacuum Metallurgy.

Prerequisite: course 141 or equivalent. Metallurgical processes carried out in vacuum including melting, purification, heat treatment, degassing of liquid metals, joining. Properties and applications of these materials. Mr. Bunshah in charge

250A. Theoretical Hydrodynamics.

(Formerly numbered 220A.) Prerequisite: course 103A or equivalent; vector algebra, complex variables; partial differential equations. Vector calculus; complex variables. Equations of motion. Irrotational incompressible flow. Plane motion: complex potential, singularities, conformal mapping. Free streamline problems. Axisymmetric flow: Stokes stream-function vortex motion.

Mr. Meecham in charge

250B. Real Fluids.

(Formerly numbered 222A.) Prerequisite: course 103A or equivalent or consent of the instructor. Theoretical treatment of laminar and turbulent, incompressible and compressible viscous flow; 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. Mr. Charwat in charge

250C. Hydrodynamic Stability and Wave Motion.

Prerequisite: course 250A or consent of the instructor. Discussion of wave propagation in fluids, illustrated especially by the dynamics of gravity waves. Free and forced motion; nonlinear effects. Survey of mechanisms through which waves grow spontaneously, with special emphasis placed on conversion of energy from a mean flow.

Mr. Kelly in charge

251A. Gas Dynamics.

(Formerly numbered 221A.) Prerequisite: course 103A or equivalent or consent of the instructor. Review of thermodynamics, wave and shock motion in unsteady one-dimensional and steady two- and three-dimensional flows, small perturbation theory for wings and bodies, similarity rules, characteristics theory. Mr. Liu in charge

251B. Hypersonic Aerodynamics.

(Formerly numbered 221B.) Prerequisite: course 251A. The hypersonic limit for particle and for

continuum flow is discussed. Analytical approximations and numerical methods. Viscous effects. The re-entry problem. Mr. Charwat in charge

251C. Aerodynamics of Airplanes and Missiles.

Prerequisite: courses 250A, 251A or consent of the instructor. The fundamental laws and methods of incompressible and compressible flow are applied to configurations important for aircraft and missile applications. Preparation for stability and control problems of the flight inside the atmosphere.

Mr. Spaid in charge

252A. Engineering Magnetohydrodynamics.

(Formerly numbered 226A.) Prerequisite: courses 117B and 250A or consent of the instructor. Continuum theory of the motion of a conducting fluid in a magnetic field; typical solutions for incompressible and compressible flow; elements of the theory of conductivity in a plasma; propulsion and power generation applications.

Mr. Meecham in charge

252B. Theory of Turbulence.

Prerequisite: courses 150A-150B or 250A or 250B or consent of the instructor. Correlation tensors. Karman-Howarth equations. Major theories of turbulence: Heisenberg, zero-fourth-cumulant, Kolmogoroff; modern theories. Mixing-length theories.

Mr. Meecham in charge

253A. Fundamentals of Aeroacoustics.

(Formerly numbered 224A.) Prerequisite: course 150A or consent of the instructor. Detailed discussion of plane waves, point sources. Nonlinearity, layered and moving media, multiple reflections. Inhomogeneous wave equation. Monopole, dipole, quadrupole source fields from scattering inhomogeneities and turbulence; Lighthill's theory. Moving sources. Similarity methods. Selected detailed applications.

Mr. Meecham in charge

253B. Advanced Topics in Aeroacoustics.

(Formerly numbered 224B.) Prerequisite: course 253A. Further developments to treat selected items such as noise generation by turbulent or supersonic jets, rockets, subsonic and supersonic boundary layers, shockwave interactions, whistles, atmospheric and underwater aspects, sonic "boom," structural response to random fluid pressures, introduction to aerothermoacoustics.

Mr. Meecham in charge

†253C. Advanced Topics in Engineering Acoustics.

Prerequisite: course 153A or consent of the instructor. Further developments to treat selected items in the areas of architectural acoustics and noise control, underwater acoustics, and ultrasonic propagation in materials. Course content will depend to an extent on the interests of each student.

Mr. Stern in charge

254A. Experimental Techniques in Aerodynamics.

Prerequisite: course 251A. Theoretical foundations of experimental equipment and instruments used in aerodynamic research. Subsonic, supersonic and hypersonic wind tunnel design and practice. Hot-shot, shock-tube and gun-tunnel—the course will include laboratory practice—evaluation of data and design of experiments.

Mr. Charwat, Mr. Spaid in charge

255A. Advanced Dynamics.

(Formerly numbered 260A.) Prerequisite: courses 102B and 155A. Kinematics and dynamics of rigid

bodies in general motion. Precession and nutation of spinning bodies. Nine and four parameter transformation for body attitude. Lagrangian and Hamiltonian formulation in generalized coordinates. Variational methods and optimization.

Mr. Forster in charge

256A. Mechanics of Deformable Solids I.

(Formerly numbered 263A.) Prerequisite: course 158A or consent of the instructor. Stress and strain tensors, indicial notation, compatibility conditions, equations of motion. Work and energy, uniqueness of solution and extremum principles. Constitutive laws of isotropic elastic solids, thermoelasticity, linear viscoelasticity and incremental plasticity.

Mr. Lin, Mr. Mukl, Mr. Westmann in charge

256B. Mechanics of Deformable Solids II.

(Formerly numbered 263B.) Prerequisite: course 256A or consent of the instructor. Systematic solution of three-dimensional isotropic problems; analysis of anisotropic solids and effects of large strains. Typical applications.

Mr. Dong in charge

256D. Theory of Disks and Plates.

(Formerly numbered 263E.) Prerequisite: course 256A or consent of the instructor. Reversible and irreversible deformation of disks; small and large deflections of elastic plates; thick plates; anisotropic plates; sandwich plates; irreversible deflections of plates; stable and unstable deformations to be considered; typical applications.

Mr. Hu, Mr. Roberts in charge

256E. Theory of Shells.

(Formerly numbered 263F.) Prerequisite: course 256A or consent of the instructor. Elements of differential geometry of surfaces; membrane and bending theory of shells; application to cylindrical, spherical, conical shells, and other shells with rotational symmetry; large deflection of shells; irreversible deflection of shells; stable and unstable deformations to be considered; typical applications.

Mr. Hu, Mr. Roberts in charge

257A. Elasticity.

Prerequisite: course 256A or consent of the instructor. Solutions within classical elastostatics and linear viscoelasticity for problems of torsion and flexure of beams and for some fundamental two-dimensional problems (plane stress and plane strain). Approximative methods of solution will also be discussed.

Mr. Mukl 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. Ito in charge

258A. Continuum Mechanics I.

Prerequisites: courses 256A or 257A, 291A, or consent of the instructor. Bodies. Motions: referential, spatial and relative description; polar decomposition theorem. Cauchy-Green, stretching spin, (vorticity), stress, and couple-stress tensor. Balance principles, mass, linear and angular momentum energy. Entropy production. Mr. Morgan in charge

258B. Continuum Mechanics II.

Prerequisite: course 258A. Principle of constitutive invariance. Material Symmetries. Simple fluids and solids, sub-fluids, liquid crystals. Thermodynamics of simple materials; the Clausius-Duhem inequality. Elastic (nonlinear) materials; problems of equilibrium, exact solutions. Contact with classical linear elasticity theory. Mr. Morgan in charge

258C. Wave Propagation in Solids I.

(Same as Planetary and Space Sciences 224A.) Prerequisite: course 158A or 159A, or consent of the instructor. Elastic wave equation and elementary solutions; wave motions in elastic half-spaces; reflection and refraction of elastic waves; surface waves; vibrations of rods and plates. Mr. Mal in charge

258D. Wave Propagation in Solids II.

(Same as Planetary and Space Sciences 224B.) Prerequisite: consent of the instructor. Wave propagation in layered media; Green's functions for various geometries; diffraction and scattering of elastic waves; attenuation; inversion problems. Mr. Mal in charge

259A. Seminar on Advanced Topics in Fluid Mechanics.

Prerequisite: consent of the instructor. To study advanced topics in fluid mechanics with intensive student participation, involving assignments in research problems leading to a term paper or an oral presentation and possible help from guest lecturers. Mr. Charwat, Mr. Gazley 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. Forster 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 Lyapunov techniques; spin stabilization; introduction to passive attitude stabilization. Mr. Likins in charge

263B. Space Vehicle Attitude Stability and Control.

Prerequisite: courses 122A, 263A. Passive attitude stabilization concepts and stability analysis; active control of spacecraft orientation; inertial and celestial sensors; reaction wheel, gyro and jet actuators; spin axis control; discontinuous and continuous active three-axis control techniques. Mr. Likins in charge

264A. Navigation and Guidance Systems.

Prerequisite: courses 122A, 160A, 255A. Basic concepts of navigation and guidance, automatic terrestrial guidance cruise vehicles, short and long range missiles, spacecraft, inertial guidance concepts and instrumentation, guidance error analysis techniques. Mr. Beggs in charge

264B. Aerospace Vehicle Navigation and Guidance Systems.

Prerequisite: course 264A. Conceptual and practical methods for the navigation and guidance of aerospace vehicles, with emphasis on error sources and error propagation, within the framework of special mission segments and corresponding guidance operations, e.g., boost and injection, rendezvous, planetary approach, etc. Mr. Forster in charge

265A. Advanced Structural Analysis I.

(Formerly numbered 166B.) Prerequisite: course 165B. Analysis of structural systems by energy methods; relaxation and iteration methods. Matrix methods as applied to beams and frames; analysis by substructures. Effects of thermal expansion, lack of fit, settling. Mr. Rubinstein in charge

265B. Advanced Structural Analysis II.

(Formerly numbered 265A.) Prerequisite: courses 166, 265A or consent of the instructor. Matrix methods applied to analysis of frames, plates, shells. Finite elements in two and three dimensions. Applications to stress, deflection, stability analysis. Dynamic behavior of structures. Mr. Hurty in charge

266A. Stability of Structures I.

Prerequisite: courses 165B, 166 or equivalent. Elastic buckling of bars. Different approaches to

stability problems. Inelastic buckling of columns and beam columns. Columns and beam columns with linear, nonlinear creep. Combined torsional and flexural buckling of columns. Buckling of plates.
Mr. Roberts in charge

266B. Stability of Structures II.

Prerequisite: course 266A. Continuation of the structural stability theory of course 266A, applied to rings, plates, and shells, dynamic stability of elements subject to transient and periodic forces.
Mr. Dong in charge

267A. Optimum Structural Design.

Prerequisite: course 165B. Principles of structural design for minimum weight or cost; relationship between material properties and structural configuration; prediction of weight of structure; relative merits of different materials; analysis of nonoptimum factors; application to aerospace and civil structures.
Mr. Felton in charge

267B. Advanced Structural Design.

(Formerly numbered 267A.) Prerequisite: courses 165B, 167. Design of steel frames by linear programming; probability and statistics related to the study of reliability of structural systems. Economic considerations in design. Application of optimization principles in structural design.
Mr. Felton, Mr. Rubinstein in charge

268A. Experimental Structural Analysis.

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. Laboratory work is included.
Mr. Matthiesen in charge

268B. Failure of Structural Systems.

Prerequisite: course 165B. Philosophy of structural safety. Principles of design for prevention of failure (other than buckling). Fatigue, brittle failure, delayed cracking, creep, design of efficient joints, environmental effects. Emphasis on current problems in actual structures.
Mr. Felton in charge

269C. Theory of Reinforced Concrete Structures.

Prerequisite: course 265B, 265D, or consent of the instructor. Physical and mechanical properties of plain concrete. Bonding of reinforcing steel, and cracking. Behavior of columns, beams, torsional elements, slabs and shells of reinforced concrete. Studies of complex reinforced concrete structures using modern techniques of applied mathematics.
Mr. Selna in charge

269A. Dynamics of Structures I.

Prerequisites: courses 155A, 165B or consent of the instructor. Consideration of properties of structures and advanced principles of dynamics. Determination of normal modes and frequencies by differential and integral equation solutions. Approximation methods and interaction techniques. Transient response to impulsive loads. Structural damping. Emphasis on matrix formulation and solution.
Mr. Hurty, Mr. Wolf 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. Hart, Mr. Hurty in charge

270A. Synthesis of Engineering Systems.

Prerequisite: course 179B; graduate standing in engineering. The logic and quantitative tools of synthesizing engineering systems. Needs and environment analysis leading to constraints, specifications, design concepts and design criteria. Physical realizability, economic justification, and financial feasibility. System stability, sensitivity and subsystem compatibility.
Mr. Asimow in charge

270B. Dynamic Elements of Operational Systems.

Prerequisite: course 193A, functional transform and network theory, linear algebra or consent of the instructor. Basic theoretical models applicable to general large-scale stochastic systems. Linear-system approximations. Applications to a wide range of system types. Mr. J. L. Barnes, Mr. Wismer in charge

270C. Techniques of System Optimization.

Prerequisite: course 170C. Theory, evaluation and computer applications of mathematical techniques for optimization with and without constraints. Advanced linear, quadratic and nonlinear programming, and stochastic processes. Applications to systems optimization problems. Mr. Wismer in charge

270D. System Simulation and Synthesis.

Prerequisite: courses 270B and 270C, or consent of the instructor. Theory and methods applicable to the simulation and synthesis of a wide range of systems characterized by deterministic and inherent stochastic elements. Microscopic simulations, macroscopic simulations. Simulation languages. System identification techniques. Applications to simulation and synthesis of representative systems.
Mr. Leonides, Mr. Wismer in charge

275A. Statistical Design of Engineering Experiments.

(Formerly numbered 283B. Same as Business Administration 215F.) Prerequisite: courses 193A, 193B. Matrix treatment of linear hypotheses in engineering experimentation. Statistical estimation, tests of hypotheses, analysis of variance, regression models. Randomized blocks, factorial, Latin square, multiple factor and level experiments. Principles of orthogonality, confounding, fractional replication, incomplete block designs with engineering applications.
Mr. J. L. Barnes 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, queuing theory, work sampling, mathematical simulation studies, multidimensional Gaussian, associated measurements. Evolutionary operations and response surface methodology. Applications and reports.
Mr. Coleman in charge

275C. Stochastic Processes in Linear Systems.

(Formerly numbered 287B.) Prerequisite: course 193A, functional transforms in linear systems, and B. S. degree in engineering, physics, or mathematics, or consent of the instructor. Formulation and solution of equations of behavior of lumped and distributed linear electrical, rigid- and fluid-mechanical, and thermal systems with stochastic (i.e., chance) excitation, or system change, and response. Emphasis on functional transform methods, and on duality.
Mr. J. L. Barnes in charge

277A. Economic Evaluation of Engineering Systems.

Prerequisite: courses 106B, 177A. Evaluation of economic feasibility of large scale engineering systems. Projections of future economic environment, growth of demand, planned expansion of the system. Techniques establishing profitability. Risk evaluation. Methods of financing. Term project.

Mr. 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, Mr. Kline in charge

278A. Advanced Kinematics.

(Formerly numbered 261A.) Prerequisite: course 178A. Analysis and synthesis of mechanisms with special emphasis on space mechanisms. Both graphical (vector) and analytical (matrix) methods are used. The dynamics of mechanisms in a space vehicle are discussed. The kinematics of geometrical optics are treated using matrices.

Mr. Beggs in charge

280A. Advanced Biotechnology.

(Formerly numbered 230A.) Prerequisite: course 180A or 180B or consent of the instructor. Review and analysis of contemporary bioscience research which bears on problems of engineering component and system design. Emphasis is on methodological and scientific factors underlying man-machine-environment interactions.

Mr. Lyman in charge

280B. Advanced Biotechnology.

(Formerly numbered 230B.) Prerequisite: course 180A or 180B or consent of the instructor. Specialized coverage of "human factors" and "human engineering" with orientation toward obtaining design optimization of the functions of humans in relation to engineering parameters of environment, communication and control.

Mr. Lyman in charge

282A. Seminar in Environmental Systems.

Prerequisite: graduate standing in engineering, architecture or public health. Open to other non-engineering students by consent of the instructor. Advanced topics in air conditioning, natural environments, and ecologies. Value analyses and designs for earth, ocean, and outer space. Processes and systems for life support, equipment protection, resources utilization, pollution control, waste reclamation, energy conversion. Selected problems differing each year.

Mr. Nottage in charge

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. Perrine 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 queueing theory. Conjunctive utilization of surface water and ground water systems.

Mr. Dracup in charge

284E. Saline Water Conversion.

Prerequisite: course 137A 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 water power systems.

Mr. McCutchan in charge

284F. Selected Topics in Water Resources.

(½ course)

Prerequisite: graduate status; consent of the instructor. In successive quarters course will deal with topics such as: water supply systems, hydraulic and structural problems, water quality management, and water law and institutions. May be repeated twice for credit.

Mr. Pillsbury in charge

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. Lee 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. Singh in charge

285C. Soil Dynamics.

Prerequisite: course 185A; graduate standing. The basic concepts of the behavior of soil under dynamic loads is presented with special application to the problems of design of soil structures and foundations to resist earthquake loading conditions.

Mr. Lee in charge

285D. Earth Pressures and Earth Retaining Structures.

Prerequisite: course 185A; graduate standing. The basic concepts of the theory of earth pressures behind retaining structures is presented with special application to the design of retaining walls, bulk-

heads and excavation bracing; the effects of flexibility of bulkheads, creep in soils and construction techniques are also discussed in detail.

Mr. Singh in charge

286A. Earthquake Engineering.

Prerequisite: courses 286A or 285A or 285A, or 155A. Engineering seismology: strong earthquake motion, microtremors, wave velocity and damping, induced vibrations, spectral analysis. Risk of earthquakes and fault breaks. Site evaluation. Structure-earth system response. Introduction to earthquake resistive design of buildings, bridges and dams. Theory and field experiments.

Mr. Duke, Mr. Jenschke, Mr. Matthiesen 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 131A or Engineering 192A, or consent of the instructor. Application of modern mathematical methods to engineering problems. Linear vector spaces and operators. Eigenvalue problems—spectral theory of operators. Applications to Sturm-Liouville problems, integral equations and systems of difference and differential equations. Mr. Levan in charge

291B. Analytical Methods of Engineering II.

(Formerly numbered 281B.) Prerequisite: course 291A or consent of the instructor. Application of modern mathematical methods to engineering problems. Green's functions and eigenvalue problems for second order ordinary differential equations and their adjoints. Discrete and continuous spectra for ordinary and partial differential equations. Initial and boundary value problems. Mr. Morgan in charge

291C. Integral Equations in Engineering.

Prerequisite: Mathematics 250B. Introduction to generalized function theory and Green's functions. Conversion of partial equations to integral equations and classification of integral equations. Solution to integral equations with degenerate kernels; discussions of successive approximations and Fredholm and Hilbert-Schmidt theory. Mr. Westmann in charge

296. Seminar in Engineering. (½ to 1 course)

Prerequisite: graduate status in engineering; consent of the instructor. Seminars may be organized in advanced technical fields. Course may be repeated provided no duplication exists. If appropriate, field trips may be arranged.

Mr. O'Neill in charge

†470A-470D. The Engineer in the Technical Environment.

(Formerly numbered 270A-270B-270C.) Prerequisite: acceptance in the Engineering Executive Program. Theory and application of quantitative methods in the analysis and synthesis of engineer-

ing systems for the purpose of making management decisions. Optimization of outputs with respect to dollar costs, time, material, energy, information and manpower. Includes case studies and individual projects.

Mr. O'Neill in charge

†471A-471B-471C. The Engineer in the General Environment. (1, ½, 1 course)

(Formerly numbered 271A-271B.) Prerequisite: acceptance in the Engineering Executive Program. Influences of human relations, laws, social sciences, humanities and fine arts on the development and utilization of natural and human resources. The interaction of technology and society—past, present and future. Change agents and resistance to change.

Mr. Campbell in charge

†472A-472B-472C-472D. The Engineer in the Business Environment. (1, 1, ½, 1 course)

(Formerly numbered 272A-272B.) Prerequisite: acceptance in the Engineering Executive Program. The language of business for the engineering executive. Accounting, finance, business economics, business law, and marketing. Laboratory in organization and management problem-solving. Analysis of actual business problems of the firm, the community, and the nation, provided through cooperation and participation with California business corporations and government agencies.

Mr. Campbell, Mr. Melancon in charge

†473A-473B. Analysis and Synthesis of a Large-Scale System.

(Formerly numbered 297.) Prerequisite: acceptance in the Engineering Executive Program. Credit to be given only upon completion of 473B. A problem area of modern industry or government is selected as a class project and its solution is synthesized using quantitative tools and methods. The project also serves as a laboratory in organization for a goal oriented technical group.

Mr. Asimow in charge

596. Directed Individual or Tutorial Studies.

(½ to 2 courses)

Prerequisite: graduate status in engineering; consent of the instructor. Application forms to request enrollment may be obtained from the Assistant Dean, Graduate Studies. Supervised investigation of advanced technical problems. The Staff in charge

596X. Directed Individual Preparation for Ph.D.

Foreign Language Examinations.

(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. Preparation for Ph.D. foreign language examination. The Staff in charge

597A. Preparation for M.S. Comprehensive Examination. (½ to 2 courses)

Reading and preparation for M.S. comprehensive examination. The Staff in charge

597B. Preparation for Ph.D. Preliminary Examinations. (½ to 2 courses)

Prerequisite: graduate status in engineering; con-

† Open only to Engineering Executive Program students. See page 122 of this bulletin.

sent of the instructor. Application forms to request enrollment may be obtained from the Assistant Dean, Graduate Studies. The Staff

597C. Preparation for Ph.D. Oral Qualifying Examination. (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. Preparation for Oral Qualifying Examination, including preliminary research on dissertation. The Staff

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 and Preparation of the Doctoral Dissertation. (½ to 2 courses)

Prerequisite: graduate status in engineering; consent of the instructor. Usually taken after student has been advanced to candidacy. Application forms may be obtained from the Assistant Dean, Graduate Studies. The Staff

■ **ENGLISH**

(Department Office, 2225 Humanities Building)

Robert Martin Adams, Ph.D., *Professor of English.*

J. Donald Bowen, Ph.D., *Professor of English.*

Vinton Adams Dearing, Ph.D., *Professor of English and Computer Applications in Literature.*

Robert William Dent, Ph.D., *Professor of English.*

Hugh Gilchrist Dick, Ph.D., *Professor of English.*

Philip Calvin Durham, Ph.D., *Professor of English.*

John Jenkins Espey, B.Litt., M.A., (Oxon.), *Professor of English.*

Robert Paul Falk, Ph.D., *Professor of English.*

Leon Howard, Ph.D., L.H.D., *Professor of English.*

Paul Alfred Jorgensen, Ph.D., *Professor of English.*

Robert Starr Kinsman, Ph.D., *Professor of English.*

William Matthews, Ph.D., Litt.D., *Professor of English.*

Earl 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.*

D. K. Wilgus, Ph.D., *Professor of English and Anglo-American Folksong.*

Claude Jones, Ph.D., *Emeritus Professor of English.*

Alfred Edwin Longueil, Ph.D., *Emeritus Professor of English.*

Russell Norman Campbell, Ph.D., *Associate Professor of English.*

Ronald E. Freeman, Ph.D., *Associate Professor of English.*

Gerald Jay Goldberg, Ph.D., *Associate Professor of English.*

Charles Bennett Gullans, 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., D.Phil., *Associate Professor of English.*

John Frederick Povey, Ph.D., *Associate Professor of English.*

Florence Ridley, Ph.D., *Associate Professor of English.*

Alan Henry Roper, Ph.D., *Associate Professor of English.*

William David Schaefer, Ph.D., *Associate Professor of English (Chairman of the Department).*

Georg Bernhard Tennyson, Ph.D., *Associate Professor of English.*

Peter Larsen Thorslev, Ph.D., *Associate Professor of English.*
 Llewellyn Morgan Buell, Ph.D., *Emeritus Associate Professor of English.*
 Walter Eldon Anderson, Ph.D., *Assistant Professor of English.*
 Joseph John Arpad, Ph.D., *Assistant Professor of English.*
 H. Bradford Arthur, Ph.D., *Assistant Professor of English.*
 Calvin Bernard Bedient, Ph.D., *Assistant Professor of English.*
 Charles Ashton Berst, Ph.D., *Assistant Professor of English.*
 Frederick Lorrain Burwick, Ph.D., *Assistant Professor of English.*
 Allen Conrad Christensen, Ph.D., *Assistant Professor of English.*
 Edward Ignatius Condren, Ph.D., *Assistant Professor of English.*
 Richard Keith Cross, Ph.D., *Assistant Professor of English.*
 C. F. William Forsberg, Ph.D., *Assistant Professor of English.*
 Robert A. Georges, Ph.D., *Assistant Professor of English.*
 Christopher Waldo Grose, Ph.D., *Assistant Professor of English.*
 George Robert Guffey, Ph.D., *Assistant Professor of English.*
 Loyce Randel Helms, Ph.D., *Assistant Professor of English.*
 Alan Albert Jabbour, Ph.D., *Assistant Professor of English.*
 Henry Ansgar Kelly, Ph.D., *Assistant Professor of English.*
 Richard Alan Lanham, Ph.D., *Assistant Professor of English.*
 Ralph Charles LaRosa, Ph.D., *Assistant Professor of English.*
 J. A. Leo Lemay, Ph.D., *Assistant Professor of English.*
 Robert M. Maniquis, Ph.D., *Assistant Professor of English.*
 Kenneth Bernard Newell, Ph.D., *Assistant Professor of English.*
 Morriss Henry Partee, Ph.D., *Assistant Professor of English.*
 Earl James Rand, Ph.D., *Assistant Professor of English.*
 Robert Alvin Rees, Ph.D., *Assistant Professor of English.*
 David Stuart Rodes, Ph.D., *Assistant Professor of English.*
 George S. Rousseau, Ph.D., *Assistant Professor of English.*
 Alan Francis Sandy, Jr., Ph.D., *Assistant Professor of English.*
 Paul Roland Sellin, Ph.D., *Assistant Professor of English.*
 Paul Douglas Sheats, Ph.D., *Assistant Professor of English.*
 William Eaton Stephenson, Ph.D., *Assistant Professor of English.*
 Patrick Lee Story, Ph.D., *Assistant Professor of English.*
 Ben Merchant Vorpahl, Ph.D., *Assistant Professor of English.*
 Carey Gail Wall, Ph.D., *Assistant Professor of English.*
 Robert D. Wilson, Ph.D., *Assistant Professor of English.*
 ———, *Assistant Professor of History.*
 ———, *Assistant Professor of History.*
 ———, *Assistant Professor of History.*



Steven Latimer Bates, M.A., *Acting Assistant Professor of English.*
 Charles Linwood Batten, Jr., M.A., *Acting Assistant Professor of English.*
 J. Douglas Canfield, M.A., *Acting Assistant Professor of English.*
 Jerome Cushman, A.B., B.S.L.S., *Senior Lecturer in English and Library Service.*
 William Carter Edinger, M.A., *Acting Assistant Professor of English.*
 F. Douglass Fiero, M.A., *Acting Assistant Professor of English.*
 Alexander Lance Hammond, M.A., *Acting Assistant Professor of English.*
 Gordon Lee Kipling, M.A., *Acting Assistant Professor of English.*
 Kenneth Robert Lincoln, M.A., *Acting Assistant Professor of English.*
 Donald Glenn Marshall, M.A., *Acting Assistant Professor of English.*
 John W. Oller, M.A., *Acting Assistant Professor of English.*

Richard Sherwin, Ph.D., *Visiting Assistant Professor of English.*

Bernard Wolfe, B.A., *Lecturer in English.*

Matthew Victor Skulicz, M.A., *Acting Assistant Professor of English.*

Stephen Irwin Yenser, M.A., *Acting Assistant Professor of English.*



Barbara Hall Partee, Ph.D., *Assistant Professor of Linguistics.*

Peter Ladefoged, Ph.D., *Professor of Phonetics.*

Robert Paul Stockwell, Ph.D., *Professor of Linguistics.*

Students must have passed Subject A (either examination or course) before taking any course in English. Regulations concerning Subject A will be found on page 39 of this bulletin.

Preparation for the Major

English 1, 2, 10A, 10B, 10C taken in sequence, each course being a prerequisite for the next course; Humanities 1A-1B or two courses chosen from Classics 141, 142, 143.

The Major

English 140 (Criticism), 141 (Chaucer), 142A and 142B (Shakespeare), 143 (Milton), and a minimum of seven additional upper division English courses, with the provision that (1) at least six of the seven courses must be chosen from the 150-180 series; (2) at least three of the seven must be in courses other than in the novel or drama; (3) at least one must be in English literature prior to 1800 (the 150 series); (4) at least one must be in English literature of the nineteenth or twentieth centuries (the 160 Series); (5) at least one must be from the 170-172 series of American literature.

Recommended: All majors are encouraged to elect additional courses from the 150-170 series, and to take at least one "Specialized Study" course from the 180 series. Students planning to do graduate work in English are urged to pursue the study of at least one foreign language; a reading knowledge of French, German, Italian, or Latin is required for the M.A. degree, and, for the Ph.D. degree, a reading knowledge of two of these languages is required.

Major for Foreign Students

The Department offers a special major in English open optionally to bona fide foreign students whose mother tongue was a language other than English. As preparation for this major, the requirements are: English 1, 2, 10A, 10B, 10C in sequence; two one-quarter courses in either English or American

history; and Speech 1. The following 13 courses are required for the major itself: English 103J; 106J; 109J; one course chosen from 111, 112, or 114; one from 115, 116, or 117; 122; 140; 142A and 142B; one from the 150 series; one from the 160 series; two electives from 141, 143, or courses numbered between 150 and 189. Students who complete this major and wish to go on to an M.A. degree in English at UCLA must first take all courses included in the regular English major that have not already been taken.

Teaching Credential Candidates

Students planning to obtain an elementary or secondary teaching credential should arrange their programs so as to elect English 120 and 130 in their senior year. Also strongly recommended are Speech 111 (or 112A or 112B), English 110, 111, and 112. English 300 and additional courses as prescribed by the Graduate School of Education will be taken in the graduate year. For additional information on courses leading to the teaching credential, consult the Graduate School of Education (Moore Hall 201) and the Department of English (Humanities Building 2225).

Honors Seminars in English 1 and 2

Entering students with a score of 700 on the CEEB English Achievement Test and a verbal score of 650 on the CEEB Scholastic Aptitude Test are eligible to enroll in an English 1 honors seminar. Interested students should bring their scores to the department offices before enrollment day. At the invitation of the department honors committee, students who have received a grade of A in English 1 may enroll in an English 2 honors seminar (winter and spring quarters only). A list of eligible students will be available in the department office prior to enrollment day.

The Honors Course in English

Majors with a 3.25 overall grade-point average and a 3.4 grade-point average in English courses are encouraged to enter the

senior honors program in English. This program consists of two courses from the 180 series of Specialized Study courses and one Special Study tutorial (English 199H). Students must register for the program and be interviewed by the honors chairman during the final quarter of their junior year. Departmental honors will be awarded only to students who follow this procedure in entering the program, and who achieve at graduation at least 3.25 overall and 3.6 in upper division English courses, at least 10 of which must be completed at UCLA.

Requirements for Admission to Graduate Courses

The requirement is ordinarily the undergraduate major in English (or its equivalent) in which a superior and clearly promising record has been achieved. Prospective students are required to take the Graduate Record Examination (Advanced Test) in literature and to have their scores reported to the Department of English. A graduate student in another department who wishes to take a graduate course in English must secure the permission of the professor teaching the course.

Requirements for the Master's Degree

1. For the general requirements, see page 139. The Department follows the Comprehensive Examination Plan, as described on page 142. The comprehensive examinations for the M.A. and the qualifying examinations for the Ph.D. are given twice a year.

2. Under the comprehensive examination plan, the Department offers two programs leading to the M.A. degree. Of these, Plan A is designed primarily for students intending to teach in high schools and junior colleges. Plan B constitutes the first phase of the program leading to the Ph.D. degree for students intending to teach in colleges and universities. Students who take the M.A. degree under Plan A may, if recommended by the Department, transfer to the Ph.D. program, but they will not be eligible for the qualifying examinations until they have completed the course requirements listed under Plan B. For both Plan A and Plan B, a reading knowledge of French or German or Italian or Latin is required. Students should take the reading test in one of these languages at the beginning of the first quarter of residence, but in any event no later than the mid-term of the quarter in which all degree requirements are to be completed.

Plan A. Students must complete at least

nine courses in English, including the following: course 120 or 121; course 201; two courses chosen from the sequence 220 through 228. In accordance with University requirements, at least five courses must be at the graduate level, that is, in the 200 series. Four courses may be in the 100 series of courses applicable to the undergraduate major, with the exception of courses in writing. Upon the completion of all requirements, the student will be given a comprehensive oral examination of no less than one hour designed to test his intellectual grasp of the major literary documents presented to him during his graduate study.

Plan B. (See Requirements for the Doctor's Degree, below.)

Requirements for the Doctor's Degree

1. For the general requirements, see page 143.

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, which is either an acceptable medieval period or one-hundred-year post-medieval period.

(d) When a candidate has passed the Part II qualifying examination, he is officially advanced to candidacy and may receive the degree of Candidate in Philosophy. He thereupon proceeds with the writing of his dissertation, and 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. English Composition and Literature.

Prerequisite: course 1. Expository writing continued, emphasizing critical readings and writing about specific works of literature in various forms. 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

70. Contemporary Themes in British and American Literature.

Prerequisite: course 1. The course will focus each quarter on one of a variety of topics of current interest. The Staff

Upper Division Courses

Courses 1, 2, 10A-10B-10C are prerequisite to all other courses in English except 100 through 122, for which course 1 is prerequisite, and courses 130 through 135, for which courses 1 and 2 are prerequisite. Consent of the instructor is required for enrollment in courses 133 through 135.

100. Major British Authors before 1800.

Not open for credit to English majors or students who have had 10A or 10B. A study of selected masterpieces of English literature before 1800, including the works of such writers as Chaucer, Shakespeare, Milton, Swift, Pope, Johnson, and Fielding. The Staff

101. Major British Authors, 1800 to the Present.

Not open for credit to English majors or students who have had 10B or 10C. A study of selected masterpieces of English literature, 1800 to the present, including such writers as Wordsworth, Coleridge, Keats, Dickens, Tennyson, Browning, Arnold, Yeats, and T. S. Eliot. The Staff

102. Major American Authors.

Not open for credit to English majors or students who have had any courses in the 170 series (formerly numbered 156, 157, 158). An introduction to the chief American men of letters, with emphasis upon the poetry, nonnarrative prose, and short fiction of such writers as Poe, Emerson, Whitman, Twain, Frost, and Hemingway. The Staff

103. Shakespeare.

Not open for credit to English majors or students who have had 142A or 142B (formerly numbered 170). A survey of Shakespeare's plays, including comedies, histories, and tragedies selected to represent Shakespeare's breadth, artistic progress, and total dramatic achievement. The Staff

104. The American Novel.

(Formerly numbered 108.) Not open for credit to English majors. The development, with emphasis on form, of the American novel from its beginning to the present day. Included are works of such novelists as Hawthorne, James, Fitzgerald, and Faulkner. Mr. Durham, Mr. Goldberg

110. Introduction to Poetry.

(Formerly numbered 109.) A study of critical issues (metrics, diction, figurative language, symbolism, irony and ambiguity, form and structure) and aesthetic issues, including evaluative criteria; followed by the close critical analysis of a selection of representative poems. This course is particularly recommended for teaching credential candidates. Mr. Sheats, Mr. Thorslev

111. The Literature Myth and Oral Tradition.

(Formerly numbered 104 and same as Folklore 104.) A study of myth, dramatic origins, oral epic, folktales and ballad, emphasizing Indo-European and Semitic examples. Mr. Wilgus

112. Children's Literature.

(Formerly numbered 106.) A study of the historical backgrounds and development of types of children's literature, folklore and oral tradition, levels of interest, criticism and evaluation, illustration and bibliography. Mr. Cushman

113A-113B. The English Bible as Literature.

(Formerly numbered 105.) The principal literary monuments of the Old and New Testaments in the King James version. Mr. Dearing, Mr. Jacobs

114. Survey of African Literature in English.

(Formerly numbered 112.) A survey of contemporary literature from English-speaking Africa, reviewing the major genres from several countries and making cross-comparisons with other literatures. Generalizations concerning the nature of the English used by such writers will be examined. Mr. Povey

115. American Popular Literature.

(Formerly numbered 107.) A study of the main currents of popular and cultural taste as reflected in such genres as dime novels, detective fiction, and Western stories. Mr. Durham, Mr. Vorpahl

116. Recent British and American Literature.

British and American literature since the mid-century: a survey of recent trends and developments in poetry, fiction, and criticism.

Mr. Espey, Mr. Nevius

117. The Short Story in England and America.

A historical survey of the short story as a genre from the eighteenth century to the present day.

Mr. Goldberg

120. English Language Study for Teachers.

A survey of those areas of theoretical and applied English linguistics that are of special interest and importance for primary and secondary school English teachers. Subjects covered include: approaches to the description of English grammar; regional and social dialects of American English; contributions of English language study to the teaching of reading, spelling, composition and literature.

Mr. Arthur, Mr. Matthews

121. The History of the English Language.

A study directed toward English majors of the main features in the grammatical, lexical and phonetic condition of the English language from Indo-European up to the present time.

Mr. Arthur, Mr. Matthews

122. The Structure of Modern American English.

A general description of the English language as it is currently used in North America, and study of the developments which have led to distinctive American characteristics.

Mr. Arthur, Mr. Campbell

130. Composition for Teachers.

Preparation for future teachers of English composition in the writing and criticism of the kinds of prose discourse usually taught in the secondary schools. The Staff

131. Exposition.

Weekly assignments designed to cover the standard patterns of expository writing: enumeration, classification, cause and effect, narrative exposition, etc. The Staff

133A-133B. Creative Writing: Poetry.

Weekly exercises in the writing of poetry, with practice in the standard forms and metres and the study of techniques. Classroom discussion based on student work. Mr. Gullans, Mr. Kessler

134A-134B-134C. Creative Writing: Short Story.

The completion of three stories of average length during each quarter. Some of these may, with the instructor's permission and the student's wish, be a substantial revision of one of the other stories presented. Classroom discussion based on student stories. Mr. Goldberg, Mr. Kessler

135A-135B-135C. Creative Writing: Drama.

An exploration of the capacity of each student to write for the theater. Class discussion of student writing, individual conferences, rehearsed readings, and laboratory productions. Mr. Savage

140. Criticism.

(Formerly numbered 171.) An introduction to the types of literary criticism and their methods of analysis and evaluation. The Staff

141. Chaucer.

(Formerly numbered 172.) A study of selected items from Chaucer's major works with emphasis upon *The Canterbury Tales*.

Mr. Matthews, Miss Ridley

142A. Shakespeare: The Poems and Early Plays.

For English majors (and non-majors who have completed 10A-10B-10C). Not open to students who have taken the course formerly numbered 170. An intensive study of selected poems and representative comedies, histories, and tragedies through *Hamlet*. The Staff

142B. Shakespeare: The Later Plays.

Prerequisite: course 142A. Not open to students who have taken the course formerly numbered 170. For English majors (and non-majors who have completed 10A-10B-10C). An intensive study of representative problem plays, major tragedies, Roman plays and romances. The Staff

143. Milton.

(Formerly numbered 173.) A study of the major works of Milton with emphasis on *Paradise Lost*. The Staff

150. Later Medieval Literature.

Reading and historical explication of the major writers of the fourteenth and fifteenth centuries (excluding Chaucer); e.g., the Gawain-poet, Langland, Gower, Malory, miracle and morality plays, prose, and short poems. The more difficult texts will be read in modernized form. Mr. Matthews, Miss Ridley

151. Elizabethan Literature.

A study of English literature of the sixteenth century, with special emphasis on the development and interrelationships of poetry, prose, fiction, and literary theory and criticism during the reign of Elizabeth I. Mr. Dick, Mr. Phillips

152. The Drama to 1642.

(Formerly numbered 145.) A study of the English drama, excluding Shakespeare, from the beginning

to the closing of the theaters, with special emphasis on plays of the Elizabethan and Jacobean periods.

Mr. Dent, Mr. Kelly

153. Literature of the Earlier Seventeenth Century (1600-1680).

Not open to students who have taken the course formerly numbered 152. A study of the major works as literary documents and as products of seventeenth-century thought. The work of Milton is excluded.

Mr. Guffey

154. Literature of the Restoration and Earlier Eighteenth Century (1680-1730).

Not open to students who have taken either of the courses formerly numbered 152 or 153. A study of major works as literary documents and as products of Restoration and earlier eighteenth-century thought.

Mr. Miner, Mr. Swedenberg

155. Literature of the Later Eighteenth Century (1730-1798).

Not open to students who have taken the course formerly numbered 153. A study of major works as literary documents and as products of later eighteenth-century thought.

Mr. Dearing, Mr. Novak

156. The Drama, 1660-1842.

(Formerly numbered 146.) A survey of the English drama from the Restoration to the Licensing Act.

Mr. Novak, Mr. Stephenson

157. The Novel to 1832.

(Formerly numbered 140.) A survey of the major English novelists from Defoe through Scott.

Mr. Novak, Mr. Stephenson

160. Earlier Romantic Poetry and Prose.

Not open to students who have taken the course formerly numbered 154. An intensive study of the poetry and prose of Blake, Wordsworth, and Coleridge, with collateral readings from such authors as Godwin, Burke, Paine, Burns, Southey, Lamb, DeQuincy, and Scott.

Mr. Burwick, Mr. Sheats

161. Later Romantic Poetry and Prose.

Not open to students who have taken the course formerly numbered 154. An intensive study of the poetry and prose of Keats, Shelley, and Byron, with collateral readings from such authors as Hazlitt, Hunt, Landor, Clare, Moore, and Peacock.

Mr. Maniquis, Mr. Thorslev

162. Victorian Poetry.

Not open to students who have taken the course formerly numbered 155. A study of major and minor Victorian poets, with special emphasis on Tennyson, Browning, Arnold, and Hopkins.

Mr. Freeman, Mr. Schaefer, Mr. Tennyson

163. Victorian Prose.

Not open to students who have taken the course formerly numbered 155. A study of major prose writers of the Victorian period, including Carlyle, Ruskin, Arnold, Mill, Newman, Pater, and Wilde.

Mr. Schaefer, Mr. Tennyson

164. The Novel, 1832-1900.

(Formerly numbered 141.) A survey of the major English novelists from Dickens through Hardy.

Mr. Christensen

165. Twentieth-Century British Poetry and Prose.

(Formerly numbered 159.) A study of the dominant trends of the twentieth century, with emphasis on experimental work in short fiction, poetry, and the contemporary critical sensibility.

Mr. Espey, Mr. Newell

166. The Novel, 1900 to the Present.

(Formerly numbered 142.) A survey of the major English novelists from Conrad to the present.

Mr. Newell

167. The Drama, 1842 to the Present.

(Formerly numbered 147.) A survey of British and American drama with its principal continental influences. For Theater Arts majors the prerequisite of courses 10A-10B-10C is waived.

Mr. Best

170. American Literature to 1800.

Not open to students who have taken the course formerly numbered 156. A historical survey of American literature through the Colonial and Early National Periods.

Mr. Lemay

171. American Literature, 1801-1865.

Not open to students who have taken the course formerly numbered 157. A historical survey of American literature, including fiction, from the beginning of the nineteenth century to the end of the Civil War.

Mr. Howard, Mr. Rees

172. American Literature, 1866-1912.

Not open to students who have taken the course formerly numbered 157. A historical survey from Whitman to the founding of *Poetry* magazine.

Mr. Nevins, Mr. Vorpahl

173. Twentieth Century American Poetry.

Not open to students who have taken the course formerly numbered 158. The development of American poetry since 1912, including Frost, Eliot, Pound, and Stevens.

Mr. Gullans

174. Twentieth Century American Fiction.

Not open to students who have taken the course formerly numbered 158. The development of the American novel and short story since 1912, including Hemingway, Fitzgerald, and Faulkner.

Mr. Lehan, Miss Wall

Specialized Studies. These courses (180 through 189) are designed to permit a small group of students (limit: 15) to specialize in a period which they find attractive, and in which they have taken adequate upper division background courses. For the author, group or genre to be studied, see the Schedule of Classes for any given quarter. Enrollments for each course are handled in the department office (Humanities Building 2225) at the time of preenrollment in the quarter preceding that in which the course is offered.

180. Specialized Studies in Medieval Literature.

The Staff

181. Specialized Studies in Renaissance Literature.

The Staff

182. **Specialized Studies in Seventeenth-Century Literature.**
The Staff
183. **Specialized Studies in Eighteenth-Century Literature.**
The Staff
184. **Specialized Studies in Romantic Literature.**
The Staff
185. **Specialized Studies in Victorian Literature.**
The Staff
186. **Specialized Studies in Twentieth-Century British Literature.**
The Staff
187. **Specialized Studies in Colonial American Literature.**
The Staff
188. **Specialized Studies in Nineteenth-Century American Literature.**
The Staff
189. **Specialized Studies in Twentieth-Century American Literature.**
The Staff

190. **Literature and Society.**

Prerequisites: courses 1, 2, 10A, 10B, 10C. A record of some aspect of the relationship between literature and social, economic or political history.
The Staff

199. **Special Studies in English. (½ to 1 course)**
Open to graduate students by petition only.
The Staff

199H. **Honors Tutorial.**

A tutorial course for students enrolled in the Honors Program. Each student will be expected to prepare a long paper of a critical or research nature.
The Staff

Graduate Courses

200. **Bibliography.**
Mr. Dearing, Mr. Dick, Mr. Gullans
201. **The Functions of Literary Criticism.**
Mr. Adams, Mr. Lehan
210. **Readings in Old English Literature.**
Mr. Condren, Mr. Matthews
211. **Readings in Middle English Literature.**
Prerequisite: course 210.
Mr. Matthews, Miss Ridley
212. **History of the English Language.**
Prerequisite: course 211.
Mr. Matthews, Mr. Stockwell
213. **The Development of Modern English.**
Course 122, or course 212, or Linguistics 205A.
Mr. Bowen, Mr. Wilson

Graduate Surveys

These courses are designed primarily for students whose undergraduate training has not included the study of literature in terms of ages or periods.

220. **Medievalism.** Mr. Matthews, Miss Ridley
221. **The Renaissance.**
Mr. Dick, Mr. Jorgensen, Mr. Phillips
222. **Jacobean and Caroline Literature.**
Mr. Guffey, Mr. Miner, Mr. Swedenberg
223. **Neo-Classicism.** Mr. Dearing, Mr. Novak
224. **Romanticism.** Mr. Burwick, Mr. Thorlev
225. **Victorianism.** Miss Nisbet, Mr. Schaefer
226. **American Literature.**
Mr. Falk, Mr. Howard, Mr. Nevius
227. **Twentieth Century Literature: American.**
Mr. Durham, Mr. Lehan, Mr. Nevius
228. **Twentieth Century Literature: British.**
Mr. Adams, Mr. Epsey, 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: Seminar.** Mr. Matthews
243. **The Ballad.**
(Same as Folklore 243.) Mr. Wilgus

244. Old English Literature. Mr. Matthews
245. Medieval English Literature.
Mr. Matthews, Miss Ridley
246. Chaucer and His Contemporaries.
Mr. Matthews, Miss Ridley
247. Studies in Early Tudor Literature.
Mr. Kinsman, Miss Ridley
248. Middle English Dialects. Mr. Matthews
249. Shakespeare.
Mr. Dent, Mr. Jorgensen, Mr. Phillips
250. Spenser. Mr. Dick, Mr. Phillips
251. Studies in Elizabethan and Jacobean Drama.
Mr. Dent, Mr. Dick, Mr. Jorgensen
252. Elizabethan Poetry. Mr. Dick, Mr. Phillips
253. Themes in Renaissance Literature.
Mr. Dick, Mr. Jorgensen
254. Trends in Seventeenth Century Prose.
Mr. Miner, Mr. Swedenberg
255. Trends in Seventeenth Century Poetry.
Mr. Miner, Mr. Swedenberg
256. Studies in Drama, 1660-1790. Mr. Novak
257. Dryden and His Contemporaries.
Mr. Dearing, Mr. Miner, Mr. Swedenberg
258. Pope and His Contemporaries.
Mr. Dearing, Mr. Novak
259. Johnson and His Contemporaries. Mr. Dearing
260. Studies in the Romantic Writers. Mr. Thorslev
261. Studies in Victorian Prose.
Miss Nisbet, Mr. Tennyson
262. Studies in Victorian Poetry.
Miss Nisbet, Mr. Schaefer
263. Studies in the Nineteenth Century Novel.
Miss Nisbet
264. Contemporary American Literature.
Mr. Durham, Mr. Nevins
265. Contemporary British Literature.
Mr. Adams, Mr. Espey, Mr. Nevins
266. Early American Literature.
Mr. Howard, Mr. Lemay
267. Major American Writers.
Mr. Falk, Mr. Howard, Mr. Nevins
268. Studies in American Literature.
Mr. Falk, Mr. Howard

269. Descriptive Bibliography. Mr. Dearing
270. Teaching of College English Composition.
Mr. Freeman
271. Studies in African Literature in English.
Prerequisite: English 114 or consent of the instructor. Continuation of English 114. Special problems and trends in African literature in English.
Mr. Povey

Professional Course in Method

300. The Teaching of English.
Required of candidates for the general secondary credential with the field major in English and speech.
Mr. Freeman

Individual Study and Research

586. Directed Individual Study.
Independent study, including preparation for the foreign language examination. This course may not be used to satisfy any course requirement for a degree.
The Staff
597. Preparation for the Doctoral Qualifying Examination.
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 39 of this bulletin). Depending on the result of this examination, entering students are: (1) exempted from any special English requirement; (2) required to take course 33C; (3) required to take course 33B followed by course 33C; (4) required to take course 33A followed by courses 33B and 33C; or (5) required to spend a quarter studying elementary English exclusively.

Certificate in the Teaching of English as a Second Language

To qualify for this certificate students must meet the following requirements: (1) All students, those educated in the United States,

as well as those educated in other countries, must have an educational background sufficient to qualify them as teachers in their home state or country. They will normally be admitted to the University as graduate students. With the approval of the Dean of the Graduate Division and the Chairman of the Department of English, graduate admission may be granted to students solely for the purpose of pursuing the courses leading to this certificate, provided they meet general graduate admission requirements. Students who do not meet these requirements may, upon recommendation of the Chairman of the Department of English, be admitted to limited status to pursue the course of study leading to the certificate. (2) Courses to be taken in the fall quarter are English 370K, Linguistics 100 and a nondepartmental elective (appropriate courses in education, folklore, speech, and the structure of the student's mother tongue are especially recommended). Depending on the results of the Entrance Examination in English as a Second Language, nonnative speakers of English may be required to take English 33C in lieu of this elective. Courses to be completed in the winter quarter are English 250K, English 122, and a departmental elective (English 109K, English 371K, or an appropriate course in English or American literature are recommended). Courses for the spring quarter are English 380K, English 103K (native and some nonnative speakers will be allowed to substitute Linguistics 103 or Linguistics 200A for this), and English 106K. By passing a proficiency examination in English composition, students may be exempted from course 106K, in which case they may choose any program-connected elective approved by their adviser (English 109K, 114, 260K, 270K, and 375K are recommended). (3) Certificate candidates in graduate status must maintain a grade average equivalent to that required of candidates for a University-recommended standard secondary teaching credential.

Special Language Requirement for Native Speakers of English

Students whose mother tongue is English will not be held for the first two electives (nondepartmental and departmental) mentioned in the previous paragraph. Instead they will be required to take two courses designed to acquire or perfect a knowledge of the native language of the pupils to whom they expect to teach English. Courses which deal with the linguistic structure of the language in question should be chosen when

ever 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.

Requirements for the Master's Degree

To be admitted to the M.A. program, students must have completed the requirements for the Certificate in the Teaching of English as a Second Language with at least a 3.25 grade-point average. Upon completion of this work they should petition to be admitted to the M.A. program. If a student has completed the Certificate requirements while in limited status and has maintained a grade-point average of 3.25, he may, upon recommendation of the Chairman of the Department of English, be simultaneously given graduate status, admitted to candidacy for the master's degree, and allowed graduate credit for the Certificate courses which are to be counted toward the M.A.: Linguistics 100, English 103K or Linguistics 103, English 122, and English 250K. Plan I as established by the Graduate Division (see page 139), the thesis plan, will be followed for the M.A. in Teaching English as a Second Language. Nine upper division and graduate-level courses, of which at least five must be in the 200 and 500 series, and a thesis are required. These include the four Certificate courses mentioned above, English 213, English 598K, and three electives. English 598K should be taken as soon as possible after the thesis topic has been chosen. The electives will be selected as a sequence

of three courses related among themselves and relevant to the thesis topic. Among the recommended fields for subspecialization are: language policy, the teaching of literature (for students with an English major only), the structure of the English language, the linguistics of a particular geographical area, phonetics, dialectology, psycholinguistics and language learning, and sociolinguistics. There are no special language requirements for the M.A. other than those included among the Certificate requirements.

Lower Division Courses

33A. Intermediate English as a Second Language. (2 courses)

Meets ten hours weekly. Intensive drill in pronunciation, structural patterns, vocabulary, conversation, and composition. The Staff

33B. Intermediate English as a Second Language.

Meets five hours weekly. Continuation of 33A. The Staff

33C. Intermediate English as a Second Language.

Meets five hours weekly. Continuation of 33B with emphasis on composition. The Staff

Upper Division Courses

103J. Phonetics for Foreign Students.

Prerequisite: course 33C or the equivalent. A detailed and systematic study of the sounds of American English and the way in which they are put together in connected speech, applied to the improvement of the student's own accent. Language laboratory. The Staff

103K. Phonetics for Teachers of English as a Second Language.

Prerequisite: consent of the instructor. Analysis of the phonological structure of contemporary English, with attention to the differences between British and American speech. Laboratory drill directed toward individual needs. Mr. Oller

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. Povey

106K. Advanced Composition for Teachers of English as a Second Language.

Prerequisite: consent of the instructor. Elements of English grammar as related to classroom instruction. Compositions based on the contrastive analysis of American and other cultures. Mr. T. Anderson, Miss McIntosh

109J. Introduction to Literature (for Foreign Students).

Prerequisite: course 33C or the equivalent. Selections from English and American literature presented

so as to make full allowance for the students' linguistic and cultural problems and to contribute to an increasing mastery of the English language.

Mr. Povey

109K. The Teaching of Literature in a Second-Language Situation.

Prerequisite: consent of the instructor. Special problems involved in teaching English literature to students whose mother tongue is a language other than English. Choice and preparation of teaching materials. Relationship of advanced reading and composition to literature.

Miss McIntosh, Mr. Povey

Graduate Courses

250K. Contrastive Analysis of English and Other Languages. Seminar.

Prerequisites: Linguistics 100, course 370K. Theory and techniques of contrasting the phonological, grammatical, and lexical structures of English with those of other languages.

Mr. T. Anderson, 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. Wilson

260K. Psycholinguistics and Language Teaching. Seminar.

(Same as Linguistics 260K.) Prerequisite: courses 370K and 103K and Linguistics 100, or consent of the instructor. An exploration of those areas of psycholinguistics covering foreign language acquisition; types and theories of bilingualism; learning theories underlying the current methods of teaching foreign languages; basic experimental designs to test existing assumptions about learning and teaching foreign languages. Mr. Oller

261K. 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. T. Anderson

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. T. Anderson

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 lan-

guage learning. Analysis of the differences between two languages as a basis of instruction.

Mr. Campbell, Miss McIntosh, Mr. Prator

375K. The Teaching of Standard English as a Second Dialect.

Prerequisite: consent of the instructor. Survey and evaluation of methods and bibliography of materials appropriate to subject. The nature of language learning, contrastive analysis, and dialect distribution and comparison.

Mr. Arthur

380K. Supervised Teaching: English as a Second Language.

Prerequisite: course 370K. Team teaching at the

elementary, secondary, or adult level under the supervision of a senior staff member.

Mr. Campbell, Miss McIntosh, Mr. Wilson

Individual Study and Research

598K. Research and Thesis for Candidates for M.A. in Teaching English as a Second Language.

Prerequisite: advancement to candidacy for M.A. degree in Teaching English as a Second Language. Special individual study, required of all candidates for M.A. in Teaching English as a Second Language. Graded Satisfactory/Unsatisfactory. Credit (one course) allowed only once. Should be taken as soon as possible after thesis topic is chosen.

The Staff

■ FOLKLORE AND MYTHOLOGY GROUP

(Department Office, 11-380 Social Sciences Building)

Marija Gimbutas, Ph.D., *Professor of Indo-European Studies.*

Wayland D. Hand, Ph.D., *Professor of German and Folklore and Director, Center for the Study of Comparative Folklore and Mythology.*

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

Jaan Puhvel, Ph.D., *Professor of Indo-European Studies.*

Stanley L. Robe, Ph.D., *Professor of Spanish.*

Charles Speroni, Ph.D., *Professor of Italian.*

Walter Starkie, M.A., Litt.D., *Professor of Spanish in Residence.*

D. K. Wilgus, Ph.D., *Professor of English and Anglo-American Folksong.*

Joseph J. Arpad, Ph.D., *Assistant Professor of English.*

Robert A. Georges, Ph.D., *Assistant Professor of English and Folklore.*

Alan Jabbour, Ph.D., *Assistant Professor of English.*

James Porter, M.A., *Assistant Professor of Music and Folklore.*

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

◇

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

Michael Owen Jones, M.A., *Acting Assistant Professor of History and Folklore.*

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

◇

Alexander Badawy, Ph.D., *Associate Professor of Art.*

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

Paulo Carvalho-Neto, M.A., *Lecturer in Portuguese.*

John A. Crow, Ph.D., *Professor of Spanish.*

Jerome Cushman, Ph.D., *Senior Lecturer in English and Library Service.*

Elsie Dunin, M.A., *Lecturer in Dance.*

Thomas Eekman, Ph.D., *Professor of Slavic Languages.*

Alma Hawkins, Ph.D., *Professor of Dance.*

Melvyn Helstien, Ph.D., *Associate Professor of Theater Arts.*

Hazel Chung Hood, B.A., *Lecturer in Dance.*

Mantle Hood, Ph.D., *Professor of Music.*

Boris A. Kremenliev, Ph.D., *Professor of Music.*

Daniel P. Kunene, Ph.D., *Assistant Professor of African Languages.*

Juana de Laban, Ph.D., *Associate Professor of Dance.*

Steven Lattimore, Ph.D., *Assistant Professor of Classical Archaeology.*

Wolf Leslau, Ph.D., *Professor of Hebrew and Semitic Linguistics.*

- William A. Lessa, Ph.D., *Professor of Anthropology.*
 William Matthews, Ph.D., *Professor of English.*
 David Morton, Ph.D., *Assistant Professor of Music.*
 Phillip Newman, Ph.D., *Assistant Professor of Anthropology.*
 Wendell H. Oswalt, Ph.D., *Associate Professor of Anthropology.*
 Florence H. Ridley, Ph.D., *Associate Professor of English.*
 Charles Seeger, A.B., *Research Musicologist in Music (Ethnomusicology and Folk Music).*
 Allegra Snyder, M.A., *Lecturer in Dance.*
 Eli Sobel, Ph.D., *Professor of German.*
 Paul O. W. Tanner, M.A., *Lecturer in Music.*
 Erik Wahlgren, Ph.D., *Professor of Scandinavian Languages.*
 Donald J. Ward, Ph.D., *Associate Professor of German.*
 Lora S. Weinroth, Ph.D., *Assistant Professor of French.*
 Johannes Wilbert, Ph.D., *Professor of Anthropology.*
 Jules Zentner, Ph.D., *Assistant Professor of Scandinavian Languages.*
 ———, *Visiting Assistant Professor of Finno-Ugric Studies.*

Although no undergraduate major in folklore is offered, a wide variety of course work is available in the three following general areas: (1) languages and literatures (English and foreign languages); (2) social sciences (anthropology, sociology); (3) folk arts (art, dance, music, theater arts). Students with undergraduate preparation in folklore may continue their work on the graduate level. For planning course work, students should consult departmental advisers and the Chairman of the Folklore and Mythology Group.

M.A. in Folklore and Mythology.

The program leading to the degree of Master of Arts in Folklore and Mythology is administered by the inter-departmental Committee on Folklore and Mythology. It is open to students desiring a knowledge of the materials of folklore and mythology and the theoretical bases and techniques of research. Students completing the degree may continue folklore study in conjunction with a program leading to a degree in an allied 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 139.

Language Requirements. A reading knowl-

edge 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; and at least one course chosen from each of the following groups:

Group 1. Folklore 106, 144, 146, 180; Music 140A-140B-140C, 142, 143A-143B, 145, 146, 190A-190B.

Group 2. Folklore 120, 121, 122, 123A-123B, 124, 125, 126, 128, 145, 149, 150, 221, 230A-230B, 241, 249; African Languages 150A-150B; French 115A-115B-115C, 215A-215B-215C-215D-215E; German 134, 240A-240B-240C, 245A-245B; Scandinavian 141, 245.

Group 3. Folklore 213, 217, 243, 251, 258, 259, 286; English 220; Indo-European Studies 260A-260B; Music 255, 280; Russian 291; Spanish 262A-262B-262C.

Also required is a written examination requiring comprehensive knowledge of (1) the theoretical bases, major documents, and techniques of folklore study; (2) the major forms of folklore; and (3) either mythology, a single form of folklore or the folklore and mythology of a selected society 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 minimum of nine courses (including course 598)

chosen from courses in the Folklore and Mythology Group, at least five of which must be in the 200 series.

Comprehensive Examination. A minimum of nine courses chosen from the courses in the Folklore and Mythology Group, at least five of which must be in the 200 series; an oral examination covering the field of the written examination.

Through its member departments the Folklore and Mythology Group also offers a variety of course work leading to the M.A. and Ph.D. degrees. Financial aid and research opportunities are available to qualified graduate students in the form of fellowships, research assistantships, teaching assistantships, and collecting stipendia. For further information, students should consult the Director of the Center for the Study of Comparative Folklore and Mythology, Mr. Hand.

Upper Division Courses

101. Introduction to Folklore.

Prerequisite: junior standing. A survey of the various forms of folklore and an examination of their historical and social significance. **The Staff**

105. Folklore in American Society.

(Same as History 105.) Prerequisite: junior standing. A cultural-historical survey of the role of folklore in the development of American civilization and of the influence of the American experience in the shaping of folklore in American society.

Mr. Georges, Mr. Jones

106. Anglo-American Folk Song.

Prerequisite: junior standing. A survey of Anglo-American balladry and folk song, with attention to historical development, ethnic background, and poetic and musical values. **Mr. Jabbour, Mr. Wilgas**

111. The Literature of Myth and Oral Tradition.

(Formerly numbered 104 and same as English 111.) A study of myth, dramatic origins, oral epic, folktale, and ballad, emphasizing Indo-European and Semitic examples. **Mr. Arpad, Mr. Jabbour**

118. Folk Art and Technology.

Prerequisite: junior standing. A general course concerned with the material manifestations of folk culture and the theoretical concepts and methodologies utilized in their analysis. **Mr. Jones**

120. Historical Survey of the Gypsies.

Prerequisite: junior standing. Study of the history, ethnic origins, and linguistics of the Gypsies.

Mr. Starkie

121. Introduction to British Folklore and Mythology.

(Formerly numbered 223.) Prerequisite: junior standing. A survey of the folklore of the peoples of Britain, with attention to their history, function, and regional differences. **Mr. Georges, Mr. Porter**

122. Introduction to Celtic Folklore and Mythology.

(Same as Indo-European Studies 189.) 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.

123A-123B. Introduction to Finnish Folklore and Mythology.

(Formerly numbered 124A-124B and same as Finno-Ugric Studies 139A-139B.) The methods and results of Finnish folklore studies and the mythic traditions of the Finns. In 123A special attention is paid to the oral epic and the Kalevala, in 123B to lyric folk poetry, ballads, folktales, and legends.

Mrs. Rank

124. Finnish Folk Art and Technology.

(Same as Finno-Ugric Studies 135.) Material manifestations of Finnish folk culture: village layout and architecture, folk technology, arts and crafts, textiles, costume and design, etc. **Mrs. Rank**

125. Introduction to Finno-Ugric Folklore and Mythology.

(Same as Finno-Ugric Studies 169.) A survey of the traditions of the smaller Finno-Ugric nationalities (Estonians, Lapps, Mordvins, Chermis, Voguls, Ostyaks, etc.). **Mrs. Rank**

126. Introduction to Baltic and Slavic Folklore and Mythology.

(Same as Indo-European Studies 179.) A general course for students interested in folklore and mythology and for those interested in Indo-European mythic antiquities. **Mrs. Gimbutas**

128. Introduction to Hungarian Folklore and Mythology.

(Same as Finno-Ugric Studies 159.) A general course for the student in folklore and mythology, with emphasis on types of folklore and varieties of folklore research. **Mrs. Birnbaum**

144. American Folk and Popular Music.

(Same as Music 144.) A survey of the history and characteristics of the music developed in or for general American culture and various subcultures. **Mr. Wilgas**

145. Oral Art and Drama of Non-Western Peoples.

(Same as Anthropology 145.) Various genres of oral art found among non-Western peoples including myth, legend, proverb, riddle, song text and ritual drama; social function of oral art; role of the innovator; dynamics of stability and change in oral art; various classical theories of folklore.

146. Musical Arts of Non-Western Peoples.

(Same as Anthropology 146.) Music as an aspect of culture in various non-Western societies. Native ideas about music and systems of criticism. The social functions of music. Music in relation to anthropological theories of symbolic behavior, enculturation, innovation, unconscious patterning, and culture history.

148. The Theory of Oral Literature.

(Same as Anthropology 148.) The historical development of the study of oral literature among preliterate people; theoretical bases for the analysis of oral traditions.

149. Folk Literature of the Hispanic World.

(Same as Spanish 149.) A study of the history and present dissemination of the principal forms of folk literature throughout the Hispanic countries.

Mr. Robe

150. Russian Folk Literature.

(Same as Russian 150.) Prerequisite: Russian 16.
Mr. Markov

161. Decorative Textiles in Folk Cultures.

Studies in ethnic origins and historical background of Eastern and Western cultures; illustrated by fabrics and costumes from the traditions.

160. Transcription, Analysis and Classification of Folk Music.

(Same as Music 180.) Prerequisite: course 144 or Music 140. An intensive study of methods and techniques necessary to the understanding of folk music.
Mr. Porter

181. Folk Music of Central and Western Europe.

(Same as Music 181.) Prerequisites: Music 2A or Music 13A or consent of the instructor. An illustrated examination of the musical styles indigenous to the area between Ireland and Czechoslovakia; particular attention will be paid to the psychological function of folk music in its social and political context.

199. Special Studies in Folklore. (½ to 1 course)

Prerequisite: senior standing and the consent of the instructor.
The Staff

Graduate Courses

200. Folklore Bibliography, Theory and Research Methods.

Prerequisite: course 101 and any one of the following courses: 105, 106, 111, 118, 121, 122, 123A-123B, 124, 125, 126, 128, 145, 149, 150; Anthropology 102, 124; German 134; Music 140A-140B-140C, 141, 142, 143A-143B, 145, 146.
Mr. Georges, Mr. Hand

201A-201B. Folklore Collecting and Field Research. (½ course each)

Prerequisite: course 200. One quarter of discussion-demonstration concerning the theoretical concepts, methods, and techniques of data gathering and field research in folklore, followed by one quarter of supervised fieldwork.
Mr. Jones, Mr. Wilgus

202A-202B. Folklore Archiving. (½ course each)

Prerequisite: course 200. One quarter of lecture-demonstration in the principles and techniques of the classification and preservation of folklore collectanea, followed by one quarter of directed experience in archiving.

213. Folk Belief and Custom.

Prerequisites: course 101 and any one of the following courses: 105, 118, 121, 122, 123A-123B, 124, 125, 126, 128, 149, 150; Anthropology 102, 124; German 134, 240.
Mr. Hand

216. The Folktale.

Prerequisites: course 101 and any one of the following courses: 105, 111, 121, 122, 123A-123B, 125, 126, 128, 145, 149, 150, 243, 249; Anthropology 124; Classics 161; German 134, 240; Indo-European Studies 140.
Mr. Georges, Mr. Hand

217. Folk Speech.

Prerequisites: course 101 and 105, 106, or 111; also recommended: Anthropology 110, 112, English 120, or Linguistics 100. A study of the ethnography of communication and its relevance to the study of social and regional dialects, proverbs, riddles, onomastics, folk poetry and verse, and traditional humor.
Mr. Georges

221. Gypsy Folklore.

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

230A-230B. Folk Tradition in Italian Literature.

(Same as Italian 230A-230B.)

Mr. Speroni, Mr. Starkie

241. Folklore and Mythology of the Near East.

(Same as Near Eastern Languages 241.)

243. The Ballad.

(Same as English 243.) Mr. Jabbour, Mr. Wilgus

249. Hispanic Folk Literature.

(Same as Spanish 249.)

Mr. Robe

251. Seminar in Finno-Ugric Folklore and Mythology.

(Same as Finno-Ugric Studies 251.)

258. Seminar in Anglo-American Folk Music.

(Same as Music 258.)

Mr. Porter, Mr. Wilgus

259. Seminar in Folklore.

Prerequisite: Folklore 200 and consent of the instructor.

286A-286B-286C. Studies in Hispanic Folk Literature.

(Same as Spanish 286A-286B-286C.) 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.

Art 104. Art of the Ancient Near East.

118A. The Arts of Oceania.

118B. The Arts of Pre-Columbian America.

- 118C. The Arts of Sub-Saharan Africa.
 119A. The Arts of Africa: Western Sudan.
 119B. The Arts of Africa: The Guinea Coast.
 119C. The Arts of Africa: The Congo.

Classics 161. Introduction to Classical Mythology.

162. Classical Myth in Literature.

Dance 140A-140B-140C. Dance Cultures of the World.

141. Dance of Africa.
 142. Dance in the Balkans.
 143. Dance in India.
 144. Dance in Indonesia.
 145. Dance in Japan.
 146. Dance in Latin America.
 147. Dance in Indian Cultures of Americas.
 151A-151B. History of Dance.

English 112. Children's Literature.

French 115A-115B-115C. Old French Language and Medieval Literature.

German 134. German Folklore.

Greek 101. Homer: *Iliad*.

Indo-European Studies 140. Introduction to Indo-European Mythology.

Music 132. Development of Jazz.

- 140A-140B-140C. 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-190B. Proseminar in Ethnomusicology.

Scandinavian 141. Medieval Scandinavian Literature.

Sociology 130. Social Processes in Africa.

131. Latin American Societies.
 132. Population and Society in the Middle East.
 133. Comparative Sociology of the Middle East.

Spanish 151. 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.
 252. Ethnography.
 253. Cultures of Asia.
 254. Cultures of the Pacific Islands.
 255. North American Indians.
 256. Arctic Cultures.
 257. Indians of South America.
 258. African Cultures.
 259. Cultures of the Soviet Union.
 261. Myth and Ritual.
 269. African Arts.
 270A-270B-270C. Documentary Film.

Art 220. The Arts of Africa, Oceania and Pre-Columbian America.

Dance 226. Dance Expressions in Selected Cultures.

English 220. Medievalism.

French 215A-215E. The Medieval Language and Literature.

German 240A. Theories, Methods and History of Germanic Folklore.

- 240B. Folksong and Ballad.
 240C. Oral Prose Genres.
 245A. Germanic Religions and Mythology.
 245B. Germanic Antiquities.

Greek 201A-201B. Homer: *The Iliad*.

- 202A-202B. Homer: *The Odyssey* and the *Epic Cycle*.

Indo-European Studies 260A-260B. Seminar in Indo-European Mythology.

Music 253. Seminar in Notation and Transcription in Ethnomusicology.

254. Seminar in Field and Laboratory Methods in Ethnomusicology.
 255. Seminar in Musical Instruments of the Non-Western World.
 280. Seminar in Ethnomusicology.

Russian 291. Seminar in Old Russian Literature.

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.

Ancient Near Eastern 150A–150B. Survey of Ancient Near Eastern Literatures in English.

Arabic 150A–150B. Survey of Arabic Literature in English.

Armenian 150A–150B. Survey of Armenian Literature in English.

Classics 141. Survey of Greek Literature in English.

142. Ancient Drama.

143. Survey of Latin Literature in English.

144. Survey of Medieval Latin Literature in English.

Czech 155A–155B. Survey of Czech Literature.

Dutch-Flemish and Afrikaans 112. Dutch, Flemish, Afrikaans Literature in Translation.

Finn-Ugric 138A–138B. Survey of Finnish Literature in Translation.

158A–158B. Survey of Hungarian Literature in Translation.

French 145A–145B–145C. Masterpieces of French Literature.

145A. The Middle Ages and Renaissance.

145B. The 17th and 18th Centuries.

145C. The 19th and 20th Centuries.

146. The Novel of the 19th Century.

147. The Novel of the 20th Century.

German 121A. Older German Literature in Translation.

121B. Classical German Literature in Translation.

121C. 19th Century German Literature in Translation.

121D. Modern German Literature in Translation.

Hebrew 150A–150B. Survey of Hebrew Literature in English.

Humanities 1A–1G. World Literature.

Indo-European Studies 168. Survey of Sanskrit Literature in Translation.

178. Survey of Lithuanian Literature in Translation.

188. Survey of Irish Literature.

Italian 100A–100B–100C. Italian Literature in Translation.

110A–110B–110C. The Divine Comedy in English.

140. Readings in the Italian Theater in Translation.

150. Modern Italian Fiction in Translation.

Oriental Languages 140A–140B. Far Eastern Literature in Translation.

140A. Japanese Literature in Translation.

140B. Chinese Literature in Translation.

Persian 150A–150B. Survey of Persian Literature in English.

Polish 152A–152B. Survey of Polish Literature.

Russian 120A–120B. Survey of Russian Literature.

124. Dostoyevsky.

125. Tolstoy.

Scandinavian 141. Medieval Scandinavian Literature.

142. Scandinavian Literature of the 18th and 19th Centuries.

143. Modern Scandinavian Literature.

144. Ibsen.

145. Strindberg.

Serbocroatian 154A–154B. Survey of Yugoslav Literature.

Spanish 160A–160B. Hispanic Literatures in Translation.

162. Cervantes in Translation.

■ FRENCH

(Department Office, 160 Haines Hall)

Marc Bensimon, Ph.D., *Professor of French.*

Francis J. Crowley, Ph.D., *Professor of French.*

Milan S. La Du, Ph.D., *Professor of French (Chairman of the Department).*

Hassan el Nouty, Docteur-ès-Lettres, *Professor of French*.

Oreste F. Pucciani, Ph.D., *Professor of French*.

§ Gabriel Bonno, Docteur-ès-Lettres, *Emeritus Professor of French*.

Clinton C. Humiston, Ph.D., *Emeritus Professor of French*.

L. Gardner Miller, Docteur de l'Université de Strasbourg, *Emeritus Professor of French*.

Anne Fabre-Luce, Ph.D., *Associate Professor of French*.

Jan Decock, Ph.D., *Assistant Professor of French*.

Jeanne Perkins, Ph.D., *Assistant Professor of French*.

Jacques Prévot, Agrégé des Lettres, *Assistant Professor of French*.

Lora Weinroth, Ph.D., *Assistant Professor of French*.

Stephen D. Werner, Ph.D., *Assistant Professor of French*.

Marius Ignace Biencourt, Docteur de l'Université de Paris, *Assistant Professor of French, Emeritus*.



Nicole Atlas, B.Sc., *Acting Assistant Professor of French*.

Colette Brichant, Docteur de l'Université de Paris, *Lecturer in French*.

Serge Canadas, Licence Diplôme, *Associate in French*.

Henri Faliu, Licencié-ès-Lettres, *Lecturer in French*.

David Florian, M.A., *Associate in French*.

Linda Freilich, M.A., *Associate in French*.

Anne Goëau-Brissonnière, Diplôme d'études supérieures, *Associate in French*.

Judith Gollub, Ph.D., *Lecturer in French*.

Marie Claire Hackstaff, M.A., *Lecturer in French*.

Jacqueline Hamel, Licenciée-ès-Lettres, *Lecturer in French*.

Dominique Isner, Certificat de Philologie, *Associate in French*.

Madeleine Korol, Ph.D., *Lecturer in French*.

Yvone Lenard, M.A., *Lecturer in French*.

Annie Lowitz, M.A., *Associate in French*.

Padoue de Martini, B.A., *Lecturer in French*.

Louis Naniche, Licencié-ès-Lettres, *Associate in French*.

Barbara Royce, M.A., *Associate in French*.

Liliane Saphier, Licenciée-ès-Lettres, *Associate in French*.

Ronnie Gale Scheib, M.A., *Acting Assistant Professor of French*.

Geoffrey Strickland, M.A. (Cambridge), *Lecturer 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 covering two periods of literary history to be selected after consultation with the major adviser. Suggested: three courses in Latin, Italian, Spanish or German.

Plan B: With emphasis on literature, leading to the Bachelor of Arts in French and subsequently to the master's degree, Plan B. Required: at least 15 courses of upper division French including (a) 101A-101B-101C, 102A-102B, 103A-103B-103C, 114A-114B-114C; (b) and eight courses in French literature selected from the list of upper division offerings in French literature. Of these courses, six must be chosen in two

§ Recalled to active service 1969-1970.

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. Weinroth and staff.

The Honors Programs in French

Majors with a 3.0 grade-point average and a 3.0 overall average will be eligible to apply for the Honors Program in French. Students will be informed of their eligibility near the end of their junior year and should make application at that time if they wish to enter the program. Applications should include: (1) a letter in French describing the student's field of interest in French literature and culture; (2) the student's final examination in French 101A or 114A or a term paper from another French course. If these materials meet with the Committee's approval, the student will be called for an interview. Students admitted to the program will enroll in French 140A-140B-140C. In 140A and 140B the student will devote his time to the study of some special aspect of French literature and will select a topic for his senior essay. The third quarter (140C) will be devoted to the writing of the essay under the tutorial guidance of the instructor. No regular class meetings will be scheduled for the Honors Course except the first meeting.

Requirements for the Standard Elementary and for the Standard Secondary Teaching Credential

Consult the UCLA ANNOUNCEMENT OF THE GRADUATE SCHOOL OF EDUCATION. At the discretion of the Department an examination will be given preparatory to recommendation for the certificate of completion for the Standard Elementary, or the Standard Secondary Teaching Credential. Should the Department direct that these examinations be given, they will be held on the first Thursday after January 1 and the third Thursday in May. They must be passed before the Department will recommend that the student take his practice teaching.

Requirements for the Master's Degree

The Department offers two alternative programs: Plan A designed for teachers of French at the secondary and junior college levels, and Plan B leading to the Ph.D. in French.

Department requirements. (1) Language: For all candidates for the M.A. in French, the foreign language requirement will be fulfilled by passing a course of at least level 3 in either German, Spanish, Italian or Latin or by passing the University reading examination in one of these languages. In special cases, substitution of another foreign language will be accepted, if approved by the Chairman of the Department. Students are required to pass the reading requirement in one of the foreign languages before taking the M.A. examination. All candidates for the M.A. must satisfy the Department as to their proficiency in spoken French. (2) Course requirements: Plan A: At least 12 courses in French including the following courses: 201A-201B, 202, 370A-370B. In addition the student will take seven courses in literature in three out of five fields (16th-20th centuries). To meet general University requirements, at least six courses must be of graduate level. The comprehensive examination will consist of a written examination in the three fields prepared, a sight translation from English to French (from French to English in the case of students whose native language is French), a literary composition in French (in the modern field only) of not less than two hours, an *explication de textes* and an oral examination in French covering a topic previously prepared by the candidate. At the discretion of the Department a candidate may be permitted to take this examination a second time, but under no circumstances is a third trial allowed. Plan B: At least 12 courses in French including the following courses: 201A-201B, 202. In addition the student will take nine courses in literature in three out of six fields defined as follows: Middle Ages, Renaissance and Baroque, Classicism, 18th century, 19th century, 20th century. For students specializing in French-African literature, the 20th century and French-African literature will constitute a single field. (To meet general University requirements, at least six courses must be on the graduate level.)

The comprehensive examination for Plan B will consist of a written examination in three out of six fields (medieval-twentieth century), each two hours long, an *explication de texte*, and an oral examination on three

fields. Passing this examination will be equivalent to passing Part I of the qualifying examination. At the discretion of the Department a candidate may be permitted to take this examination a second time; but under no circumstances is a third trial allowed.

Requirements for the Ph.D.

Departmental requirements. (1) Language requirements: Students normally will pass this requirement by passing courses through at least level 5 in German, level 3 in Latin and either Spanish or Italian. Students may also pass a reading examination in German, Latin and either Italian or Spanish. In special cases, substitution of another foreign language will be accepted, if approved by the Chairman of the Department. Information concerning alternative procedures may be obtained from the Department of French. At least one of these language requirements must be satisfied prior to taking the qualifying examination, Part I. The remaining language requirements must be met prior to taking Part II of the Qualifying Examination. All candidates for the Ph.D. must satisfy the Department as to their proficiency in spoken French. (2) Required: French 201A-201B, 202, 203A-203B-203C, 205A-205B-205C (unless previously completed). In addition the student will take such required courses as his guidance committee will prescribe in preparation for the qualifying examination, Part II. These courses shall include at least four seminars, two of which must be in the candidate's chosen area. In the case of students who already have the *Licence-ès-Lettres* or the M.A., the work taken will be evaluated by the Department and appropriate credit given toward the course and examination requirements. All students will, however, take Part I of the qualifying examination, which in this case will serve as a guidance examination for the use of the Department. (3) Part I of the qualifying examination will consist of a written examination in 3 out of 6 fields (medieval-twentieth century), each two hours long, an *explication de texte*, and an oral examination. If the student does well on these examinations, he will be encouraged to proceed further with graduate study toward the Ph.D. in either French or Romance Languages. The passing grade for Part I is an average grade of B (3.0). (4) After completion of the language requirements and the required courses, the student will take Part II of the written and oral quali-

ifying 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 revalidated by the Department. Inquire at departmental office for further clarification.

Lower Division Courses

The ordinary prerequisites for each of the lower division courses are listed under the description of these courses. Students who have had special advantages in preparation may, upon examination or by recommendation of the instructor, be permitted a more advanced program. No credit will be allowed for completing a less advanced course after satisfactory completion of a more advanced course in grammar and/or composition.

1. Elementary French.

Sections meet five hours weekly.

Miss Hamel in charge

16. Elementary French for Graduate Students.

(No credit)

Sections meet three hours weekly.*

Mrs. Brichant in charge

2. Elementary French.

Sections meet five hours weekly. Prerequisite: course 1 or advanced placement standing.

Miss Hamel in charge

26. Elementary French for Graduate Students.

(No credit)

Sections meet three hours weekly. Prerequisite: course 1G or the equivalent. Mrs. Brichant in charge

3. Elementary French.

Sections meet five hours weekly. Prerequisite:

course 2 or two years of high school French or advanced placement standing. Miss Hamel in charge

4. Intermediate French.

Sections meet five hours weekly. Prerequisite: course 3 or three years of high school French or advanced placement standing. Miss Hamel in charge

4B. Conversational French for Graduate Students.

(No credit)

Classes meet three hours weekly.
Mrs. Hackstaff in charge

5. Intermediate French.

Sections meet five hours weekly. Prerequisite: course 4 or four years of high school French or advanced placement standing. Miss Hamel in charge

6. Intermediate French.

Sections meet five hours weekly. Prerequisite: course 5 or advanced placement standing.
Miss Hamel in charge

7. Advanced French.

Sections meet five hours weekly. Prerequisite: course 6 or advanced placement standing.
Mrs. Lowitz in charge

8. Advanced French.

Sections meet five hours weekly. Prerequisite: course 7 or advanced placement standing.
Mrs. Lowitz in charge

9. Advanced French.

Sections meet five hours weekly. Prerequisite: course 8 or advanced placement standing.
Mrs. Lowitz in charge

10A-10D. French Conversation. (½ course each)

(Formerly numbered 8A-8D.) Sections meet three hours weekly. Prerequisite: course 3 with grade A or B or by permission of the Department.
Mrs. Hackstaff in charge

Upper Division Courses

The prerequisite to all upper division courses except those in translation is six courses of lower division French including course 6 with a grade of B or higher or course 7 with a grade of C or higher.

All upper division courses are conducted in French. Course 114A is prerequisite to all other upper division courses in literature. No credit will be allowed for completing a less advanced course after satisfactory completion of a more advanced course in grammar and/or composition.

101A-101B-101C. Grammar, Composition and

Oral Expression. (½ course each)

Classes meet three hours weekly.
Miss Hamel in charge

102A-102B. French Phonetics; Theory and Correction of Diction. (½ course each)

Classes meet three hours weekly. French pronunciation, diction, intonation in theory and practice; phonetic transcription, phonetic evolution of the modern language; remedial exercises; recordings.
Miss Korol in charge

103A-103B-103C. Advanced Grammar and Composition. (½ course each)

Classes meet three hours weekly. Prerequisite: course 101A-101B-101C or the equivalent. Note: A placement examination will be administered in French 103A and qualified students will be advanced to French 103B or 103C. At all events 103C will be required of all majors. This course is required of all candidates for the Standard Credential in Secondary or Elementary Teaching.
Mrs. Brichant in charge

114A-114B-114C. Introduction to the Study of French Literature.

Classes meet four hours weekly. The fourth hour will be conducted as a quiz section and will deal exclusively with *explication de textes*. Sections limited to 15 students. Not open to students who have taken or are taking courses 145A-145B-145C.

114A. The Middle Ages and Renaissance.

114B. The 17th and 18th Centuries.

114C. The 19th and 20th Centuries.
Mrs. Perkins in charge

115A-115B-115C. Medieval French Literature.

115A. Literature of the Twelfth Century. Classes meet three hours weekly.

115B. Literature of the Thirteenth Century. Classes meet two hours weekly.

115C. Literature of the Fourteenth Century. Classes meet two hours weekly.

116A-116B-116C. The Renaissance.

All classes meet two hours weekly. Mr. Bensimon

116A. Rabelais and His Time.

116B. Ronsard and His Time.

116C. Montaigne and His Time.

117A-117B-117C. The Seventeenth Century.

All classes meet two hours weekly. Mr. Prévot

117A. From Malherbe to Corneille.

117B. From Pascal to Bossuet.

117C. From Racine to Fénelon.

118A-118B-118C. The Eighteenth Century.

All classes meet two hours weekly. Mr. Crowley

118A. Precursors of the Enlightenment (1680-1734).

118B. Confrontation (1734-1759).

118C. Advent of a New Order (1759-1789).

119A-119D. The Nineteenth Century.

All classes meet two hours weekly.

Mr. el Nouty and Staff

119A. From Chateaubriand to Hugo.

119B. From Balzac to Flaubert.

119C. From Verlaine to Huysmans.

119D. The Turn of the Century.

120A-120B-120C. The Twentieth Century.

All classes meet two hours weekly.

Mr. Decock and Staff

120A. Introduction to the Twentieth Century.

120B. French Literature from 1918 to 1940.

120C. French Literature from 1940 to the Present.

132A-132B. Survey of French Culture and Institutions.

All classes meet three hours weekly. A fourth hour may be required for the viewing of films and other laboratory activities. Mrs. Brichant

132A. French Culture and Institutions from the Beginning to 1789.

132B. French Culture and Institutions from 1789 to the present.

140A-140B-140C. Honors Course in French.

Mrs. Weinroth

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.

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.

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 146 of this bulletin.

201A-201B. Composition and Style.

201A. Thème et Version. Course meets three times weekly. Required for the M.A. and Ph.D. degrees. Mr. Prévot

201B. La Dissertation Française. Course meets three times weekly. Required for the M.A. and Ph.D. degrees. Mr. Prévot

202. Explication de Textes.

(Formerly numbered 230.) Course meets three times weekly. Required for the M.A. and Ph.D. degrees. Mr. Bonno

203A-203B-203C. French Literary Criticism.

(Formerly numbered 231.) Miss Fabre-Luce

203A. The History of Literary Criticism from Aristotle to Sainte-Beuve. Course meets twice weekly. Required for the Ph.D. degree.

203B. Modern Theories of Criticism. Course meets twice weekly. Required for the Ph.D., degree.

203C. The Techniques of Literary Criticism. Course meets twice weekly. Required for the Ph.D. degree.

204A. Phonology and Morphology from Vulgar Latin to French Classicism.

The evolution of the French language. Required of candidates for the Ph.D. in Romance Languages and Literatures who emphasize philology. Mr. La Du

204B. Syntax and Semantics from Vulgar Latin to French Classicism.

The evolution of the French language. Required of candidates for the Ph.D. in Romance Languages and Literatures who emphasize philology. Mr. La Du

205A-205B-205C. The Intellectual Background of French Literature.

Mr. Pucciani

205A. Scholasticism (with ancient sources); Humanism. Required for the Ph.D. degree.

205B. Rationalism, Empiricism, Positivism. Required for the Ph.D. degree.

205C. Idealism, Phenomenology, Existentialism. Required for the Ph.D. degree.

215A-215E. The Medieval Language and Literature.

(Formerly numbered 203A-203B and 215A-215B.)

215A. Old and Middle French. Classes meet three times weekly. This course is prerequisite to courses 215B-215E. Core course. Phonology and morphology of the language. Introduction to Old French texts. Mrs. Weinroth

215B. The Chansons de geste. Classes will meet twice weekly. Core course. Mrs. Weinroth

215C. The Romance. Classes will meet twice weekly. Core course. Mr. La Du

215D. Medieval Theater. Classes will meet twice weekly. Mrs. Weinroth

215E. Provençal Poetry. Classes will meet three times weekly. Mr. La Du

216A-216H. The Renaissance.

216A. The Generation of 1530. Two hours weekly. Core course. Mr. Bensimon

216B. The Generation of 1550. Two hours weekly. Core course. Mr. Bensimon

216C. The Generation of 1580. Two hours weekly. Core course. Mr. Bensimon

- 216D. Rabelais and Prose Writers. Two hours weekly. Mr. Bensimon
 216E. Baroque Poetry. Two hours weekly. Mr. Bensimon
 216F. Montaigne. Two hours weekly. Mr. Bensimon
 216G. Theater. Two hours weekly. Mrs. Perkins
 216H. Intellectual Trends of the Renaissance. Two hours weekly. Mr. Bensimon

217A-217I. The Seventeenth Century.

- 217A. Classic Theater. Two hours weekly. Core course. Mr. Bonno
 217B. Non-Dramatic Literature. Two hours weekly. Core course. Mr. Bonno
 217C. Classic Prose. Two hours weekly. Core course. Mr. Bonno
 217D. Molière. Two hours weekly. Mr. Prévot
 217E. Corneille. Two hours weekly. Mrs. Perkins
 217F. Racine. Two hours weekly. Mr. Bonno
 217G. The Novel. Two hours weekly. Mr. Prévot
 217H. Moralists. Two hours weekly. Mr. Bonno
 217I. Religious thought. Two hours weekly. Mr. Bonno

218A-218D. The Eighteenth Century.

- 218A. Fontenelle, Bayle, Montesquieu, Prévost. Two hours weekly. Core course. Mr. Crowley
 218B. Diderot and the Encyclopedia. Two hours weekly. Core course. Mr. Crowley
 218C. Voltaire and J. J. Rousseau. Two hours weekly. Core course. Mr. Crowley
 218D. The Theater and the Novel. Two hours weekly. Mr. Crowley

219A-219K. The Nineteenth Century.

- 219A. Romanticism. Two hours weekly. Core course. Mr. el 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
 220O. Poetry. Two hours weekly. Miss Fabre-Luce
 220P. Cinema and Literature. Two hours weekly. Mr. Decock

221A-221B-221C-221D. French-African Literature.

- 221A. Introduction to the Study of the French-African Literatures. Two hours weekly. Core course. Mr. el Nouty
 221B. French-African Literature of Madagascar and Bantu Africa. Two hours weekly. Core course.
 221C. French-African Literature of Berbero-Sudanese and Arabo-Islamic Africa. Two hours weekly. Core course.
 221D. Franco-Caribbean Literature.

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. el Nouty and the Staff

256A-256B. Studies in Contemporary Literature.

Mr. Pucciani and the Staff

257A-257B. Studies in the French African Literature.

Mr. el Nouty and the Staff

258A-258B. Studies in Literary Criticism.

The Staff

259A-259B. Studies in Philosophy and Literature.

The Staff

260A-260B. Studies in the History of Ideas.

Seminars will meet as announced. Only the first meeting will be scheduled. Candidates for the Ph.D. will be required to take 4 seminars, 2 of which must be in their field of special interest. The Staff

Professional Courses

310A-310B. The Teaching of French in the Elementary School.

Mrs. Walker

310A. Prerequisite: consent of the instructor. Theory of French Teaching in the Elementary

School. Classes meet three hours weekly. Required for the Standard Elementary Credential. Mrs. Walker

310B. Observation of Language Teaching in the Elementary School. Classes will meet as announced. Required for the Standard Elementary Credential. Mrs. Walker

370A-370B. The Teaching of French in the Secondary School and at the College Level.

370A. Prerequisite: 101A-101B-101C; 102A-102B; 103A-103B-103C. Theory of Language Teaching. Three hours weekly. Required for the Standard Secondary Credential. Mr. Pucciani

370B. Prerequisite: 370A. Observation of Language Teaching in the Secondary School and at the College Level. Classes will meet as announced. Required for the Standard Secondary Credential. Miss Hamel

372. The Language Laboratory. (½ course)

Two hours weekly. Prerequisite: consent of the

instructor. New electronic techniques for language instruction. Pedagogical and practical problems of making tapes, installing and organizing a laboratory; control procedures. Mr. de Martini

Individual Study and Research

596. Directed Individual Studies or Research.

(½ to 1 course)

The Staff

597. Preparation for the Comprehensive Examination for the Master's Degree or the Qualifying Examination for the Ph.D.

(½ to 2 courses)

The Staff

599. Research for and Preparation of the Doctoral Dissertation. (½ to 2 courses)

The Staff

■ GENETICS

For courses in genetics, see under departments of Bacteriology, Botanical Sciences, and Zoology.

■ GEOCHEMISTRY

Interdepartmental Committee for Graduate Study in Geochemistry. D. Carlisle, Geology; W. G. Ernst, Geology and Geophysics; I. R. Kaplan, Geology and Geophysics; G. C. Kennedy, Geophysics and Geology; W. F. Libby, Chemistry and Geophysics; D. A. Lightner, Chemistry; W. W. Rubey, Geology and Geophysics; J. T. Wasson, Chemistry and Geophysics (chairman and graduate adviser); G. W. Wetherill, Geophysics and Geology.

Undergraduate Study

Undergraduate students who wish to prepare for graduate work in geochemistry are advised to complete an undergraduate major in chemistry or in geology with a strong preparation in chemistry. It is recommended that such students consult with the appropriate undergraduate adviser in the Department of Geology.

Graduate Study

A program of graduate study leading to the degrees of M.S. and Ph.D. in Geochemistry is offered under the sponsorship of the interdepartmental committee. The curriculum is open to students having an outstanding undergraduate record in the basic sci-

ences, 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 are an electron microprobe, facilities for neutron activation analysis, high pressure laboratories, mass spectrometric equipment, facilities for measurement of tritium and radiocarbon, X-ray fluorescence and diffraction apparatus, an atomic absorption spectrometer, 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 Bunche Hall)

Henry J. Bruman, Ph.D., *Professor of Geography.*

*Huey L. Kostanick, Ph.D., *Professor of Geography.*

Richard F. Logan, Ph.D., *Professor of Geography.*

Clifford H. MacFadden, Ph.D., *Professor of Geography.*

Tom L. McKnight, Ph.D., *Professor of Geography.*

Howard J. Nelson, Ph.D., *Professor of Geography (Chairman of the Department).*

Jonathan D. Sauer, Ph.D., *Professor of Geography.*

Joseph E. Spencer, Ph.D., *Professor of Geography.*

Benjamin E. Thomas, Ph.D., *Professor of Geography.*

Norman J. W. Thrower, Ph.D., *Professor of Geography.*

Ruth Emily Baugh, Ph.D., *Emeritus Professor of Geography.*

Robert M. Glendinning, Ph.D., *Emeritus Professor of Geography.*

George McCutchen McBride, Ph.D., LL.D., *Emeritus Professor of Geography.*

Clifford M. Zierer, Ph.D., *Emeritus Professor of Geography.*

Charles F. Bennett, Ph.D., *Associate Professor of Geography.*

Gary S. Dunbar, Ph.D., *Associate Professor of Geography.*

Antony R. Orme, Ph.D., *Associate Professor of Geography.*

Gerry A. Hale, Ph.D., *Assistant Professor of Geography.*

Werner H. Terjung, Ph.D., *Assistant Professor of Geography.*

———, *Assistant Professor of Geography.*

———, *Assistant Professor of Geography.*

———, *Assistant Professor of Geography.*

———, *Assistant Professor of Geography.*



Christopher Salter, M.A., *Acting Assistant Professor of Geography.*

Preparation for the Major

Geography 1A-1B-1C are required of all majors. Transfer students must consult a departmental adviser prior to arranging a program. All prospective majors must consult a departmental adviser to plan a lower division program which will enable them to take advanced work in one or more fields of concentration which are allied to geography. A mathematics sequence such as Mathematics 2A-2B-2C or 3A-3B-3C or 11A-11B-11C or an acceptable sequence in statistics is also recommended.

Three general objectives may be recognized for those who select geography as a major. These are: 1) a broad understanding of the world, its conditions, and its peoples, leading to a liberal education, 2) preparation 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 major-

ing in geography must consult a departmental adviser for the planning of a program suitable to the desired objective.

The Major

The minimum requirement for the major is ten upper division courses in geography chosen in consultation with a departmental adviser. All majors must take the two required courses in Group I—Geography 110 and 120. 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, 160, 162, 166, 172, 176; and *two* courses chosen from Group IV—Geography 122, 124, 130, 132, 134, 140, 150, 152, 164, 198; and *three* courses chosen from Group V—Geography 110 through 198 (excluding 191). Students planning to do graduate work in geography should take Geography 170 and when possible, appropriate courses in departments outside the major field.

* Absent on leave, fall and winter quarters, 1969-1970.

Allied Fields. Every geography major shall develop some competence in one or two allied fields. This program which must be approved by the department consists of a group of at least four upper division courses chosen from not more than two departments in such subjects as will provide a concentration allied to the field of specialization within the major.

Admission to Graduate Status

For admission to graduate status in the Geography Department a student should normally have completed the undergraduate major or its equivalent; have received a bachelor's degree or its equivalent from an acceptable college or university; and have maintained at least a B average in all courses taken in the junior and senior years. Prospective students are required to take the Graduate Record Aptitude Test and the Advanced Test in Geography, and in addition, to provide the Department with three letters of evaluation from previous instructors. Students not meeting the grade average requirements may be admitted in exceptional cases if their letters of evaluation and their Graduate Record Examination scores or other evidence indicate that they have unusual promise. Students may be admitted with subject deficiencies, but such deficiencies will have to be made up.

Information and applications for the Graduate Record Examination may be obtained by writing to the Educational Testing Service, 1947 Center Street, Berkeley, California 94704 or Box 955, Princeton, New Jersey 08540.

Requirements for the General Secondary Teaching Credential

Consult the UCLA ANNOUNCEMENT OF THE GRADUATE SCHOOL OF EDUCATION.

Requirements for the Master's Degree

The general requirements of the Graduate Division are listed on page 139, 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.

Diagnostic Examination. Required under both the Thesis Plan or the Comprehensive Examination Plan. The examination will be given by the candidate's informal guidance committee in the course of the first quarter in residence, to assess the candidate's general competence in the field of geography up to the graduate level.

Review. During the third quarter of residence the graduate advisory committee will review the progress of each student. The results of this review will determine whether or not the student shall be permitted to proceed toward the M.A. degree.

Foreign Language. Required under both the Thesis Plan and the Comprehensive Examination Plan is a reading knowledge of a foreign language appropriate to the candidate's field of specialization and approved by the chairman of his guidance committee and the graduate adviser.

Thesis Plan. 1. The work in residence must include at least nine courses, including a minimum of six courses at the graduate level, of which Geography 200 (Growth of Geographic Thought), and at least one seminar, are required. In addition, a student who has not had an acceptable field course will be required to take Geography 270 (Advanced Field Analysis). The balance of each program must be worked out in consultation with the graduate adviser.

2. Each student must present a thesis, based in whole or in part on original investigation, and preferably a field study. Selection of a thesis topic, conduct of the investigation, and final organization, proceeds 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.

3. In addition, for students who plan to go on for the Ph.D. in this department, a re-

search paper is required. The student will write the paper in the field of his special interest under the supervision of a guidance committee. The topic will be assigned by the committee in consultation with the student; it will have an average of 10,000 words, and will be completed within a 10-week period.

Requirements for the Doctor's Degree

General requirements of the Graduate Division are stated on page 143, and specific requirements of the Department of Geography follow.

1. An M.A. or M.S. degree, with a geography specialty is recommended of all students undertaking work toward the Ph.D. degree.

2. Each student must satisfactorily complete Geography 200 (Growth of Geographic Thought), and 278 (Regional Field Investigations). In Geography 278 approximately six weeks out of the quarter will be spent in the field.

3. During the third quarter of residence the graduate advisory committee will review the progress of each student. The results of this review will determine whether or not the student shall be permitted to proceed toward the Ph.D. degree.

4. Preliminary examinations may consist of oral or written examinations, at the discretion of the guidance committee. At the minimum, there shall be a written examination covering both general and specific aspects of the geographical field, as well as the student's particular fields of specialization. This examination also shall include a field problem in local geography.

5. Foreign Language Requirement. A candidate may satisfy the department's 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 cultural elements of geography (population distribution, general land-use patterns, and trade) and their correlation with the physical elements. Delimitation of the major geographic regions of the world. The Staff

1C. Introduction to Geography: Geographic Analysis.

Lecture, one hour; laboratory-discussion, three hours. Prerequisites: courses 1A, 1B, or equivalent, or consent of the instructor. A study of the relationships and integration of the fundamental physical and cultural elements of geography into major world geographic regions. The Staff

5. Man and the Earth Ecosystem.

Lecture, three hours; reading period, one hour. An examination of the historical and contemporary roles of man as a major agent of biological change in the earth ecosystem. Mr. Bennett

10A. World Regional Geography: The Americas.

Lecture, three hours; reading period, one hour. Analysis of the physical and cultural features that characterize and differentiate the geographical landscapes and regions of the Americas. The Staff

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, 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.

Lecture, three hours; reading period, one hour. Prerequisites: course 1A-1B-1C or equivalent, or upper division standing, or consent of the instructor. A study of the growth, scope and techniques of physical geography. Mr. Orme

112. Geomorphology.

Lecture, three hours; reading period, one hour. Prerequisite: courses 1A-1B or equivalent; junior standing or consent of the instructor. A study of the landforms of the earth and the processes responsible for shaping them. Mr. Logan, Mr. Orme

114. Climatology.

Lecture, three hours; reading period, one hour. Prerequisite: courses 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, with special emphasis on energy balance climatology and bioclimatology. Mr. Terjung

116. Soils.

(Formerly numbered 116.) Lecture, three hours; reading period, one hour. Prerequisites: course 1B or equivalent, or junior standing; course 1A, and Chemistry 1A or 2A, or consent of the instructor. A study of the origins, evolution, properties and utilization of soils, with special emphasis on the world's major soil groups. The Staff

120. Cultural Bases of Geography.

(Formerly numbered 175.) Lecture, three hours; reading period, one hour. Prerequisites: courses 1A-1B, or equivalent, or upper division standing. The geographic aspects of cultural factors in the evolution of primitive cultures and advanced civilizations. Mr. Spencer

122. Population and Settlement.

(Formerly numbered 174.) Lecture, three hours; reading period, one hour. Prerequisites: courses 1A-1B, or equivalent, or upper division standing. Past and present patterns of human population and of rural and urban settlement in selected areas involving theoretical considerations and analyses. The Staff

124. Historical Geography of the United States.

(Formerly numbered 171.) Lecture, three hours; reading period, one hour. Prerequisites: courses 1A-1B, or equivalent, or upper division standing. A study of the evolution of the cultural landscapes of the area that is now the United States. Examination of past geographies and of geographical change through time. Mr. Dunbar

130. Economic Bases of Geography.

(Formerly numbered 141.) Lecture, three hours; reading period, one hour. Prerequisites: courses 1A-1B, or equivalent, or upper division standing. The principles of economic geography as developed through regional studies of economic phenomena, with special emphasis upon man's foodstuffs, minerals, and power resources. Mr. MacFadden

132. Industry and Resources.

(Formerly numbered 142.) Lecture, three hours; reading period, one hour. Prerequisites: courses 1A-1B, or equivalent, or upper division standing. Analysis of the character and regionalization of industrial developments within the developed and developing countries of the world, and their relationships to the distribution of industrial resources, with special emphasis on minerals and power and fuel supplies. Mr. MacFadden

134. Conservation of Resources.

(Formerly numbered 161.) Lecture, three hours; reading period, one hour. Prerequisites: courses 1A-1B, or equivalent, or upper division standing. An analysis of the basic principles of the conservation of the natural resources of the world. Mr. Bennett

140. Political Geography.

(Formerly numbered 181.) Lecture, three hours; reading period, one hour. Prerequisites: courses 1A-1B, or equivalent, or upper division standing. The principles of political geography as developed through regional studies of political phenomena throughout the world. Current problems in domestic and international affairs will be considered. Mr. Kostanich

150. Urban Geography.

(Formerly numbered 155.) Lecture, three hours; reading period, one hour. Prerequisites: courses 1A-1B, or equivalent, or upper division standing. A study of the origin, development, distribution, and regional variation of the world's cities, with emphasis on an analysis of the functions and patterns of American cities. Mr. Nelson

152. Urban Planning.

(Formerly numbered 156.) Lecture, three hours; reading period, one hour. Prerequisites: courses 1A-1B, or equivalent, or upper division standing. A study of urban planning with special emphasis on the role of the geographer in the planning process. The Staff

160. Plant Geography.

(Formerly numbered 118.) Lecture, three hours; reading period, one hour. Prerequisites: courses 1A-1B, or equivalent, or upper division standing, and Biology 2, or equivalent, or consent of the instructor. Characteristics, distribution, environmental and cultural relationships of the principal vegetation patterns. Mr. Sauer

162. Animal Geography.

(Formerly numbered 117.) Lecture, three hours; reading period, one hour. Prerequisites: courses 1A-1B, or equivalent, or upper division standing, and Biology 2, or equivalent, or consent of the instructor. A study of the physical and cultural factors of animal distribution and an examination of the role of animals in human societies. Mr. Bennett

164. Historical Geography of Crop Plants.

Lecture, three hours; reading period, one hour. Prerequisites: courses 1A-1B and Biology 2, or equivalents, or consent of instructor. Geographic patterns of domestication and diffusion of useful plants from antiquity to the present, based on detailed case histories of selected species. Mr. Sauer

166. Plant Migration.

Lecture, three hours; reading period, one hour. Prerequisites: courses 1A-1B and Biology 2, or

equivalents, or consent of instructor. Mechanisms of geographic patterning of natural and artificially modified vegetation. Emphasis on range changes for which there is direct fossil or documentary evidence.
Mr. Sauer

170. Field Analysis.

(Formerly numbered 101.) Saturday field trips, 8-5. Prerequisites: courses 1A-1B-1C, 110, 120, or equivalent, and consent of the instructor. The basic methods of geographic analysis of small areas, embracing both rural and urban types and physical, cultural and economic aspects. Training carried on chiefly in the field.
Mr. Logan

172. Cartography.

(Formerly numbered 105.) Laboratory, four hours; independent work, two hours. Prerequisites: courses 1A-1B, or equivalent, or upper division standing, and consent of the instructor. Survey of the field of cartography. Includes theory and construction of map projections, compilation procedures, principles of generalization, symbolization, terrain representation, lettering, drafting and scribing, and map reproduction methods.
The Staff

176. Quantitative Analysis.

(Formerly numbered 109.) Lecture, three hours; laboratory, one hour. Prerequisites: courses 1A-1B, or equivalent, or upper division standing. An introduction to the methods of measurement and interpretation of geographic distributions and associations.
The Staff

180. Anglo-America.

(Formerly numbered 121.) Lecture, three hours; reading period, one hour. Prerequisites: courses 1A-1B, or equivalent, or upper division standing. Delimitation and analysis of the principal geographic regions of the United States and Canada.
Mr. McKnight, Mr. Nelson

181. Middle America.

(Formerly numbered 122A.) Lecture, three hours; reading period, one hour. Prerequisites: courses 1A-1B, or equivalent, or upper division standing. A study of the geographic factors, physical and cultural, that are basic to an understanding of the historical development of Middle America and of the 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. Prerequisites: courses 1A-1B, or equivalent, or upper division standing. The regions of north Africa, including the Sahara, in terms of physical features, human settlement, economic production, and political patterns.
Mr. Hale, Mr. Thomas

189. Middle and Southern Africa.

(Formerly numbered 126.) Lecture, three hours; reading period, one hour. Prerequisites: courses 1A-1B, or equivalent, or upper division standing. The regions of Africa south of the Sahara (middle and south Africa) in terms of physical features, human settlement, economic production, and political patterns.
Mr. Thomas

190. Australasia.

(Formerly numbered 125.) Lecture, three hours; reading period, one hour. Prerequisites: courses 1A-1B, or equivalent, or upper division standing. A regional synthesis of the physical and cultural features which characterize Australia, New Zealand, and the islands of the South Pacific.
Mr. McKnight

191. California.

(Formerly numbered 131.) Lecture, three hours; reading period, one hour. Prerequisites: courses 1A-1B, or equivalent, or upper division standing. A systematic and regional treatment of the geography of California including the physical, cultural, and economic aspects and detailed studies of the various regions.
Mr. Logan, Mr. McKnight

198. Proseminar in Geography.

(Formerly numbered 190.) Staff-student discussions, three hours; reading period, one hour. Prerequisites: courses 1A-1B, or equivalent, and courses 110 and 120 and junior standing. Staff-student colloquium on the historical and modern conceptual principles of geographical theory, including schools of geographic thought and contributions of particular scholars.
Mr. Spencer

199. Special Study. (½ to 2 courses)

Study schedule to be arranged individually with the instructor. Prerequisites: courses 1A-1B, or equivalent; senior standing and consent of the instructor. The Staff

Graduate Courses**200. Growth of Geographic Thought.**

Lecture, two hours; discussion session, one hour; reading period, one hour. Prerequisite: consent of the instructor. Lectures and discussions on the comparative development of the philosophy and operative thought of geographers in different countries, stressing the origins and foundations of American Geographic thought. Mr. Spencer, Mr. Thomas

205. Seminar: Geographic Thought.

(Formerly numbered 250.) Discussion session, three hours; reading period, two hours. Prerequisites: course 200, or equivalent, and consent of the instructor. Discussions and studies of particular themes and topics significant to the growth of the modern philosophy of geography. Mr. Spencer, Mr. Thomas

212. Advanced Geomorphology.

Lecture, two hours; discussion session, one hour; reading period, one hour. Prerequisite: course 112 or equivalent, or consent of the instructor. An extended study of selected geomorphic processes and landforms. Mr. Logan, Mr. Orme

213. Seminar: Geomorphology.

Lecture, three hours; reading period, two hours. Prerequisites: course 212 or equivalent and consent of the instructor. Selected geomorphic topics with emphasis on current research frontiers and techniques. May be repeated for credit. Mr. Logan, Mr. Orme

214. Advanced Climatology.

Lecture, two hours; discussion session, one hour; reading period, one hour. Prerequisite: course 114, or equivalent, or consent of the instructor. A survey of the major literature of climatology: dynamic, energy balance, bioclimatic, urban. Mr. Terjung

215. Seminar: Climatology.

Discussion session, three hours; reading period, two hours. Prerequisites: course 214 or equivalent and consent of the instructor. Selected topics. May be repeated for credit. The Staff

216. Quaternary Studies.

Lecture, three hours; reading period, two hours. Prerequisites: course 212 or 214 or 260 or 262; or appropriate graduate course in anthropology, botany, geology or zoology; and consent of the instructor. An analysis of the changing environment of the Quaternary era. Mr. Orme

217. Field Methods in Microclimatology. (2 courses)

Lecture, four hours; laboratory 20 hours. Prerequisite: courses 114, 214 and consent of the instructor. The distribution of the exchanges and budgets of energy, matter and momentum and their interrelations will be examined instrumentally in the context of biological ecosystems (man, animals, plants) and the urban environment. Mr. Terjung

220. Advanced Cultural Geography.

Lecture, two hours; discussion session, one hour; reading period, one hour. Prerequisites: course 120,

or equivalent, or consent of the instructor. Lectures and discussions around specific aspects of the development of cultural landscapes in different geographic environments. Mr. Spencer

222. Historical Geography of the United States.

Lecture, two hours; discussion session, one hour; reading period, one hour. Prerequisites: course 124 and consent of the instructor. Some major themes in American historical geography. Mr. Dunbar

223. Seminar: Historical Geography.

Discussion session, three hours; reading period, two hours. Prerequisites: course 222 and consent of the instructor. Theory and practice of historical geography in North America and Europe. Mr. Dunbar

225. Seminar: Cultural Geography.

(Formerly numbered 272.) Discussion session, three hours; reading period, two hours. Prerequisites: course 220 or 222, or equivalent and consent of the instructor. Discussions centered around particular topics in cultural geography; topics may vary from year to year. The Staff

230. Advanced Economic Geography.

Lecture, two hours; discussion session, one hour; reading period, one hour. Prerequisites: course 130 or 132, or equivalent, or consent of the instructor. An analysis of the geographic problems of economic development in selected regions of the world. Mr. MacFadden

232. Geographical Aspects of Land Planning.

(Formerly numbered 165.) Lecture, two hours; discussion session, two hours. Prerequisites: courses 110, 120, or equivalent, and consent of the instructor. The role of the geographer and the geographic discipline in land planning activities. The Staff

235. Seminar: Economic Geography.

(Formerly numbered 270.) Discussion session, three hours; reading period, two hours. Prerequisites: course 230 or 232, or equivalent, and consent of the instructor. Related research projects growing out of courses 230 and 232. The Staff

240. Advanced Political Geography.

Lecture, two hours; discussion session, one hour; reading period, one hour. Prerequisites: course 140 or equivalent or consent of the instructor. Intensive study of the theories and principles of political geography and German geopolitics. Selected regions will be used as specific examples of differing techniques of study in geopolitics. Mr. Kostanick

245. Seminar: Political Geography.

(Formerly numbered 271.) Discussion session, three hours; reading period, two hours. Prerequisites: course 240, or equivalent and consent of the instructor. Related research projects growing out of course 240. The Staff

250. Advanced Urban Geography.

Lecture, two hours; discussion session, one hour; reading period, one hour. Prerequisites: course 150 or 152, or equivalent, or consent of the instructor. Treatment of the evolution, morphology, and function of cities with emphasis on theory and methods of analysis. Mr. Nelson

255. Seminar: Urban Geography.

Discussion session, three hours; reading period, two hours. Prerequisites: course 250, or equivalent, and consent of the instructor. Related research projects growing out of course 250. The Staff

260. Advanced Biogeography: Animals.

Lecture, two hours; discussion session, one hour; reading period, one hour. Prerequisites: course 160 or 162, or equivalent, or consent of the instructor. An intensive review and analysis of biophysical and cultural factors influencing animal distributions. Mr. Bennett

262. Advanced Biogeography: Plants.

Lecture, two hours; discussion session, one hour; reading period, one hour. Prerequisites: course 160 or 162 or 166, or equivalent, or consent of the instructor. An intensive review and analysis of physical and cultural factors influencing plant distributions. Mr. Sauer

265. Seminar: Biogeography.

Discussion session, three hours; reading period, two hours. Prerequisites: course 260, 262 or equivalent and consent of the instructor. Research projects related to or growing out of course 260 or 262. The Staff

270. Advanced Field Analysis.

Saturday field trips, 8-5. Prerequisite: consent of the instructor. Training in the analysis and evaluation of the geographical characteristics of the physical environment and the human utilization thereof. Mr. Logan

272. Advanced Cartography.

Laboratory, three hours; independent work, two hours. Prerequisites: course 172 or equivalent, or consent of the instructor. Advanced work in the theory and practical application of modern cartographic principles. Special emphasis is placed on terrain representation, quantitative and computers' mapping, scribing, color separation, and reproduction of maps. Mr. Thrower

274. Photo Interpretation and Remote Sensing.

Laboratory, three hours; independent work, two hours. Prerequisites: course 172 or equivalent or consent of instructor. The study of aerial photographs and other remote sensing images as tools for geographical research. Particular attention is placed on the analysis of landscapes and the interpretation of interrelationships of individual features in their physical and cultural complex. Mr. Thrower

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. The Staff

278. Regional Field Investigations. (2 courses)

(Formerly numbered 275.) Field camp: normally involving about six weeks in the field. Prerequisites: course 170 or 270; doctoral status, and consent of the instructor. Advanced field study in several contrasting environments, utilizing both reconnaissance

and intensive methods, in the investigation of significant physical and cultural features from both the systematic and regional viewpoints. Mr. Logan

280. Anglo-America.

Lecture, two hours; discussion session, one hour; reading period, one hour. Prerequisites: course 180 or equivalent or consent of the instructor. A study of the geographic conditions and their relation to economic, social, and political problems in selected regions in Anglo-America. Mr. McKnight, Mr. Nelson

281. Latin America.

Lecture, two hours; discussion session, one hour; reading period, one hour. Prerequisites: course 181 or 182 or equivalent or consent of the instructor. A study of the geographic conditions and their relation to economic, social, and political problems in selected regions in Latin America. Mr. Bennett, Mr. Bruman

283. Europe.

Lecture, two hours; discussion session, one hour; reading period, one hour. Prerequisites: course 183 or equivalent or consent of the instructor. A study of the geographic conditions and their relation to economic, social, and political problems in selected regions in Europe. Mr. Kostanick, Mr. Thrower

284. Soviet Union.

Lecture, two hours; discussion session, one hour; reading period, one hour. Prerequisites: course 184 or equivalent or consent of the instructor. A study of the geographic conditions and their relation to economic, social, and political problems in selected regions in the Soviet Union. Mr. Kostanick

285. Asia.

Lecture, two hours; discussion session, one hour; reading period, one hour. Prerequisites: course 185 or 186 or equivalent or consent of the instructor. A study of the geographic conditions and their relation to economic, social, and political problems in selected regions in non-Soviet Asia. Mr. MacFadden, Mr. Spencer

288. Africa.

Lecture, two hours; discussion session, one hour; reading period, one hour. Prerequisites: course 187 or 188 or 189 or equivalent or consent of the instructor. A study of the geographic conditions and their relation to economic, social, and political problems in selected regions in Africa. Mr. Hale, Mr. Thomas

289. Australasia.

Lecture, two hours; discussion session, one hour; reading period, one hour. Prerequisites: course 190 or equivalent or consent of the instructor. A study of the geographic conditions and their relation to economic, social, and political problems in selected regions in Australia, New Zealand, and Oceania. Mr. McKnight

290. Seminars in Regional Geography.

Selected topics for each seminar. Each may be repeated for credit.

290A. Anglo-America. Prerequisites: course 280 and consent of the instructor. Mr. McKnight, Mr. Nelson

290B. Middle America. Prerequisites: course 181 and consent of the instructor. Mr. Bennett, Mr. Bruman

290C. South America. Prerequisites: course 182 and consent of the instructor. Mr. Bennett, Mr. Bruman

290D. Europe. Prerequisites: course 283 and consent of the instructor. Mr. Kostanick, Mr. Thrower

290E. Soviet Union. Prerequisites: course 284 and consent of the instructor. Mr. Kostanick

290F. Southern Asia. Prerequisites: course 285 and consent of the instructor. Mr. MacFadden

290G. Eastern Asia. Prerequisites: course 285 and consent of the instructor. Mr. Spencer

290H. Middle East. Prerequisites: course 288 and consent of the instructor. Mr. Hale

290L. Northern Africa. Prerequisites: course 288 and consent of the instructor. Mr. Hale, Mr. Thomas

290J. Middle and Southern Africa. Prerequisites: course 288 and consent of the instructor. Mr. Thomas

290K. Australasia. Prerequisites: course 289 and consent of the instructor. Mr. McKnight

291. Geography of the Arid Lands.

(Formerly numbered 119.) Lecture, three hours; reading period, one hour. Prerequisites: courses 110, 114, 120, 160, 170 or equivalent and consent of the instructor. An investigation of the physical and cultural complexes of the world's arid regions. Salient factors emphasized include climate, landforms, water, soils, natural vegetation and the various aspects of human occupancy, including future possibilities for human utilization. The Staff

292. Seminar: Humid Tropics.

Discussion session, three hours; reading period, two hours. Prerequisite: consent of the instructor. Selected topics. Biophysical and cultural complexes of the humid tropics with emphasis on problems related to human settlement and livelihood. May be repeated for credit. Mr. Bennett

Individual Study and Research

596. Directed Individual Study or Research.

(½ to 2 courses)

Prerequisite: consent of the instructor. The Staff

597. Preparation for M.A. Comprehensive

Examination or Ph.D. Qualifying Examination. (½ to 2 courses)

Special individual study. Prerequisite: consent of the instructor. The Staff

598. Research for and Preparation of the Masters

Thesis. (½ to 2 courses)

Independent study. Prerequisite: consent of the instructor. The Staff

599. Research for and Preparation of the Doctoral Dissertation. (½ to 2 courses)

Independent study. Prerequisite: consent of the instructor. The Staff

■ GEOLOGY

(Department Office, 3806 Geology Building)

Donald Carlisle, Ph.D., *Professor of Geology.*

John M. Christie, Ph.D., *Professor of Geology.*

**W. Gary Ernst, Ph.D., *Professor of Geology and Geophysics.*

Clarence A. Hall, Jr., Ph.D., *Professor of Geology.*

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

Helen Tappan Loeblich, Ph.D., *Professor of Geology.*

Clemens A. Nelson, Ph.D., *Professor of Geology (Chairman of the Department).*

Gerhard Oertel, Dr.rer.nat., *Professor of Geology.*

Kenneth D. Watson, Ph.D., *Professor of Geology.*

**George W. Wetherill, Ph.D., *Professor of Geophysics and Geology.*

U. S. Grant IV, Ph.D., *Emeritus Professor of Geology.*

Joseph Murdoch, Ph.D., *Emeritus Professor of Geology.*

Willis P. Popenoe, Ph.D., *Emeritus Professor of Geology.*

**William W. Rubey, D.Sc., *Emeritus Professor of Geology and Geophysics.*

**Isaac R. Kaplan, Ph.D., *Associate Professor of Geology and Geophysics.*

N. Gary Lane, Ph.D., *Associate Professor of Geology (Vice-Chairman of the Department).*

John L. Rosenfeld, Ph.D., *Associate Professor of Geology.*

**Ronald L. Shreve, Ph.D., *Associate Professor of Geology and Geophysics.*

Wayne A. Dollase, Ph.D., *Assistant Professor of Geology.*

Ronald J. Gibbs, Ph.D., *Assistant Professor of Geology.*

Lincoln S. Hollister, Ph.D., *Assistant Professor of Geology.*

J. William Schopf, Ph.D., *Assistant Professor of Geology.*



Ted L. Bear, A.B., *Lecturer in Petroleum Geology.*

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

Lawrence A. Frakes, Ph.D., *Associate Research Geologist.*

**David T. Griggs, M.A., *Professor of Geophysics.*

**Willard F. Libby, Ph.D., *Professor of Chemistry.*

LouElla R. Saul, M.A., *Senior Museum Scientist.*

Alexander Stoyanow, Ph.D., *Research Associate in Geology.*

Takeo Susuki, M.A., *Senior Museum Scientist.*

William S. Ting, Ph.D., *Associate Research Geologist.*

Peter P. Vaughn, Ph.D., *Professor of Zoology.*

David Weide, A.B., *Museum Scientist.*

The program described below is designed to provide the student majoring in earth sciences with as broad and generalized a training as possible in a curriculum leading to the Bachelor of Science degree.

Students majoring in geology must confer with a departmental adviser at or before the beginning of each quarter. Sample undergraduate programs are available in the departmental office.

Preparation for the Major

Physical Sciences 3G, Geology 4; fifteen courses in physical, mathematical, and life sciences (other than geology), of which the following are required: Physics 7A-7B (7C and/or 7D strongly recommended); Chemistry 1A-1B-1C; Mathematics 11A-11B-11C; Biology 1A-1B.

The Major

Geology 101A-101B-101C, 111A-111B-111C, 115, 121A-121B.

Students planning to do graduate work in specialized careers in geology should aim to take, when possible, appropriate courses in departments outside the major department. Suggested graduate programs for various fields of emphasis are available in the departmental office and will provide guidelines in choosing upper division courses.

Qualified undergraduate students may, upon consent of their adviser and the instructor, take Geology graduate courses numbered from 200 to 250.

Graduate Study

Students must have a B.S. or B.A. degree in any subject. *All entering graduate students* are required to take the *General Preliminary Examination* early in the Fall Quarter of their first year of residence. This examination is general in scope, is based upon undergraduate courses only, and is used only for guidance. It has no bearing on admission to graduate status.

Master of Science Degree

General University requirements. See page 139.

Departmental requirements. The basic requirement is the completion of a minimum of nine upper division and graduate courses from any physical and/or life science department, of which at least six courses must be at the graduate level, subject to approval by a guidance committee. Of the six graduate level courses, at least one must be a seminar.

No more than two 500-series courses may be applied to the Divisional nine-course minimum and five-graduate-course minimum for the master's degree.

The Thesis Plan is required for those students for whom the M.S. degree is terminal. For those students proceeding to the Ph.D. degree, the Comprehensive Examination Plan is recommended.

Students with differing degree objectives (i.e., physical geology, geophysics, mineralogy, petrology, geochemistry, engineering geology, sedimentology-stratigraphy, paleontology, mineral deposits) will be expected to take appropriate courses in departments outside the major.

Doctor of Philosophy Degree

General University requirements. See page 143.

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

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

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 410.

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 geotraphy. The Staff

103. Intermediate Petrology.

Lecture, two hours; laboratory, six hours. Prerequisite: course 101C. Microscopic and megascopic study of selected suites of igneous, sedimentary, and metamorphic rocks; their composition, occurrence, and origin. The Staff

111A-111B-111C. Structural-Stratigraphic-Field Geology.

Lecture, three to four hours; laboratory, three hours; one day a week field trips. Prerequisites: course 4, or consent of instructor; recommended, course 101A-101B-101C taken prior or concurrently. Principles of geologic mapping, structural geology, stratigraphy, interpretation of geologic maps, graphic solution of structural problems. The Staff

112. Intermediate Structural Geology.

Lecture, two hours; laboratory, three hours; limited field study. Prerequisite: course 111B. Geo-

metric and dynamic interpretation of faults and folds; structures of metamorphic and igneous rocks; large scale tectonics. Mr. Christie, Mr. Oertel

115. Principles of Paleontology.

(Numbered 11 in 1966-67.) Lecture, three hours; demonstration, one hour; or laboratory, three hours (geology majors must take laboratory); field trips. Prerequisite: one course in biological science; recommended a second course in biological science. Principles governing the evolution and distribution of fossils; the geologic history of plants, invertebrates and vertebrates. Mr. Hall, Mr. Lane, Mr. Schopf

121A. Advanced Field Geology. (2 courses)

Summer, all day, eight weeks. Prerequisite: course 111C or consent of instructor; course 121B must be taken concurrently. Problems in field geology; preparation of geologic maps and structure sections of selected areas. The Staff

121B. Advanced Geologic Report Writing.

Summer, eight weeks. Prerequisite: must be taken concurrently with course 121A. Preparation of geologic reports in the field and a final summary report on region mapped in course 121A.

128. Mineral Deposits.

(Formerly numbered 228.) Lecture, three hours; laboratory, three hours. Prerequisite: course 101C. Origin and occurrence of important metallic and nonmetallic deposits. Mr. Carlisle, Mr. Watson

130. Isotope Geochemistry.

(Same as Geophysics 130.) Lecture, three hours; discussion, one hour. Prerequisite: junior or senior standing in physical or biological science and consent of instructor. Theoretical aspects of geochronology, particularly Carbon-14 dating. Applications of radioisotopes to the hydrologic cycle and to atmospheric circulation. Stable isotope distribution in nature. Exchange mechanisms and their applications to paleotemperatures, hydrology, mineral formation and origin of biological deposits. (Alternates yearly with course 131). Mr. Kaplan, Mr. Libby

*131. Geochemistry.

(Same as Geophysics 131.) Lecture, three hours; discussion, one hour. Prerequisite: junior or senior standing in chemistry, physics, or geology, or consent of instructor. Origin and abundance of the elements and their isotopes; distribution and chemistry of the elements in the earth, oceans, and atmosphere; chemistry of the earth's interior, phase transformations at high pressure and temperature. (Alternates yearly with course 130). Mr. Kennedy, Mr. Wetherill

132. Petroleum and Engineering Geology.

(Formerly numbered 222.) Lecture, two and a half hours. Prerequisite: course 111C, or consent of the instructor. Geology applied to the exploration and production of gas, petroleum and water; techniques of surface and subsurface geology; problems of engineering, petroleum, and ground water geology. Mr. Bear

133. Regional Geology.

(Formerly numbered 246.) Lecture, three hours; discussion, two hours. Prerequisite: course 111C or

* Not to be given, 1969-1970.

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. Ernst, Mr. Nelson, Mr. Rosenfeld

136. Geophysical Exploration.

Lecture, three hours. Prerequisite: consent of instructor. Principles and techniques of gravimetric, seismic, magnetic, and other geophysical methods of exploration for ores, petroleum, and other economic minerals.

*150. Problems in Earth History.

Discussion, three hours. Prerequisite: open to upper division and graduate students with permission of instructor; science background advised but not required. Current and classic problems in the history of the earth from its origin to the present. Selected aspects of the evolution of biosphere, atmosphere, chemosphere, and lithosphere. Term paper required.

199. Special Studies in Geology. (½ to 1 course)

Students may be allowed to take course more than once for credit.

The Staff

Graduate Courses

210. Advanced Paleontology.

Lecture, two hours; laboratory, six hours; field trips. Prerequisite: course 115 or advanced standing in biological science. The detailed study of selected groups of fossils, including emphasis on evolution, classification, paleoecology, and stratigraphic utility.

Mr. 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. Hall

214. Vertebrate Paleontology.

(Same as Zoology 214.) Lecture, three hours; laboratory, three hours. Prerequisites: Zoology 101 and consent of the instructor; recommended, one course in general geology; limited enrollment. Study of the fossil record of the evolution of the vertebrates.

Mr. Vaughn

*215. Paleobiology of Plant Microorganisms.

Lecture; two hours; laboratory, six hours. Prerequisite: course 115 or advanced standing in biological science. Survey of morphology, evolution and diversification, environmental interactions, and stratigraphic value of bacteria, algae and fungi, with emphasis on dinoflagellates and acritarchs, chrysomonads, silicoflagellates, ebridians and diatoms, discoasters and collolithophorids. (Alternates yearly with course 216.)

Mrs. Loeblich

218. Micropaleontology.

Lecture, two hours; laboratory, six hours. Prerequisite: course 115 or advanced standing in biological science. Survey of microfossils of the animal kingdom, their systematics, morphology, ecology, evolutionary history and stratigraphic use, with emphasis on foraminiferans, radiolarians, chitinozoans, tintinnids, ostracods, scolecodonts and conodonts. (Alternates yearly with course 215.) Mrs. Loeblich

218. Paleobotany.

Lecture, three hours; field trips. Prerequisites: course 111C and elementary botany, or graduate standing in botany. Vegetation of the earth during geologic time.

Mr. Schopf

220. Biogeology.

Discussion, three hours; laboratory, field, or library research leading to a term paper. Prerequisite: open to graduate students in science; qualified undergraduates admitted by petition. Selected problems related to biological processes and events in geology and cosmology. Course content to vary from year to year.

Mr. Schopf

*230. X-Ray Crystallography.

Lecture, three hours; laboratory, three hours. Prerequisite: course 101C. Point, translation, and space group symmetry, diffraction of x-rays, reciprocal lattice theory, single crystal x-ray methods, diffraction symmetry and elementary crystal structure analysis. (Alternates yearly with course 231.)

Mr. Dollase

231. Crystal Chemistry and Structure of Minerals.

Lecture, three hours; laboratory, three hours. Prerequisite: course 101C. Bonding, interatomic configurations, polymorphic transformations, isotypism, thermal and positional disorder; survey of the structures of the common minerals, and relation of physical and chemical properties to crystal structure. (Alternates yearly with course 230.)

Mr. Dollase

234. Phase Equilibria.

Lecture, three hours; discussion, two hours. Prerequisites: course 101C, Chemistry 113C or consent of instructor. Principles governing homogeneous and heterogeneous equilibria, with selected applications to mineral stability relations in igneous and metamorphic rocks (fractional crystallization, partial melting, hydrothermal solutions, element partitioning in coexisting phases).

Mr. Ernst

*236A. Igneous Petrology.

Lecture, two hours; laboratory, six hours. Prerequisite: course 234 (may be taken concurrently) and a knowledge of differential equations. Solutions of the heat flow equation for specific examples of cooling magmatic bodies; the nature and origin of batholiths and associated rocks. (Alternates yearly with course 236B).

Mr. Hollister

236B. Igneous Petrology.

Lecture, two hours; laboratory, six hours. Prerequisite: course 234 or consent of instructor. Occurrence and origin of mafic and ultramafic rocks. (Alternates yearly with course 236A.)

Mr. Watson

238. Metamorphic Petrology.

Lecture, three hours; laboratory, six hours. Prerequisite: course 103 or consent of the instructor. Interpretation of metamorphic rocks in the light of observation, theory, and experiment. Geological relations, petrographic evidence, metamorphic zoning, thermodynamics of phase equilibria, projections, chemographic relationships, use of piezobirefringent haloes, Rayleigh depletion model, isotopic fractionation, environmental factors of metamorphism. Laboratory study of representative metamorphic rocks and suites of rocks selected to illustrate topics discussed in lectures.

Mr. Hollister, Mr. Rosenfeld

* Not to be given, 1969-1970.

239. Structural Petrology of Deformed Rocks.

Lecture and discussion, three hours; laboratory, three hours. Prerequisite: courses 101, 111; 112 or 248 recommended, or consent of instructor. Use of universal stage. Microscopic study of textures, structures and preferred orientations of minerals in tectonites. Deformation mechanisms in crystals and aggregates. Theories of development of preferred orientation. Application of experimental data to the interpretation of microfabrics. (Alternates yearly with course 249.) Mr. Christie

***240. Sedimentology.**

Lecture, two hours; laboratory, six hours. Prerequisite: consent of instructor. Characteristics of sediment particles (size, sorting, and morphology) and sedimentary masses and appropriate statistical approaches; relation of these characteristics to the environment and process of deposition. (Alternates yearly with course 241.) Mr. Gibbs

241. Sedimentary Petrology.

Lecture, two hours; laboratory, six hours. Prerequisite: course 101C, recommended course 240. Texture, composition, structure, and modes of origin of the sedimentary rocks. (Alternates yearly with course 240.) Mr. Gibbs

242. Clay Mineralogy.

Lecture, two hours; laboratory, six hours. Prerequisite: consent of instructor. Crystallography, chemistry, physical properties, occurrence, origin, and alterations of the clay and related minerals; theory and techniques of identification, characterization, and quantitative analysis using x-ray diffraction and electron microscopy; cation exchange and size characteristics of clay minerals. (Offered in alternate years.) Mr. Gibbs

244. Marine Geology.

Lecture, three hours; laboratory, six hours; field trips. Prerequisites: courses 101C, 111C. Recent marine sedimentology and geochemistry; oceanography; morphology structure, and geologic history of the ocean basins. Mr. Gibbs, Mr. Kaplan

248. Advanced Structural Geology.

Lecture, three hours; discussion, two hours. Prerequisite: course 111C. Principles governing fracture, folding, and flow of rocks; solution of structural problems at various scales; regional tectonic problems. Mr. Christie, Mr. Oertel

***249. Structural Analysis of Deformed Rocks.**

Lecture and discussion, three hours; laboratory, three hours. Prerequisite: courses 111; 112 or 248 recommended, or consent of instructor. Geometrical analysis of megascopic structures in terranes with complex or multiple deformations. Analysis of strain from deformed primary features. Interpretation of structural history in metamorphic terranes. (Alternates yearly with course 239.) Mr. Christie, Mr. Oertel

250. Stress and Deformation of Geologic Materials.

Lecture, three hours; discussion, two hours. Prerequisites: Physics 1A-1B-1C; Mathematics, three courses or one year of calculus. Scalars, vectors, tensors; rotation and inversion of axes, transformation matrix; stress; infinitesimal strain, strain rate; finite strain; Mohr's circle construction and other graphical methods of representation. Mr. Shreve

* Not to be given, 1969-1970.

Graduate Seminars

All seminars and Geology 297, 298, 596, 597, 598, 599 are to be arranged, all require consent of instructor. Seminars vary in content and instructor according to interests of staff and students. The range of subject matter is indicated by the descriptions following each of the seminar headings. In some, two or more staff members offer a cooperative seminar or sequence of seminars. Students are allowed to take a specifically numbered seminar as often as desired because of changing course content.

251. Seminar in Mineralogy.

Examination of groups of rock-forming minerals (e.g., feldspars) integrating such aspects as crystal structure, crystal chemistry, phase equilibria, and petrogenesis. The Staff

252. Seminar in Geochemistry.

Phase equilibria under crustal conditions, chemistry of ocean waters, recent and ancient sediments, structure and chemistry of the upper mantle, geochronology, cosmochronology, and cosmochemistry. The Staff

253. Seminar in Petrology.

Problems of igneous or metamorphic petrology: methods of evaluating physical conditions of metamorphism; diffusion in mineralogic systems; origin of ultramafic rocks and problems of the mantle; element fractionation among coexisting phases; other current subjects in the field. The Staff

254. Seminar in Sedimentology.

Processes of sediment transport and deposition; deep sea sediments; deltas and estuaries; petrology of carbonates, sandstones, and lutites; stratigraphy; paleo-environmental studies. The Staff

255. Seminar in Structural Geology and Tectonics.

Flow and fracture in the earth's crust from microscopic to continental scale and in experiments. Examples may include metamorphic terranes, glaciers, plutons, volcanoes, and consolidated or unconsolidated sediments. Modern concepts of the oceanic basins; processes leading to segregation of continental-type rocks. The Staff

256. Seminar in Physical Geology.

Glacier physics, theoretical geomorphology, river mechanics, statistical models. The Staff

257. Seminar in Paleontology.

Current biogeologic literature and research on: evolution of selected groups of animals and plants, numerical taxonomy, organism-environmental relationships, origin and development of life, biostratigraphy, paleoecology, biogeography, and biostatistics. The Staff

258. Seminar in Mineral Deposits.

Problems of distribution, composition, and formation of mineral deposits; mineral economics; investigations of opaque minerals by microscopic or other techniques. The Staff

- 297. Advanced Techniques in Geological Research.**
298. Advanced Topics in Geology. (½ to 1 course)
 The Staff
 Individual Study and Research
- 596. Directed Individual Study and/or Research.**
 (½ to 1 course)
 The Staff
- 597. Preparation for Master's Comprehensive Examination or Doctoral Qualifying Examination. (½ to 1 course)**
 The Staff
- 598. Master's Research and Thesis Preparation.**
 (½ to 1 course)
 The Staff
- 599. Doctoral Research and Dissertation Preparation. (½ to 1 course)**
 The Staff
 Related Courses in Other Departments
 Geophysics and Planetary Physics 249. Experimental Petrology.
 250. Seminar in Geophysics.
 260. Experimental Geology.
- Planetary and Space Science 222. Introduction to Seismology.
 225A-225B. Physics and Chemistry of Planetary Interiors.
- Zoology 260. Seminar in Vertebrate Paleontology.

■ GEOPHYSICS AND PLANETARY PHYSICS

(Institute Office, 3687 Geology Building)

- W. Gary Ernst, Ph.D., *Professor of Geology and Geophysics.*
 David T. Griggs, M.A., *Professor of Geophysics.*
 Robert E. Holzer, Ph.D., *Professor of Geophysics.*
 William M. Kaula, M.S., *Professor of Geophysics.*
 George C. Kennedy, Ph.D., *Professor of Geochemistry and Geology.*
 Leon Knopoff, Ph.D., *Professor of Geophysics and Physics.*
 Willard F. Libby, Ph.D., *Professor of Chemistry and Director of the Institute of Geophysics and Planetary Physics.*
 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.*
 Paul J. Coleman, Jr., Ph.D., *Associate Professor of Planetary Physics.*
 Isaac R. Kaplan, Ph.D., *Associate Professor of Geology and Geophysics.*
 Ronald L. Shreve, Ph.D., *Associate Professor of Geology and Geophysics.*
 John T. Wasson, Ph.D., *Associate Professor of Chemistry and Geophysics.*

The Institute of Geophysics and Planetary Physics was established to encourage fundamental research in geophysics, geochemistry and space physics and to provide graduate instruction for qualified students. Members of the staff and associated departments are prepared to supervise graduate work in a variety of fields: atmospheric physics, physics of the radiation belts, interplanetary physics and solar physics, geophysical fluid dynamics, high pressure physics, tectonophysics, geochemistry, nuclear geophysics, age determination, gravitation, physical oceanography and marine geophysics, seismology, physics of the deep interior, and exploration geophysics. The bachelor's degree may be in

any field; however, a thorough undergraduate preparation in one or more of the basic sciences, physics, mathematics or chemistry is expected of students pursuing graduate research. The student who elects to pursue research in geophysics, geochemistry or space physics may do so by entering the Geochemistry Interdepartmental Curriculum or by enrolling in one of the following departments: geology, physics, meteorology, mathematics, astronomy, chemistry, planetary and space science. An individual program of instruction will be worked out for each student, since the requirements for the M.S. or Ph.D. degree are not the same for all students. For further information, contact the Institute of Geophysics and Planetary Physics.

† Recalled to active service, 1969-1970.

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 76.

Upper Division Courses**130. Isotope Geochemistry.**

(Same as Geology 130.) Lecture, three hours; discussion, one hour. Prerequisite: upper division standing in physical or biological sciences and consent of instructor. Theoretical aspects of geochronology, particularly Carbon-14 dating. Application of radioisotopes to the hydrologic cycle and to atmospheric circulation. Stable isotope distribution in nature. Exchange mechanisms and their applications to paleotemperatures, hydrology, mineral formation and origin of biological deposits. (Alternates yearly with course 131.) Mr. Kaplan, Mr. Libby

131. Geochemistry.

(Same as Geology 131.) Lecture, three hours; discussion, one hour. Prerequisite: upper division standing in chemistry, physics, or geology, or consent of instructor. Origin and abundance of the elements and their isotopes; distribution and chemistry of the elements in the earth, oceans, and atmosphere; chemistry of the earth's interior; phase transformations at high pressure and temperature. (Alternates yearly with course 130.) Mr. Kennedy, Mr. Wetherill

136. Geophysical Exploration.

(Same as Geology 136.) Lecture, three hours. Prerequisite: consent of the instructor. Principles and techniques of gravimetric, seismic, magnetic, and other geophysical methods of exploration for ores, petroleum, and other economic minerals.

Graduate Courses**241. Statistical Hydrodynamics.**

(Same as Planetary and Space Science 218.) An introduction to the nonlinear fluid processes of planetary physics: aperiodic motion and statistical stability; similarity theory; upper bounds for the turbulent transport of heat and momentum; mean field equations; quantitative theories of turbulent flow; the problem of statistical closure. Mr. Malkus

249. Experimental Petrology.

Prerequisite: consent of the instructor.

Mr. Kennedy

250. Seminar in Geophysics.

Prerequisite: consent of the instructor. Seismology, geophysical prospecting, electromagnetic prospecting. Selected topics in earth physics. The content will vary from year to year.

260. Experimental Geology. (¼ to 1½ courses)

Seminar, two hours; laboratory, optional. Prerequisite: consent of the instructor. The mechanics of rock deformation. Dimensional analysis and model theory applied to geological problems. Mr. Griggs

Individual Study and Research**596. Directed Individual Study or Research in Geophysics. (¼ to 1½ courses)**

This course will include studies relative to exploration geophysics and experimental work in the electromagnetic model laboratory; research relative to gravity-surveying and to gravity earthtides; theoretical and experimental studies relative to seismology and geophysics (Mr. Knopoff); tectonophysics and properties of matter at high pressure (Mr. Griggs); atmospheric electrical phenomena (Mr. Holzer); meteorological problems (Mr. Palmer); radioactive dating and nuclear geophysics (Mr. Libby, Mr. Wetherill); hydrodynamics (Mr. Malkus); meteorites (Mr. Wetherill); volcanology, physics of high pressure, phase equilibria in geologically important chemical systems (Mr. Kennedy); geodesy and satellite orbit analysis (Mr. Kaula). The Staff

596A. Directed Individual Study or Research in Geochemistry. (¼ to 1½ courses)

Prerequisite: consent of the instructor. Nuclear geochemistry, geochronology, isotope chemistry of meteorites (Mr. Wetherill); cosmochemistry, trace element abundances in meteorites, natural radioactivity (Mr. Wasson); radiocarbon dating, tritium hydrology and water and moisture circulation, radioactive fallout circulation and precipitation and assimilation into the biosphere, high pressure chemistry particularly as applied to planetary interiors, chemistry of ionizing radiation particularly as applied to planetary atmospheres (Mr. Libby); experimental investigation of phases equilibrium at high temperatures and pressures with emphasis on geochemically important systems (Mr. Kennedy); experimental and theoretical investigation of phase equilibrium relations involving crustal conditions (Mr. Ernst); sedimentary geochemistry, geochemistry of stable isotopes, geological microbiology, origin and diagenesis of marine and nonmarine sediments, chemical history of the oceans, organic compounds in meteorites and biochemistry of early evolutionary processes (Mr. Kaplan) The Staff

597A. Preparation for the Comprehensive Examination for the Master's Degree or the Qualifying Examination for the Ph.D. (¼ to 1½ courses)

For course content and staff see course 596.

597B. Preparation for the Comprehensive Examination for the Master's Degree or the Qualifying Examination for the Ph.D. in Geochemistry. (¼ to 1½ courses)

For course content and staff see course 596A.

598. Research for and Preparation of the Master's Thesis in Geochemistry. (¼ to 1½ courses)

For course content and staff see course 596A.

599A. Research for and Preparation of the Doctoral Dissertation. (¼ to 1½ courses)

For course content and staff see course 596.

599B. Research for and Preparation of the Doctoral Dissertation in Geochemistry. (¼ to 1½ courses)

For course content and staff see course 596A.

■ GERMANIC LANGUAGES

(Department Office, 310 Royce Hall)

Franz H. Bäuml, Ph.D., *Professor of German.*

Carl William Hagge, Ph.D., *Professor of German.*

Wayland D. Hand, Ph.D., *Professor of German and Folklore.*

Victor A. Oswald, Jr., Ph.D., *Professor of German.*

Eli Sobel, Ph.D., *Professor of German (Chairman of the Department).*

Erik Wahlgren, Ph.D., *Professor of Scandinavian Languages (Vice-Chairman, Scandinavian Section).*

Gustave Otto Arlt, Ph.D., LL.D., *Emeritus Professor of German.*

Alfred Karl Dolch, Ph.D., *Emeritus Professor of German.*

Frank H. Reinsch, Ph.D., *Emeritus Professor of German.*

Kenneth G. Chapman, Ph.D., *Associate Professor of Scandinavian Languages.*

Vern W. Robinson, Ph.D., *Associate Professor of German.*

† Donald J. Ward, Ph.D., *Associate Professor of German.*

William J. Mulloy, Ph.D., *Emeritus Associate Professor of German.*

Ehrhard Bahr, Ph.D., *Assistant Professor of German.*

Rudolf A. Koester, Ph.D., *Assistant Professor of German.*

Wolfgang Nehring, Ph.D., *Assistant Professor of German.*

Stephen P. Schwartz, Ph.D., *Assistant Professor of German.*

Hans Wagener, Ph.D., *Assistant Professor of German.*

Terence Harrison Wilbur, Ph.D., *Assistant Professor of German.*

Gudrun H. Wasson, Ph.D., *Assistant Professor of German.*

Jules Zentner, Ph.D., *Assistant Professor of Scandinavian Languages.*

———, *Assistant Professor of Scandinavian.*

———, *Instructor in German.*

———, *Instructor in German.*



Arthur B. Groos, Jr., M.A., *Acting Assistant Professor of German.*

E. Bond Johnson, III, M.A., *Acting Assistant Professor of German.*

Stephanie Lombardi, Ph.D., *Lecturer in German.*

David R. McCann, M.A., *Acting Assistant Professor of German.*

William F. Roertgen, Ph.D., *Lecturer in German, Dutch-Flemish, and Afrikaans.*

Edith A. Schulz, M.A., *Lecturer in German.*

———, *Associate in German.*

———, *Associate in German.*

Preparation for the Major in German

Required: courses 1, 2, 3, 4, 5, 6, or their equivalents.

The Major in German

Two majors of 15 courses each are offered by the department. Either one may be used in satisfaction of Bachelor of Arts requirements.

Plan A is designed primarily for the undergraduate who may expect to continue study toward the attainment of a teaching creden-

tial and/or a terminal M.A. degree. This plan requires courses 100, 103A, 103B, 108A, 108B, 117, 123A, 123B, 128, 129 and two introductory literature courses chosen from 104, 105, 106, 107, and three courses to be chosen from among 122, 124, 125, 126, 127, 132, 134.

Plan B is designed primarily for the undergraduate who may expect to continue study toward the attainment of the M.A. in German and the Ph.D. degree in Germanic Languages. This plan requires courses 100, 101, 108A, 108B, 117; five introductory literature courses: free choice among 103A, 103B, 104,

* In residence spring quarter only, 1969-1970.

† Absent on leave, 1969-1970.

105, 106, 107; and five advanced courses: free choice among 122, 123A, 123B, 124, 125, 126, 127, 128, 129, 132, 134.

Admission to Graduate Status

The completion of the undergraduate major, or its equivalent, with a minimum grade-point average of 3.0 is required. If the candidate is deficient in the undergraduate major he must complete it by taking the appropriate courses, as recommended by the departmental graduate adviser. A placement examination in German language and literature may be required of entering graduate students.

Requirements for the Standard Secondary Credential

Consult the UCLA ANNOUNCEMENT OF THE GRADUATE SCHOOL OF EDUCATION.

Requirements for the Master's Degree

1. For the general requirements, see pages 139.

2. Application for advancement to candidacy may be made when the student has passed the Graduate Division reading examination in French.

3. A minimum of nine upper division and graduate level courses of which at least five courses must be graduate level (200 or 500 series), plus a comprehensive examination and additional course requirements described under items 5 and 6 below. When appropriate, the comprehensive examination will be conducted orally.

4. A student who is accepted by the Department on the thesis plan is required to pass an oral examination in the field of the thesis (as provided on page 143), in addition to the comprehensive examination of item 5 (Plan A) below.

5. For the candidate who expects to terminate his studies with an M.A. degree and teaching credential (Plan A): in addition to the minimum of nine upper division and graduate courses mentioned above in item 3, courses 128 and 129 (or their equivalent) and 370 are specifically required. No seminar is required. A comprehensive examination is required 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.

6. For the candidate whose interests are literary and linguistic rather than pedagogical or who intends to proceed toward the Ph.D. (Plan B): at least 12 upper division and

graduate courses, of which 9 must be of graduate level; one seminar must be included. A comprehensive examination is required on (a) a basic knowledge of bibliography, (b) a reading knowledge of Middle High German, (c) the origin and development of the German language, and (d) major works and authors from the earliest times to the present.

Requirements for the Doctor's Degree

1. For the general requirements, see pages 143.

2. The department reserves the right to require of a student holding an M.A. degree from another institution an examination equivalent to that given its own M.A. candidates. Failure to demonstrate satisfactory achievement may result in the assignment of additional preparatory courses.

3. Advancement to candidacy will take place when the student has (a) passed the graduate reading examination in French; (b) passed a departmental reading examination either in a modern Scandinavian language or in Dutch-Flemish—Afrikaans or in Latin; (c) successfully completed three seminars; (d) passed the qualifying examinations for the doctorate (see item 4 below).

4. At the beginning of his work toward the doctorate or as soon as possible thereafter, the student shall make known his intended major field as well as his minor field, selected from the four fields in which the degree is offered: (a) German Literature, (b) Germanic Philology and Linguistics, (c) Scandinavian Literature and Philology, (d) Germanic Folklore. The field in which the candidate intends to present a dissertation will be designated as his major field. A departmental doctoral guidance committee will direct his work toward the qualifying examinations. The candidate who chooses German Literature as his major field will be required to choose two fields of specialization (which will comprise the subject-matter of his major field examination) from the following: (a) Medieval German Literature; (b) German Literature of the 16th and 17th Centuries; (c) the 18th Century and Classicism; (d) Romanticism and the 19th Century; (e) Modern German Literature. The candidate who chooses German Literature as his minor field will be required to select from the above five fields of specialization one field which will be covered by his minor field examination. The candidate shall pass one written qualifying examination in his major field and one written qualifying examination in a minor field. He is then subject to an oral

qualifying examination administered by his doctoral committee, as provided on page 000. Upon passing his qualifying examinations the candidate shall write a dissertation. The final oral examination will deal primarily with the relation of his dissertation to the field of knowledge to which it contributes.

Lower Division Courses

No credit will be allowed for completing a less advanced course after satisfactory completion of a more advanced course in grammar and/or composition. Prerequisites for lower division courses are listed under the course descriptions. Students with demonstrated preparation may be permitted a more advanced program by the Department, or such students may be transferred to a more advanced course on recommendation of the instructor.

1. Elementary German.

Lecture, five hours per week; laboratory, one hour. Mrs. Lombardi in charge

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 in charge

2G. Elementary German for Graduate Students.

(No credit)

Continuation of course 1G. Miss Schulz in charge

3. Elementary German.

Lecture, five hours per week. Prerequisite: course 2 or two years of high school German.

Mrs. Lombardi in charge

4. Intermediate German.

Lecture, five hours per week. Prerequisite: course 3 or three years of high school German.

Mr. Robinson in charge

5. Intermediate German.

Prerequisite: course 4, or four years of high school German.

Mr. Robinson in charge

6. Intermediate German.

Prerequisite: course 5 or the equivalent.

Mr. Robinson in charge

Upper Division Courses

The prerequisite for all upper division courses except 121A, 121B, 121C, 121D is course 6 or the equivalent.

Courses Not Open to Graduate Students in German

100. German Civilization and Culture.

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. Sobel, Mr. Wagener

101. The Study of German Literature.

Application of the techniques and methods employed in literary criticism. Study of the various genres of German literature and of German prosody.

Mr. Bahr, Mr. McCann, Mr. Ward

103A. Lessing.

Reading and discussion of representative works of Lessing, including *Mina von Barnhelm*, *Emilia Galotti*, *Nathan der Weise*, *Die Erziehung des Menschengeschlechts*, and selections from *Laocoon* and *Hamburgische Dramaturgie*

Mr. Hagge

103B. Schiller.

Reading and discussion of representative works of Schiller including *Die Räuber*, *Kabale und Liebe*, *Wallensteins Tod*, *Maria Stuart*, *Die Jungfrau von Orleans*, and *Wilhelm Tell*.

Mr. Bahr, Mr. Hagge

104. Introduction to Romanticism.

Analysis of selected poetry and narrative prose of the Romantic period.

Mr. Nehring

105. Introduction to 19th Century German Literature.

(Formerly numbered 104.) Analysis of selected works of post-Romantic, pre-Naturalistic literature.

Mr. Nehring

106. Introduction to Modern Literature.

(Formerly numbered 105.) Analysis of selected works of the period from 1890 to 1945.

Mr. Koester, Mr. Oswald

107. Introduction to Contemporary Literature.

Analysis of selected works of the period 1945 to the present time.

Mr. McCann

108A. Advanced Composition, Grammar, and Conversation.

(Formerly numbered 106A.) Grammar, composition, conversation.

Mrs. Lombardi, Mr. Roertgen

108B. Advanced Composition, Grammar, and Conversation.

(Formerly numbered 106B.) Grammar, composition, conversation. Prerequisite: course 108A or consent of instructor.

Mrs. Lombardi, Mr. Roertgen

117. Language and Linguistics.

Prerequisites: courses 100 and 108A. Introduction to the historical development of the German language; theory and method of descriptive, historical, and comparative linguistics.

Mr. Schwartz

121A. Older German Literature in Translation.

Analyses in English of works of German literature from the Medieval period to Baroque.

Mr. Bäuml, Mr. Sobel

121B. Classical German Literature in Translation.

(Formerly numbered 121A.) Analyses in English of works of the period of Classicism.

Mr. Bahr

121C. 19th Century German Literature in Translation.

Readings and lectures in English on selected 19th century authors.

Mr. Robinson

121D. Modern German Literature in Translation.

(Formerly numbered 121B.) Readings and lectures in English on selected modern authors.

Mr. McCann, Mr. Oswald

Courses Open to Graduate Students in German**122. Studies in German Literature before 1750.**

(Formerly numbered 131.) Prerequisite: three upper division courses, including 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

123A. The Young Goethe.

Prerequisite: courses 100, 101 and 103A or 103B, or consent of the instructor. Reading and discussion of representative works of Goethe's early period including *Götz von Berlichingen*, *Werther*, *Urfaust*, *Edmont*, and a wide selection of lyrics.

Mr. Bahr, Mr. Hagge

123B. The Classical Goethe.

Prerequisite: courses 100, 101, 103A or 103B, or consent of the instructor. Reading and discussion of representative works of Goethe's maturity and old age, including *Iphigenie auf Tauris*, *Torquato Tasso*, *Die Wahlverwandtschaften*, *Novelle*, and a wide selection of lyrics.

Mr. Bahr, Mr. Hagge

124. Advanced Study in Romanticism.

Prerequisite: courses 100, 101, 104 or consent of the instructor. Reading and analysis of a wider range of works than in course 104.

Mr. Nehring

125. Advanced Study in Nineteenth Century Literature.

(Formerly numbered 124.) Prerequisite: courses 100, 101, 105, or consent of the instructor. Reading and analysis of a wider range of works than in 105.

Mr. Nehring, Mr. Robinson

126. Advanced Study in Modern Literature.

(Formerly numbered 125.) Prerequisite: courses 100, 101, 106 or consent of the instructor. Reading and analysis of a wide range of the literature from 1890-1945.

Mr. Koester, Mr. Oswald

127. Advanced Study in Contemporary Literature.

Prerequisite: courses 100, 101, 107 or consent of the instructor. Analysis of a wide range of German literature from 1945 to the present.

128. Advanced Composition, Grammar and Conversation.

(Formerly numbered 116.) Prerequisite: courses 108A-108B or consent of the instructor. Grammar, composition, conversation.

Mrs. Lombardi, Mr. Roertgen

129. German Phonetics.

(Formerly numbered 118.) Study of the articulatory basis of the sounds of German and practice in standard pronunciation.

Mr. Wilbur

132. Goethe's Faust.

Prerequisite: courses 100, 101, 123A, 123B or consent of the instructor. Detailed interpretation of Goethe's *Faust*, Parts I and II, together with more general consideration of other treatments of the Faust theme in European literature.

Mr. Hagge

134. German Folklore.

A survey of the various genres of German folklore.

Mr. Hand, Mr. Ward

199A-199Z. Special Studies. (½ or 1 course)

Prerequisite: senior or graduate standing, and consent of the instructor. To be arranged with the member of the faculty who will direct the study. The member of the faculty directing the study will be identified by the same two-letter code used to identify his 599 research course. A course of independent study 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**201A. Bibliography of German Literary History.**

(Formerly numbered 201.) Study of the various kinds of bibliographies, handbooks, lexica, series publications, journals, literary histories, and other reference works.

Mr. Sobel

201B. History of Germanistics.

A history of the study of German literature and the German language from Humanism to the present with particular attention to the development of new methods in philology and literary historiography.

Mr. Bäuml, Mr. Ward

201C. Theories and Methods of Literary Criticism.

Foundations of literary criticism, current theories and methods, practical poetics.

Mr. Bahr

201D. Diplomatics, Palaeography, and Principles of Text Editing.

A study of diplomatics, medieval German palaeography, and the principles of editing various types of texts.

Mr. Bäuml

202A. Middle High German.

(Formerly numbered 202.) Introduction to the Middle High German language.

Mr. Bäuml

202B. Readings in Middle High German Literature.

(Formerly numbered 203.) Readings from Middle High German courtly literature.

Mr. Bäuml

203A. The Courtly Epic.

Analysis of Hartmann's *Erec* and *Iwein*, Wolfram's *Parzival*, and Gottfried's *Tristan*. Lectures on methods of interpretation.

Mr. Bäuml

203B. The Courtly Lyric.

Analysis of lyric poetry from Der von Kürenberg to Johannes Hadlaub.

Mr. Bäuml

203C. The Heroic Epic.

Analysis and methods of interpretation of heroic poetry from the *Hildebrandslied* to *Kudrun*.

Mr. Bäuml, Mr. Ward

204A. Early New High German Literature.

Introduction to the Early New High German language, readings from Early New High German literature.

Mr. Sobel

204B. Renaissance and Reformation Literature.

(Formerly numbered 204.) German literature of the 15th and 16th centuries.

Mr. Sobel

205A. Baroque Novel and Prose Satire.

Development of modern Baroque scholarship and definition of Baroque as literary period. Types of the Baroque novel and prose satire. Mr. Wagener

205B. Baroque Lyric and Drama.

Prosodies and lyrics from J. Regnard to J. C. Günther and Baroque drama from Heinrich Julius von Braunschweig to Christian Reuter. Mr. Sobel, Mr. Wagener

206A. Enlightenment and Sentimentalism.

Representative authors of the earlier part of the eighteenth century from Gottsched through Lessing. Mr. Bahr, Mr. Hagge

206B. Sturm und Drang.

Representative authors of the *Sturm und Drang* including the young Goethe and Schiller. Mr. Bahr, Mr. Hagge

207A. Classicism: Goethe.

Selected topics in the works of Goethe in the period 1776-1832. Mr. Bahr, Mr. Hagge

207B. Classicism: Schiller.

Selected topics in the dramatic and critical works of Schiller in the period 1793-1805. Mr. Bahr, Mr. Hagge

208. Romanticism.

Analysis of representative works of the Romantic Period. Mr. Nehring

209A. 19th Century Lyrics.

Analysis of postromantic lyric poetry. Mr. Bahr, Mr. Nehring

209B. 19th Century Drama.

Analyses of postromantic, prenaturalistic dramas. Mr. Nehring

209C. 19th Century Prose.

Analyses of works of postromantic, prenaturalistic narrative prose. Mr. Bahr, Mr. Nehring

210A. Naturalism and Symbolism.

Poetry, drama, and shorter narratives of the period 1890-1938. Mr. Koester, Mr. Oswald

210B. Expressionism and Neorealism.

Poetry, drama, and shorter narratives of the period 1910-1948. Mr. Koester, Mr. Oswald

210C. 20th Century Novel to 1945.

Analyses of selected novels written prior to 1945. Mr. Koester, Mr. Oswald

211A. Contemporary Novel.

Analyses of selected novels of the period from 1945 to the present. Mr. McCann

211B. Contemporary Lyrics and Drama.

Lyrics and drama of the period from 1945 to the present. Mr. McCann

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**240A. Theories, Methods, and History of Germanic Folklore.**

Historical survey of the theories of German folklorists of the nineteenth and twentieth centuries, and a study of contemporary folklore mythology. Mr. Hand, Mr. Ward

240B. Folk Song and Ballad.

Survey of German folk song and ballads, their historical development, relation to other literary genres, ethnic background, and poetic and musical values. Mr. Hand, Mr. Ward

240C. Oral Prose Genres.

Legends, folk tales, jests, proverbs, riddles; their history, function, and poetic value. Mr. Hand, Mr. Ward

245A. Germanic Religions and Mythology.

(Formerly numbered 245.) (Same as Scandinavian 245). Mr. Wahlgren

245B. Germanic Antiquities.

Prehistory and early history of Germanic culture; a philological investigation of Germanic ethnography, customs, behavior and law. Mr. Schwartz

251. Seminar in Syntax and Phonology of German.

(Formerly numbered 290.) The syntactical and phonological structure of the German language according to the principles of generative grammar and other techniques. Mr. Schwartz, Mr. Wilbur

252. Seminar in Historical and Comparative German Linguistics.

The historical development of the Germanic languages according to the principles and techniques of comparative linguistics. Mr. Schwartz, Mr. Wilbur

253. Seminar in Medieval Literature. Mr. Bäumel**254. Seminar in Renaissance and Reformation.** Mr. Sobel**255. Seminar in Baroque Literature.** Mr. Sobel, Mr. Wagener**256. Seminar in Enlightenment and Sturm und Drang.** Mr. Bahr, Mr. Hagge**257. Seminar in the Age of Goethe.** Mr. Bahr, Mr. Hagge**258. Seminar in Romanticism.** Mr. Bahr, Mr. Nehring**259. Seminar in 19th Century Literature.** Mr. Nehring**260. Seminar in the Modern Period.** Mr. Koester, Mr. Oswald**261. Seminar in Contemporary Literature.** Mr. Oswald**262. Seminar in Germanic Folklore.** Mr. Hand, Mr. Ward

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***596A-596ZZ. Directed Individual Study or Research.**

To be arranged with the member of the faculty who will direct the study or research. The member of the faculty directing the study will be identified by the same two-letter code used to identify his 599 research course. To be graded on Satisfactory-Unsatisfactory basis. May be taken twice. Only one course in the 500 series may count toward the M.A. requirement. The Staff

597A-597ZZ. Preparation for Comprehensive Examination for the Master's Degree or the Qualifying Examination for the Ph.D.

To be arranged with the member of the faculty who will direct the study. The member of the faculty directing the study will be identified by the same two-letter code used to identify his 599 research course. To be graded on Satisfactory-Unsatisfactory basis. Holders of M.A. degree in German may take it twice. Only one course in the 500 series may count toward the M.A. graduate course requirement. The Staff

598A-598ZZ. Research for Preparation of Master's Thesis.

To be arranged with the member of the faculty who will direct the study. The member of the faculty directing the study will be identified by the same two-letter code used to identify his 599 research course. To be graded on Satisfactory-Unsatisfactory basis. May be taken three times. Only one course in the 500 series may count toward the M.A. graduate course requirement. The Staff

599A-599ZZ. Research for Preparation of the Doctoral Dissertation. (1 to 2 courses)

To be graded on Satisfactory-Unsatisfactory basis. May be taken unlimited number of times. To be arranged with the member of the faculty who will direct the study. Each faculty member has his own doctoral research course identified by a two-letter code as follows: E. Bahr, 599EB; F. H. Büuml, 599FB; K. G. Chapman, 599KC; C. W. Hagge, 599CH; W. D. Hand, 599WH; R. A. Koester, 599RK; W. Nehring, 599WN; V. A. Oswald, Jr., 599VO; V. W. Robinson, 599VR; S. P. Schwartz, 599SS; E. Sobel, 599ES; H. Wagener, 599HW; E. Wahlgren, 599EW; D. J. Ward, 599DW; G. H. Wasson, 599GW; T. H. Wilbur, 599TW; J. Zentner, 599JZ.

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**112. Dutch, Flemish, Afrikaans Literature in Translation.**Readings and analysis of selected works in translation from Dutch, Flemish, and Afrikaans Literature. Mr. Roertgen**199. Special Studies in Dutch-Flemish and Afrikaans. (½ to 1 course)**Mr. Roertgen**Scandinavian Languages****Preparation for the Major**

Plan A. Required: courses 1, 2, 3, 4, 5, 20, or 11, 12, 13, 14, 15, 20, or their equivalents. For Plans B and C, the requirements will include the above and German 1, 2, 3, 4, 5, 6.

The Major in Scandinavian

Three majors of 10 courses each are offered. Any one of the 3 may be used in satisfaction of the A.B. requirements.

Plan A is designed primarily for undergraduates who do not contemplate graduate work in this Department. This plan requires: Scandinavian 141, 142, 143, 185, and 6 courses from Scandinavian 105, 106, 144, 145, 151, 152, 153.

Plan B is designed primarily for undergraduates who may wish to pursue graduate work with the emphasis on literature. This plan requires: Scandinavian 141, 142, 143, 185, German 101, 103A, 103B, 105, and 3 courses from the following: Scandinavian 105, 106, 144, 145, 151, 152, 153, German 106, 123A, 123B, 125, 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, 108A, 117, and 3 courses from Scandinavian 105, 106, 151, 152, 153.

Admission to Graduate Status

The completion of the undergraduate major, or its equivalent, with a minimum grade-point average of 3.0 is required. If the candidate is deficient in the undergraduate major he must complete it by taking the appropriate courses, as recommended by the adviser of the Scandinavian section. A placement examination in the Scandinavian languages, as well as in German, may be required of entering graduate students.

Lower Division Courses

No credit will be allowed for completing a less advanced course after satisfactory completion of a more advanced course in grammar and/or composition. Prerequisites for lower division courses are listed under the course descriptions. Students with demonstrated preparation may be permitted a more advanced program by the Department, or

such students may be transferred to a more advanced course on recommendation of the instructor.

1. Elementary Swedish. Mr. Zentner in charge

2. Elementary Swedish.
Prerequisite: course 1 or equivalent.
Mr. Zentner in charge

3. Elementary Swedish.
Prerequisite: course 2 or equivalent.
Mr. Zentner in charge

4. Intermediate Swedish.
Prerequisite: course 3 or equivalent.
Mr. Zentner in charge

5. Intermediate Swedish.
Prerequisite: course 4 or equivalent.
Mr. Zentner in charge

11. Elementary Norwegian. Mr. Chapman in charge

12. Elementary Norwegian.
Prerequisite: course 11 or equivalent.
Mr. Chapman in charge

13. Elementary Norwegian.
Prerequisite: course 12 or equivalent.
Mr. Chapman in charge

14. Intermediate Norwegian.
Prerequisite: course 13 or equivalent.
Mr. Chapman in charge

15. Intermediate Norwegian.
Prerequisite: course 14 or equivalent.
Mr. Chapman in charge

20. Intermediate Norwegian and Swedish.
(Formerly numbered 6 and 16.) Lecture, three hours per week and special assignments. Prerequisites: courses 5, 15, or the equivalent. Readings in Swedish and Norwegian, written and oral exercises.
Mr. Wahlgren in charge

Upper Division Courses

105. Advanced Swedish.
Lecture, three hours per week and special assignments. Prerequisite: course 20 or equivalent. Readings, composition, and conversation. Conducted in Swedish.
Mr. Wahlgren in charge

106. Advanced Swedish.
(Formerly numbered 105B.) Lecture, three hours per week with special assignments. Prerequisite: course 105 or equivalent. Readings, composition, and conversation. Conducted in Swedish.
Mr. Wahlgren in charge

141. Medieval Scandinavian Literature.
Lecture, three hours per week. Open to all upper division students. Reading in the Old Icelandic sagas, the Eddas, and early ballad literature. Conducted in English, and no knowledge of a Scandinavian language is required.
The Staff

142. Scandinavian Literature of the 18th and 19th Centuries.

Lecture, three hours per week. Prerequisite for Scandinavian majors: course 20, or equivalent knowledge of Danish. For nonmajors: no knowledge of a Scandinavian language is required.
Mr. Chapman, Mr. Wahlgren, Mr. Zentner

143. Modern Scandinavian Literature.

Lecture, three hours per week. Prerequisite for Scandinavian majors: course 20, or equivalent knowledge of Danish. For nonmajors: no knowledge of a Scandinavian language is required.
Mr. Chapman, Mr. Wahlgren, Mr. Zentner

144. Ibsen.

Lecture, three hours per week. Prerequisite for Scandinavian majors: course 20, or equivalent knowledge of Danish. For nonmajors: no knowledge of a Scandinavian language is required.
Mr. Chapman, Mr. Zentner

145. Strindberg.

Lecture, three hours per week. Prerequisite for Scandinavian majors: course 20, or equivalent knowledge of Danish. For nonmajors: no knowledge of a Scandinavian language is required.
Mr. Chapman, Mr. Zentner

151. Elementary Old Icelandic.

Lecture, three hours per week, and special assignments. Prerequisite: at least one year of a modern Scandinavian language or consent of the instructor. Grammar and readings of prose literature.
Mr. Chapman, Mr. Wahlgren

152. Intermediate Old Icelandic.

Lecture, three hours per week, and special assignments. Prerequisite: course 151. Readings of Old Icelandic prose and poetry.
Mr. Chapman, Mr. Wahlgren

153. Modern Icelandic.

Lecture, three hours per week. Prerequisite: course 152. Grammar, readings, composition, and conversation.
Mr. Chapman

185. Readings in Scandinavian Literature History.

Reading course in the standard literary histories for Denmark, Iceland, Norway, and Sweden. Readings in English. No lectures; written examinations. Required for the A.B. and of graduate students offering Scandinavian as a minor field for the Ph.D.
The Staff

190. Honors Course in Scandinavian.

Lecture by special arrangement. Prerequisite: senior standing with a minimum 3.0 grade-point average in the major and consent of the honors committee of the Scandinavian section. Intensive study of a selected special topic in Scandinavian. Discussions, oral and written reports.
The Staff

199A-199ZZ. Special Studies in Scandinavian.

(½ or 1 course)

Prerequisite: senior or graduate standing, and consent of the instructor. To be arranged with the member of the faculty who will direct the study. The member of the faculty directing the study will be identified by the same two-letter code used to identify his 599 research course. 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.

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 245A.) Lecture, three hours per week. Prerequisite: Knowledge of German, a Scandinavian language, or consent of the instructor.

Mr. Wahlgren

263. Seminar in Scandinavian Studies.

Mr. Chapman, Mr. Wahlgren, Mr. Zentner

Individual Study and Research

596A-596Z. Directed Individual Study or Research.

To be arranged with the member of the faculty who will direct the study or research. The member of the faculty directing the study will be identified by the same two-letter code used to identify his 599 research course. To be graded on Satisfactory-Unsatisfactory basis. May be taken twice. Only one course in the 500 series may count toward the M.A. graduate course requirement.

599A-599Z. Research for Preparation of the Doctoral Dissertation.

To be graded on Satisfactory-Unsatisfactory basis. May be taken unlimited number of times. To be arranged with the member of the faculty who will direct the study. Each faculty member has his own doctoral research course identified by a two-letter code as follows: K. G. Chapman, 599KC; E. Wahlgren, 599EW; J. Zentner, 599JZ.

■ HISTORY

(Department Office, 6265 Bunche Hall)

Milton Anastos, Ph.D., *Professor of Byzantine Greek and History.*

Truesdell S. Brown, Ph.D., *Professor of History.*

Robert N. Burr, Ph.D., *Professor of History.*

John W. Caughey, Ph.D., *Professor of History.*

Stanley Coben, Ph.D., *Professor of History.*

John S. Galbraith, 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.*

Terence O. Ranger, Ph.D., *Professor of History.*

Hans J. Rogger, Ph.D., *Professor of History.*

Theodore Saloutos, Ph.D., *Professor of History.*

Stanford Shaw, Ph.D., *Professor of History.*

Speros Vryonis, Ph.D., *Professor of History.*

†Eugen Weber, M.Litt., *Professor of History.*

Hayden V. White, Ph.D., *Professor of History.*

Lynn T. White, Ph.D., *Professor of History.*

Stanley Wolpert, Ph.D., *Professor of History (Chairman of the Department).*

Eugene N. Anderson, Ph.D., *Emeritus Professor of History.*

Brainerd Dyer, Ph.D., *Emeritus Professor of History.*

Yu-Shan Han, Ph.D., *Emeritus Professor of History.*

Amin Banani, Ph.D., *Associate Professor of Persian and History.*

Cornelius W. Bolle, Ph.D., *Associate Professor of History.*

John G. Burke, Ph.D., *Associate Professor of History (Vice-Chairman of the Department).*

E. Bradford Burns, Ph.D., *Associate Professor of History.*

Mortimer H. Chambers, Jr., Ph.D., *Associate Professor of History.*

Claus-Peter Clasen, Ph.D., *Associate Professor of History.*

Raymond H. Fisher, Ph.D., *Associate Professor of History.*

† Absent on leave, 1969-1970.

Amos Funkenstein, Ph.D., *Associate Professor of History.*
 Frank Gatell, Ph.D., *Associate Professor of History.*
 Nikki Keddie, Ph.D., *Associate Professor of History.*
 Abdallah Laroui, M.A., *Associate Professor of History.*
 D. Cresap Moore, Ph.D., *Associate Professor of History.*
 Gary B. Nash, Ph.D., *Associate Professor of History.*
 Boniface I. Obichere, Ph.D., *Associate Professor of History.*
 Alexander P. Saxton, Ph.D., *Associate Professor of History.*
 Arthur J. Slavin, Ph.D., *Associate Professor of History.*
 James W. Willkie, Ph.D., *Associate Professor of History.*
 Robert A. Wilson, Ph.D., *Associate Professor of History.*
 †Robert Wohl, Ph.D., *Associate Professor of History.*
 Edward A. Alpers, Ph.D., *Assistant Professor of History.*
 Philip J. Borden, Ph.D., *Assistant Professor of History.*
 Robert Dallek, Ph.D., *Assistant Professor of History.*
 David M. Farquhar, Ph.D., *Assistant Professor of History.*
 Robert R. Griffith, Ph.D., *Assistant Professor of History.*
 Philip C. Huang, Ph.D., *Assistant Professor of History.*
 Norris C. Hundley, Ph.D., *Assistant Professor of History.*
 Temma Kaplan, Ph.D., *Assistant Professor of History.*
 Larry G. Kincaid, Ph.D., *Assistant Professor of History.*
 James M. Lockhart, Ph.D., *Assistant Professor of History.*
 Peter Loewenberg, Ph.D., *Assistant Professor of History.*
 M. Gwyn Morgan, D.Phil., *Assistant Professor of History.*
 Fred G. Notehelfer, Ph.D., *Assistant Professor of History.*
 Peter H. Reill, Ph.D., *Assistant Professor of History.*
 Richard Rouse, Ph.D., *Assistant Professor of History.*
 Damodar Sar Desai, Ph.D., *Assistant Professor of History.*
 Ronald T. Takaki, Ph.D., *Assistant Professor of History.*
 Gabor P. Vermes, Ph.D., *Assistant Professor of History.*
 Richard Weiss, Ph.D., *Assistant Professor of History.*
 Isser Woloch, Ph.D., *Assistant Professor of History.*
 ———, *Assistant Professor of History.*
 ———, *Assistant Professor of History.*
 ———, *Assistant Professor of History.*
 ———, *Assistant Professor of History.*



Keith B. Berwick, Ph.D., *Lecturer in History.*
 Robert P. Brenner, M.A., *Acting Assistant Professor of History.*
 Fawn M. Brodie, M.A., *Senior Lecturer in History.*
 Christopher Ehret, M.A., *Acting Assistant Professor of History.*
 Juan Gomez-Quinones, M.A., *Acting Assistant Professor of History.*
 Thomas S. Hines, M.A., *Acting Assistant Professor of History.*
 Richard Hovannisian, M.A., Ph.D., *Visiting Associate Professor of History.*
 Albert Hoxie, M.A., *Lecturer in History.*
 Michael O. Jones, M.A., *Acting Assistant Professor of History and Folklore.*
 John H. M. Laslett, Ph.D., *Acting Associate Professor of History.*
 H. H. Liang, Ph.D., *Acting Associate Professor of History.*
 Miriam Lichtheim, Ph.D., *Lecturer in History.*
 H. Viscount Nelson, M.A., *Acting Assistant Professor of History.*
 Geoffrey Symcox, Ph.D., *Lecturer in History.*
 William R. Tillman, M.A., *Acting Assistant Professor of History.*

† Absent on leave, 1969–1970.

Preparation for the Major

Required: courses 1A-1B-1C. Three additional one-quarter lower division courses, at least one of which shall be taken from History 2A-2B, History 8 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 142 and 145 of this bulletin.

The Honors Major

Students are admitted to honors candidacy by the departmental honors committee. Attention is called to the fact that honors will normally be awarded only to those students who successfully complete the honors program.

1. Students in the honors program are required to take: (a) course 197 (one quarter) in their junior year; (b) course 199 honors; (two quarters) in their senior year, during which time they shall prepare an honors thesis.

2. Four courses in other departments in the division of social sciences, either lower or upper division (anthropology, geography, economics, political science, sociology, psychology, except Psychology 12 and 115).

3. Honors candidates are required to take two comprehensive examinations at the end of the senior year: one in the student's major field (to be determined in consultation with the director of the honors program), and one in the broader area of historical interpretation.

4. Honors candidates may, with consent of the director of the honors program, take up to three quarters of 190 (directed reading) in preparation for the comprehensive

examinations. This will count towards the overall requirement of upper division courses demanded of all majors.

Teaching Minor in History

The teaching minor in history for purposes of the elementary, secondary and junior college teaching credentials consists of the following: nine courses (of which two must be in United States history) to include: (1) 1A-1B-1C (Introduction to Western Civilization); or 101A-101B-101C (Western Civilization); (2) two courses selected from: 2A-2B (History of Technology from Antiquity to the Twentieth Century), 7A-7B (Political and Social History of the United States), 8 (Approaches to the Study of Latin American History), 9A-9B-9C-9D (History of India, China, Japan and the Near East); and (3) four upper division quarter courses selected from *two* of the fields listed under the M.A. program in history, or the history of science.

Admission to Graduate Status

For admission to graduate status in the History Department students should normally have completed the undergraduate major or its equivalent; have received a bachelor's degree or its equivalent from an acceptable college or university; and have maintained at least a B-plus average in that major and a B average in all courses taken in the junior and senior years. The Department requires applicants to provide two letters of recommendation. In certain cases the Department may also require the Graduate Record Examination scores on the aptitude tests, but will in all cases be glad to receive these scores for consideration. Students not meeting the grade point average may be admitted if their letters of recommendation and their Graduate Record Examination scores or other evidence indicate unusual promise. Students may be admitted with subject deficiencies, but such deficiencies will have to be made up by taking courses in addition to requirements for an advanced degree program. Applications for the academic year should be submitted by January 15. Students are expected to begin their graduate work in the fall quarter. Only in exceptional cases will students be allowed to begin their work in the winter, spring or summer quarter.

Information and applications for the Graduate Record Examination may be obtained by writing to the Educational Testing Service, 1947 Center Street, Berkeley, California 94704 or, for applicants east of the

Rocky Mountain states, the Educational Testing Service, Box 955, Princeton, New Jersey 08540.

Requirements for the General Secondary Teaching Credential

Consult the ANNOUNCEMENT OF THE GRADUATE SCHOOL OF EDUCATION.

Requirements for the Master's Degree

A candidate for the degree of Master of Arts must meet the requirements set forth by the Graduate Council as stated on page 139.

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.

Master's Examination. The Department follows the Comprehensive Examination Plan (see page 142). 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; Jewish History. For the Certificate Program in Russian and East European Studies see page 467.

An acquaintance solely with textbook information will not be adequate. The student is advised to consult lists of recommended readings prepared by the Department, and to confer at the outset of his graduate work with instructors offering graduate courses in the field in which he proposes to present himself for examination. The Master's examination will ordinarily be given in May, July and December on dates announced by the Graduate Adviser.

Requirements for the Doctor's Degree

A candidate for the degree of Doctor of Philosophy in history must meet the general requirements set forth on pages 143-145.

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. The candidate is required to take at least one continuing history seminar of either two or three quarters.

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 all three foreign languages must be proven by passing examinations 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.

Qualifying Examinations. Before he is admitted to candidacy a student must pass an oral qualifying examination and 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. A full-time graduate student should take his qualifying examinations not later than the end of his ninth quarter of graduate work. A student who fails to meet this requirement may be barred thereafter from graduate courses.

Fields of Examination. Ancient Greece; Ancient Rome; The Early Middle Ages, 300-1100; The Later Middle Ages, 1050-1500; Byzantine History; Russia since 882; England, 1485-1763; England since 1763; The British Empire; China 900 to 1800; The Near East, 500-1500; The Near East since 1500; African History; History of Science to 1600; History of Science since 1600. Europe, Renaissance-Reformation, Renaissance to the French Revolution; Europe since 1740; China since 1800; Modern Japan; South and Southeast Asia; United States, 1492-1800; United States since 1763; The American West; Latin America, 1492-1830; Latin America since 1759; History of Religions; Jewish History.

The written qualifying examination will consist of a three-hour examination in a field selected by the candidate's 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 com-

municate its results in good literary form. In lieu of the customary type of dissertation, a student may in certain cases edit, or translate and edit, some historical source. Such a project involves careful textual criticism, explanatory annotations, and an historical introduction clearly showing the contribution of the source to historical knowledge. The dissertation must be completed within five years of the qualifying examinations. Any extension of this period must be secured annually from the Chairman of the Department.

Lower Division Courses

1A-1B-1C. Introduction to Western Civilization.

Lecture and discussion. A broad, historical study of major elements in the Western heritage from the world of the Greeks to that of the twentieth century, designed to further the beginning student's general education, introduce him to ideas, attitudes, and institutions basic to Western civilization, and to acquaint him, through reading and critical discussion, with representative contemporary documents and writings of enduring interest.

Mr. Hoxie, Mr. Weber, Mr. Wohl

2A-2B. History of Technology from Antiquity to the Twentieth Century.

(Formerly numbered 105A-105B.) Designed for students in the natural sciences, social sciences, and fine arts. It is a survey of the development of man's ability to understand more fully and to utilize more efficiently his natural environment, stressing technology's changing social, economic, scientific and cultural relationships.

Mr. Burke

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

8. Approaches to the Study of Latin American History.

Introduction to the ways in which historians have interpreted the Latin American past and related it to the contemporary world.

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. Noteheifer, Mr. Wilson

9D. History of the Near and Middle East.

A survey of the major social, cultural and political institutions and ideas of the Near East.

Mrs. Keddie

Upper Division Courses

The prerequisite for all upper division courses is upper division standing or consent of the instructor, unless otherwise stated. For certain graduate courses which are open to students with Upper Division standing and with the permission of the instructor, see page 319.

101A-101B-101C. Western Civilization.

Lecture. A broad, historical study of major elements in the Western heritage from the world of the Greeks to that of the twentieth century. Primarily designed for non-history majors. May not be taken for credit by students who have taken History 1A-1B-1C.

Mr. Symcox, Mr. Weber, Mr. Wohl

105. Folklore in American Society.

(Same as Folklore 105). Prerequisite: junior standing. A cultural-historical survey of the role of folklore in the development of American civilization and of the influence of the American experience in the shaping of folklore in American society.

Mr. Jones

106A-106B. History of Science.

(Numbered 213A-213B in 1968-69.) Scientists and scientific thought in relationship to societies from the ancient civilizations to the present.

Mr. Burke

106C. History of Science in America.

History of science in relationship to society in America.

Mr. Borden

111A-111B-111C. History of the Ancient Mediterranean World.

111A. A survey of the history of the ancient East from earliest times to the foundation of the Persian Empire.

111B. The history and institutions of the Greeks from their arrival to the death of Alexander.

111C. The history and institutions of Rome from the founding of the city to the death of Constantine.

Mr. Brown, Mr. Chambers, Mr. Morgan

112A-112B. History of Ancient Greece.

112A. The Greek city-state. The emphasis will be on the period between the Persian Wars and the rise of Macedon.

112B. The Hellenistic Period. A consideration of the new patterns in government, social life, science, and the arts that appeared between the Macedonian conquest and the decisive intervention of Rome.

Mr. Brown

113A-113B. History of Rome.

113A. To the death of Caesar. Emphasis will be placed on the development of imperialism and on

the constitutional and social struggles of the late republic.

113B. From the death of Caesar to the time of Constantine. The early empire will be treated in more detail supplemented by a survey of the social and economic changes in the third century.

Mr. Chambers, Mr. Morgan

117. History of Ancient Egypt.

A cultural history of ancient Egypt from predynastic times to the end of the new kingdom.

Miss Lichtheim

121A. The Early Middle Ages.

A survey of religious, intellectual, artistic, social, and economic changes in Europe from the decay of the Roman Empire until about 1050.

Mr. L. White

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. L. 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-125C. History of Africa.

History of the societies of sub-Saharan Africa.

The Staff

126A-126B. History of West Africa.

126A. West Africa from earliest times to 1800.

126B. West Africa since 1800.

Mr. Griffith, Mr. Obichere

127A-127B. History of East and Central Africa.

127A. History of East Africa from its peopling to the gaining of independence. Particular attention is paid to state formation, long distance trade, and the rise of nationalism.

Mr. Alpers

127B. Development of social and political institutions from the rise of the great Central African state systems to the present.

Mr. Ranger

128A-128B. History of Southern Africa.

128A. History of Southern Africa from origins to 1870. The origins of the South African peoples and their interactions to 1870. Attention will be given to social and economic, as well as political aspects.

128B. History of Southern Africa since 1870. The interactions between the inhabitants of Southern Africa since 1870. Attention will be given to social and economic, as well as political aspects.

129. History of Northeast Africa.

Cultural and economic developments from earliest times. The Semitic settlement in Ethiopia and the kingdom of Axum. Ethiopia from the decline of Axum to modern times.

Mr. Alpers, Mr. Ehret

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

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, Mr. Laroui

135. Introduction to Islamic Culture.

Origins of the Islamic way of life and thought, survey of Islamic history, Islamic literature in English translation, interaction of the Islamic world and Europe in medieval and modern times.

Mr. von Grunebaum

136. Islamic Institutions and Political Ideas.

Institutions and ideas of government, administration, justice, education, economic and social life in the Islamic Near East as they were before the impact of the West, and as they were affected by that impact.

Mr. von Grunebaum

138A-138B. Jewish History.

Jewish history from Biblical times to our period.

Mr. Funkenstein

138C. Aspects of Jewish Intellectual History.

A study of the development of the Jewish self-understanding in relation to the intellectual climate of the environment, as expressed in the halacha, in philosophy, and in cabbalism.

Mr. Funkenstein

139A-139B-139C. History of the Turks.

A survey of the society, government, and political history of the Turks from earliest times to the present.

139A. Origins to the sixteenth century.

139B. Sixteenth to the nineteenth century.

139C. Nineteenth and twentieth centuries.

Mr. Shaw

141A-141G. History of Modern Europe.

141A. The Renaissance.

Mr. Martines

141B. The Reformation.

Mr. Classen

141C. Europe: 1560-1660.

141D. Europe under the old Regime.

141E. Europe, 1789-1848.

141F. Europe, 1848-1900.

141G. Europe in the 20th Century.

Mr. King, Mr. Wohl

142A-142B-142C. Cultural and Intellectual History of Modern Europe.

Climates of taste and climates of opinion. Educational, moral and religious attitudes; the art, thought, and manners of the time in an historical context. Quarter courses are oriented approximately as follows:

142A. 17th and 18th centuries.

Mr. Hoxie

142B. 19th Century.

Mr. Liang, Mr. Weber

142C. 20th Century.

Mr. Liang, Mr. Weber

143A-143E. History of Modern France.

- 143A. 1480-1630. Mr. Lossky
 143B. 1630-1789. Mr. Lossky
 143C. The Revolution and Napoleon. Mr. Woloch
 143D. 1815-1870. Mr. King, Mr. Woloch
 143E. Contemporary France. Mr. King

144A-144B-144C. History of Modern Germany.

- 144A. 18th Century. Mr. Reiff
 144B. 19th Century. Mr. Loewenberg
 144C. 20th Century. Mr. Loewenberg

145A-145B. The Netherlands in European Affairs, 1450-1795.

- 145A. From the Burgundian unifications to the Truce of 1609. Mr. Lossky
 145B. From the Truce of 1609 to the end of the Dutch Republic. Mr. Lossky

146A-146B-146C. History of Russia.

146A. From the 13th century to the Crimean War. Political, social, and economic developments, and foreign relations in the Muscovite and imperial periods.

146B. 1856-1917. The Great Reforms, the agrarian problem and backwardness, the radical movement, the revolution of 1905; foreign relations, especially the Near Eastern question. Either part of the course may be taken without the other.

146C. The Soviet Union, 1917 to the present. The Bolshevik Revolution, consolidation of the regime, collectivization and industrialization, foreign policy and domestic developments. Mr. Fisher, Mr. Rogger

146A-146B. History of Italy.

146A. Late Middle Ages to Unity. The Italian people from the late Middle Ages to the achievement of national unity. Mr. Wohl
 146B. 1861 to the Present. Political, economic, social, diplomatic and ideological developments. Mr. Wohl

146C-146D. 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. Miss Kaplan

149A-149B-149C. History of Eastern Europe.

149A. The Balkans. From the 14th century to 1878.
 149B. East-Central Europe to 1800. The Western Slavs, their Baltic and Danubian neighbors.
 149C. Contemporary East Central Europe and the Balkans. Mr. Vermes, Mr. Vryonis

150A-150H. Studies in English History.

(Formerly numbered 152A-152B, 153A-153B, 155, 156, and 157.)
 150A-150B. Medieval England. Mrs. Searle
 150C-150D. Renaissance England. Mr. Slavín
 150E-150F. Early Modern England.
 17th and 18th Century England. Mr. Howard
 150G-150H. Modern England.
 19th and 20th Century England. Mr. Moore

158A-158B. The British Empire Since 1783.

The political and economic development of the British Empire, including the evolution of colonial nationalism, the development of the commonwealth idea, and changes in British colonial policy. Mr. Galbraith, Mr. Sar Desai

162A-162B. Latin America in the 19th and 20th Centuries.

162A. Latin America in the 19th Century. An intensive analysis of the economic, social, and political problems of the Latin American nations from their independence to around 1910. Mr. Burns, Mr. Burr

162B. Latin America in the Twentieth Century. An examination of society, economy, and politics in Latin America in the 20th Century. Mr. Burr, Mr. Wilkie

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. The Mexican Revolution.

The structure of "Permanent Revolution" since 1910. Mr. Wilkie

168A-168B. Colonial Latin America.

Studies in the general development of Latin America prior to 1825 with emphasis on social history. Mr. Lockhart

169. Diplomatic History of Latin America.

Emphasizes the historical development of a distinctive system of international relations among the nations of the Western Hemisphere, from 1808 to the present. Mr. Burr

171A. The United States: Colonial Period to 1763.

Political and social history of the thirteen colonies and their neighbors; European background, settlement and westward expansion, intercolonial conflicts, beginnings of culture, colonial opposition to imperial authority. Mr. Nash, Mr. Tillman

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, Mr. Tillman

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. Mrs. Brodie, Mr. Gatell, Mr. Saxton

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. 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.

174A-174B. The United States: The Twentieth Century.

The political, economic, intellectual, and cultural aspects of American democracy in the twentieth century. Mr. Cohen, Mr. Weiss

175A-175B. History of American Capitalism Since the Civil War.

Recommended preparation: courses 7A-7B and Economics 13. A study of the changes in agriculture, industry, labor, banking, transportation, and commerce in a capitalist society, and of some of the prominent personalities who made these changes possible. Mr. Saloutos

176A-176B. History of the American Negro.

A survey of the social, cultural and political history of Negroes in the United States. Mr. Nelson, Mr. Takaki

177A-177B. Intellectual History of the United States.

The principal system of ideas about man and God, nature and society, which have been at work in American history. Emphasis on the sources of these ideas, their connections with one another, and their expression in great documents of American thought. Mr. Borden

176A-176B. 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

176A-179B. Constitutional History of the United States.

Prerequisite: eight units of United States history or government, or consent of the instructor. A study of the origins and development of the Federal Constitution.

180A-180B. Social History of the United States since 1800.

An historical study of the character and values of the American people as affected by regions, classes, and economic change; with particular attention to the cultural roles of women, businessmen, Negroes, and ethnic groups. Mr. Hines

181. The American West.

A study of the West as frontier and as region, in transit from the Atlantic seaboard to the Pacific, and from the 17th century to the present. Mr. Caughey, Mr. Hundley

182. The Immigrant in America.

A historical analysis of the social and economic causes and effects of immigration, particularly after the 1880's, emphasizing the problems of acculturation and adjustment. The restrictionists and the implications of immigration policy on U. S. foreign policy will be stressed. Mr. Saloutos

183. Racial Attitudes in America.

The course will trace the origins and development of racial attitudes, both scientific and popular, in America from the first English contacts with Africans and Indians in the late 16th century to the present day. Mr. Nash in charge

184. American Reform Movements and Reformers.

(Formerly numbered 215.) A study of educational, monetary, labor and agrarian reforms advocated in the nineteenth and twentieth centuries. Mr. Saloutos

185. History of United States Labor.

Examines the development of American labor from colonial times to the present day, especially the A. F. of L., the rise of industrial unionism, and those characteristics of American labor which separate it from labor movements elsewhere. Graduates and undergraduates. Mr. Laslett

188. History of California.

The economic, social, intellectual, and political development of California from the earliest times to the present. Mr. Caughey, Mr. Hundley

190. Directed Reading for Honors. (½ to 1 course)

Reading to fill gaps in the historical training of individual honors students. Reports on reading will be made at regular intervals. May be taken for up to three quarters. The Staff

191A-191B-191C. History of China.

191A. From Beginning to 900.

191B. 900-1800.

Prerequisite: course 9B or 191A, or consent of the instructor.

191C. 1800 to the present.

Mr. Farquhar, Mr. Huang

193. Diplomatic History of the Far East.

The role of the Far Eastern states in the international community beginning with the establishment of the Treaty System in China and the opening of Japan to intercourse with the rest of the world in 1854. Mr. Wilson

195A-195B. Tokugawa and Modern Japan.

The political, economic, and cultural development of Japan since the establishment of the Tokugawa Shogunate in 1603. Mr. Notehelfer, Mr. Wilson

196A. Early History of India.

Introduction to the civilization and institutions of India. A survey of the history and culture of the South Asian subcontinent from the earliest times to the founding of the Mughal Empire. Mr. Wolpert

196B. Recent History of India and Pakistan.

History of the South Asian subcontinent from the founding of the Mughal Empire, through the eras of European expansion, British rule, and the nationalist movement, to the present. Mr. Wolpert

196C-196D. History of Southeast Asia.

196C. Early History of Southeast Asia. A political and cultural history of the peoples of Southeast Asia from the earliest times to about 1815.

196D. Southeast Asia since 1815. History of modern Southeast Asia with emphasis on expansion of European influence in the political and economic spheres, growth of nationalism and the process of decolonization. Mr. Sar Desai

197. History and Historians.

Required of all history majors in their junior year. A study of historiography, including the intellectual processes by which history is written, the results of these processes, and the sources and development of history. Attention also to representative historians. Mr. Fisher, Mr. Reill, Mr. H. White

198. Undergraduate Seminars.

Admission with approval of the instructor. (These are to be offered in different fields, as schedule and staff allow.) The Staff

199. Special Studies in History.

An introduction to research, followed by individual investigation of selected topics, to be taken by all history majors in the senior year. Sections will be offered in different fields. Honors candidates may take two quarter courses for credit. The Staff

Graduate Courses**200-215. Graduate Lecture Courses.**

Prerequisite: graduate status or, with permission of instructor, upper division standing.

200A-200B. History of Ancient Mesopotamia and Syria.

The political and cultural development of the "Fertile Crescent," including Palestine, from the Neolithic to the Achaemenid period. Mr. Buccellati

201A. History of the Eurasian Nomadic Empires.

(Formerly numbered 199C.) 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. Themes in Early and Modern Chinese History.

A close examination of various topics and periods mainly between the years 900 and 1800. Mr. Farquhar

203. History of Ancient Egypt in the Late Period.

Prerequisite: course 117 and a background in Graeco-Roman history. A cultural history of ancient Egypt from the end of the new kingdom to the coming of Christianity. Miss Lichtheim

204A-204B. History of the Church in the Middle Ages.

(Formerly numbered 122A-122B.) A course on the development of Christian doctrines, on ecclesiastical institutions and on relations between the church and empires, kingdoms, and lay society, from the beginnings of Christianity to the great reform councils of the late Middle Ages. Mr. Ladner

205A-205B. Medieval and Renaissance Italy.

The course will treat Italian city-states, particularly Venice, Florence, Milan, and Genoa, between 1100 and 1500, emphasizing urban society, urban problems, politics, and institutions. Italian cities will be contrasted with major Northern European cities. Mr. Martinez

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

210C-210D. Morocco and Europe from 1400-1950.

The interaction of indigenous traditions, political, social, institutional, with European influence emerging mostly from Portugal, Spain and France. Morocco will be the focus of attention with the rest of North Africa providing a basis for comparison.

211A-211B-211C. Islamic Iran.

(Formerly numbered 132A-132B.) Political, social and cultural history of Persia.

A. 600 to 1400. Mr. Banani

B. 1400 to 1800. Mr. Banani

C. 1800 to the Present. Mrs. Keddie

212. Intellectual History of Recent China.

Confucianism on the eve of the encounter with the West; Chinese intellectuals' response to the West and modern Japan in the nineteenth and twentieth centuries. Mr. Huang

214. Social and Intellectual History of Recent Japan.

This course will emphasize the social changes which accompanied the political and economic transformation of modern Japan and the necessary adaptation of the Confucian value system. Mr. Notehelfer

224. Later Medieval Latin Palaeography and Manuscripts, 1100-1500.

An intensive training in the reading of select Medieval and Renaissance hands and in the tools and techniques of textual and literary history. Mr. Rouse

225. Introduction to Historical Methods.

An historical and analytical examination of the methods of historical study and the assumptions and premises to which these methods are related.

Mr. Moore, Mr. H. White

†230A-230R. 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; R. Jewish History.

The Staff

†240A-240R. Topics in History.

(Formerly numbered 208A-208R.) A through R 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. L. White

254A-254B. Seminar in the Italian 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. Loosky, Mr. Martines

258A-258B. Seminar in English History: Middle Ages and Renaissance.

Mr. Slavin

259A-259B. Seminar in English History: Modern History.

Mr. Howard, Mr. Moore

260A-260B. Seminar in Modern European History.

Mr. King

261A-261B. Seminar in Modern European History.

Mr. Weber, Mr. H. White

262A-262B. Seminar in the Modern History of Spain, Italy and Portugal.

Mr. Wohl

263A-263B. Seminar in Russian History.

Mr. Fisher, Mr. Rogger

264A-264B. Seminar in British Empire History.

Mr. Galbraith

265A-265B. Seminar in African History.

Mr. Griffith, Mr. Ranger

266A-266B. Seminar in Latin American History.

Mr. Burr

267A-267B. Seminar in Near Eastern History.

The seminar will concentrate on studies in the History of the Near East and on Westernization of the Arab-speaking world in alternate years.

Mr. von Grunebaum

268A-268B. Seminar in Jewish History.

Studies in the intellectual and social history of the Jewish people from ancient times to the modern period.

Mr. Funkenstein

269A-269B. Seminar in Early American History.

Mr. Nash

270A-270B. Seminar in Recent United States History.

Mr. Cohen

271A-271B-271C. Seminar in Recent American History.

Mr. Saloutos

272A-272B. Seminar in United States History of the Middle Nineteenth Century.

Mrs. Brodie

273A-273B. Seminar in United States Social and/or Intellectual History.

Mr. Saxton

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

277A-277B. Seminar in Afro-American History.

This social and political history of the Afro-American will include an emphasis on the development and structure of race relations in America, and racial concepts and dilemmas, black and white.

Mr. Takaki

279A-279B. Seminar in Chinese History.

Mr. Farquhar, Mr. Huang

280A-280B. Seminar in South and Southeast Asia.

Mr. Wolpert

281A-281B. Seminar in Modern Japanese History.

Mr. Notehelfer, Mr. Wilson

282A-282B. Seminar in the History of Religions.

Mr. Bolle

283A-283B. Seminar in Ottoman and Modern Turkish History.

Mr. Shaw

Individual Study and Research

596. Directed Studies. (1/4 to 2 courses)

The Staff

† Offered as schedule and staff allow.

597. Directed Studies for Graduate Examinations.

(¼ to 2 courses)

Preparation for either the Master's Comprehensive Examination or the Ph.D. Qualifying Examinations.
The Staff**599. Doctoral Research and Writing.**

(¼ to 2 courses)

Open only to students who have passed the qualifying examination for the Ph.D. degree. The Staff

Related Course in Another Department

The following course is offered in the Department of Medical History and is accepted for credit.

Medical History 107B. Historical Development of Medical Science.**■ HUMANITIES****Pier-Maria Pasinetti, Ph.D., Professor of Italian.****Bonnie T. Engdahl, Ph.D., Lecturer in Humanities.**

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.

101. The Romantic Dilemma.

Prerequisites: courses 1A-1B, or English 1 and 2, or consent of the instructor. The Theme of Romantic individualism and rebellion, pursued through literary examples of Romantic hero types (and anti-types) from Rousseau and Goethe to Dostoevsky and Hesse. Mrs. Engdahl

102. Satire.

Prerequisites: courses 1A-1B, or English 1 and 2, or consent of the instructor. The changing nature of satire as illustrated by examples of the genre from Horace and Juvenal to Ionesco and Nabokov.

103. English Renaissance Tragedy.

Prerequisites: courses 1A-1B, or English 1 and 2, or consent of the instructor. A close study in lectures

and discussions of six Elizabethan-Jacobean plays, with emphasis on those themes and elements, such as revenge, the superman, theatricality and rhetorical extravagance, which define the nature and quality of English Renaissance Tragedy. Particular attention will be paid to the classical and Continental origins of these distinguishing characteristics.

104. The Twentieth Century Continental Novel:**Mann and Proust.**Prerequisites: courses 1A-1B, or English 1 and 2, or consent of the instructor. An intensive study of *The Magic Mountain* and *The Remembrance of Things Past* as works of art and as expressions of the sense of social and cultural dissolution felt in early twentieth century Europe. Mr. Pasinetti**105. The Comic Spirit.**

Prerequisites: courses 1A-1B, or English 1 and 2, or consent of the instructor. Literary masterpieces, both dramatic and non-dramatic, selected to demonstrate the varieties of comic expression.

Related Courses in Other Departments

Integrated Arts 1A-1B-1C.**Engineering 101. Engineering. Its Role and Function in Human Society.****■ INTEGRATED ARTS**

The main manifestations of the creative spirit in the arts of Western Civilization and the problems of their interrelation (literature excluded). For the general student; a knowledge of European history is expected.

1A. Integrated Arts.

Lecture, three hours. From Classic Antiquity to the end of the Middle Ages. Mr. Kayser

1B. Integrated Arts.

Lecture, three hours. From the Renaissance to the rise of Classicism. Mr. Kayser

1C. Integrated Arts.

Lecture, three hours. From the French Revolution to the present. Mr. Kayser

■ INTERDISCIPLINARY COLLOQUIA

Organized colloquia involving several disciplines are offered from time to time in conformity with faculty and student interests. They are open to all faculty members and to graduate students assigned to the colloquia by their advisers. Graduate credit is not awarded directly, but may be given through appropriate departmental courses.

African Studies

Committee in Charge. E. A. Alpers, History; M. Gilsenan, Anthropology; L. J. Kuper, Sociology; M. Lofchie, Political Science; J. F. Povey, English; P. O. Proehl, Law; M. G. Smith, Anthropology; B. E. Thomas, Geography; L. M. Thompson, History.

A colloquium on Africa in the social sciences will meet biweekly throughout the year. Papers presented and discussed in this colloquium will focus each quarter upon a different integrating theme, such as Urbanization and Migration, Development and Adaptation of Legal Systems in Africa, the Plural Societies of Africa, and similar topics amenable to interdisciplinary discourse.

Mathematics in the Behavioral Sciences

Committee in Charge. J. Marschak, Business Administration and Economics (chair-

man); G. D. Allen, Linguistics; J. L. Barnes, Engineering; P. Bonacich, Sociology; E. C. Carterette, Psychology; T. S. Ferguson, Mathematics; J. Hirshleifer, Economics; D. Kaplan, Philosophy; M. R. Mickey, Biostatistics; D. O. Walter, Physiology.

Meetings are announced in the UNIVERSITY CALENDAR.

A colloquium on mathematics in the behavioral sciences will meet biweekly throughout the year. Papers presented and discussed in this colloquium use mathematical language to improve communication between behavioral sciences, and also between these sciences and other branches of knowledge.

Political Change

Committee in Charge. M. Lofchie, Political Science (chairman); L. J. Kuper, Sociology; M. G. Smith, Anthropology; D. A. Wilson, Political Science; C. Wolf, Jr., Economics; E. V. Wolfenstein, Political Science.

A colloquium on the theoretical analysis of political change will meet regularly throughout the year. Papers presented will emphasize the interaction of the phenomena which are the subject matter of the traditional social science disciplines in the processes of change.

■ ISLAMIC STUDIES

For details of the undergraduate major, see Curriculum in Near Eastern Studies, page 77 of this catalog.

Master of Arts in Islamic Studies

The program for the Master of Arts in Islamic Studies is designed primarily for the student desiring to prepare for an academic career. It may, however, be found useful also for the student seeking a general education and desiring a special emphasis in this particular area or for a student who plans to live and work in this area, whose career will be aided by a knowledge of the peoples, languages, and institutions. (Such a career might be centered on teaching, research, business, engineering, journalism, librarianship, or government service.) Subject to the limitations indicated below, the special course of studies is formulated for each candidate according to his experience and requirements.

Requirements for the Master's Degree

General Requirements (as throughout the Graduate Division). See page 139.

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 interdepartmental degree in Islamic Studies will pass on the application for admission to the program. A student entering the program is normally expected to have completed the equivalent of advanced Arabic (Arabic 103A-103B-103C), or advanced Persian (Persian 102A-102B-102C), or advanced Turkish (Turkish 103A-103B).

Plan. The program is offered under both the Thesis Plan and the Comprehensive Examination Plan. The selection of a plan will be decided upon by the candidate and his adviser and approved by the interdepartmental advisory committee.

Language Requirements. A candidate for the degree of Master of Arts in Islamic Studies will be required to show proficiency in either French or German, in addition to two Near Eastern languages of their field of specialization. The student is expected to pass the graduate foreign language reading examination in either French or German by

the end of the second quarter of residence. In view of the scholarly literature in the field, a candidate is earnestly advised to acquaint himself with a second European language in which relevant material for his studies is available.

Program. The program of each candidate will be especially prescribed by the interdepartmental advisory committee. The program should, wherever possible, be established before the candidate enters his first quarter of work. The program will be planned to emphasize Arabic, Persian or Turkish (Islamic) studies and is intended particularly for the student desiring to prepare for an academic career in this field.

Program in Arabic, Persian or Turkish (Islamic) Studies. The student will be required to continue his language work by taking no less than four courses on the appropriate level in the two Near Eastern languages of his choice. The remaining five courses are to be chosen from the relevant upper division and graduate courses in history, political science or any of the other fields represented in the program depending on the student's preparation and specific needs, with the proviso that the selection must be limited to two of these disciplines. The omission of history may be approved only in exceptional cases. Especially recommended are: History 230J, 240J, 267A-267B, Political Science 250F and Sociology 236, 237.

Other study arrangements in the Near Eastern field are available through the Department of Near Eastern Languages.

Requirements for the Ph.D. Degree in Islamic Studies

General Requirements. See pages 143-145.

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 interdepartmental degree in Islamic 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 Islamic 599.

The Qualifying Examination

The qualifying examination will depend on the social science concentration elected by the student. If, for example, his chosen field is history, he will be examined on the whole range of Near Eastern history, in one field of sociology or political science, and in the particular Near Eastern languages and literatures of his approved program. Qualifying examinations for students with different concentrations will be constructed accordingly.

Lower Division Courses

- Arabic 1A-1B-1C. Elementary Arabic.
- Geography 10C. World Regional Geography: Africa and the Middle East.
- Hebrew.*
- History 9D. History of the Near East.
- Music 71K. Music of Persia.

Upper Division Courses

- African Languages. †
- Anthropology 123. Culture and Personality.
- 124. Comparative Religion.
- 125. Comparative Society.
- 145. Oral Art and Drama of Non-Western Peoples.

* See Department of Near Eastern Languages for complete listing and detailed description.

† See Linguistics Department for complete listing and detailed description.

146. Musical Arts of Non-Western People.
 147. The Cultures of the Arab World.
 148. The Theory of Oral Literature.
- Arabic** 102A-102B-102C. Intermediate Arabic.
 102K. Intensive Intermediate Arabic.
 103A-103B-103C. Advanced Arabic.
 111A-111B-111C. Spoken Egyptian Arabic.
 113A-113B-113C. Spoken Iraqi Arabic.
 130A-130B-130C. Classical Arabic Texts.
 132A-132B-132C. Philosophical Texts in Classical Arabic.
 140A-140B-140C. Modern Arabic Texts.
 150A-150B. Survey of Arabic Literature in English.
 180A-180B-180C. Structure of Literary Arabic.
 199. Special Studies in Arabic.
- Armenian** 101A-101B-101C. Elementary Modern Armenian.
 102A-102B-102C. Intermediate Modern Armenian.
 103A-103B-103C. Advanced Modern Armenian.
 130A-130B-130C. Elementary Classical Armenian.
 131A-131B-131C. Intermediate Classical Armenian.
 132A-132B-132C. Advanced Classical Armenian.
 150A-150B. Survey of Armenian Literature in English.
 199. Special Studies in Armenian Language and Literature.
- Art** 101A-101B-101C. Egyptian Art and Archeology.
 103B. Hellenistic Art.
 104A. Art of the Ancient Near East.
 104B-104C-104D. Architecture and the Minor Arts of Islam in the Middle Ages.
 105A. Early Christian and Byzantine Art.
 105B. Early Medieval Art.
 198. Special Courses in Art.
 199. Special Studies in Art.
- Berber** 101A-101B-101C. Elementary Berber.
 102A-102B-102C. Advanced Berber.
 120A-120B-120C. Introduction to Berber Literature.
 199. Special Studies in Berber Languages.
- Caucasian Languages** 111A-111B-111C. Elementary Georgian.
 199. Special Studies in Caucasian Languages.
- Classics** 145A. Byzantine Civilization: Political Theory, Roman Law and Conflicts with Paganism.
 145B. Byzantine Civilization: Theology and Relations with Rome.
 145C. Byzantine Civilization: Literature, Art, Science and the Renaissance.
- Ancient Near East** 120A-120B-120C. Elementary Ancient Egyptian.
 121A-121B-121C. Intermediate Ancient Egyptian.
 122A-122B. Late Egyptian.
 123A-123B. Coptic.
 150A-150B. Survey of Ancient Near Eastern Literatures in English.
 160A-160B. Introduction to Near Eastern Archaeology.
 161A-161B-161C. Archaeology of Mesopotamia.
 199. Special Studies in the Ancient Near East.
- Geography** 187. The Middle East.
 188. North Africa.
- Hebrew.***
- History** 117. History of Ancient Egypt.
 121A. The Early Middle Ages.
 121B. The Later Middle Ages.
 123A-123B-123C. Byzantine History.
 124A-124B. History of Religions.
 126A-126B. History of West Africa.
 129. History of Northeast Africa.
 131A-131B. Armenian History.
 133A-133B. History of North Africa from the Moslem 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.
 138C. Aspects of Jewish Intellectual History.
 139A-139B-139C. History of the Turks.
 149A-149B-149C. History of Eastern Europe.
 196A. Early History of India.
 196B. Recent History of India and Pakistan.
 198. Undergraduate Seminars.
 199. Special Studies in History.
- Music** 145. History and Theory of Persian Music.
 171K. Music of Persia.

* See Department of Near Eastern Languages for complete listing and detailed description.

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.

Sociology 132. Population and Society in the Middle East.
133. Comparative Sociology of the Middle East.
151. Culture and Personality.

Turkic Languages 101A-101B. Elementary Turkish.
102A-102B. Intermediate Turkish.
103A-103B. Advanced Turkish.
110A-110B-110C. Old and Middle Turkic.
111A-111B-111C. Chagatai.
112A-112B-112C. Uzbek.
113A-113B-113C. Kirghiz.
190A-190F. 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. Selected Topics in Mediterranean Society and the Arab World.

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.
213. Problems in Islamic Art.
223. Classical Art.
225. Medieval Art.
226A-226B. Medieval Art and Architecture.

Berber 201. Berber Structure.

Classics. Greek 231A-231B-231C. Seminar in Patristic and Byzantine Literature.
232. Seminar in the History of Classical Scholarship of the Byzantine Period.

French 221A. Introduction to the Study of the French-African Literatures.
221B. French-African Literature of Madagascar and Bantu Africa.
221C. French-African Literature of Berbero-Sudanese and Arabo-Islamic Africa.
221D. Franco-Caribbean Literature.
257A-257B. Studies in French-African Literature.

Geography 288. Africa.
290H. Middle East.
290I. Northern Africa.

Hebrew.*

History 200A-200B. History of Ancient Mesopotamia and Syria.
201A. History of the Eurasian Nomadic Empires.
203. History of Ancient Egypt in the Late Period.
204A-204B. History of the Church in the Middle Ages.
207. Armenian Intellectual History.
209A-209B. The Modern Middle East.
210A-210B. Morocco and Europe to the End of the French Protectorate.
210C. Morocco and Europe to the End of the French Protectorate.
210D. Morocco and Europe from the End of the French Protectorate to 1930.
211A-211B-211C. Islamic Iran.
230J. Advanced Historiography. The Near East.
230R. Advanced Historiography. Jewish History.
240J. Topics in History. The Near East.
240R. Topics in History. Jewish History.
267A-267B. Seminar in Near Eastern History.

† See Linguistics Department for complete listing and detailed description.

* See Department of Near Eastern Languages for complete listing and detailed description.

- 268A-268B. Seminar in Jewish History.
 282A-282B. Seminar in the History of Religions.
 283A-283B. Seminar in Ottoman and Modern Turkish History.
 596. Directed Studies.
 597. Directed Studies for Graduate Examinations.
- Islamic** 596. Directed Individual Study.
 597. Examination Preparation.
 598. Thesis Research and Preparation.
 599. Dissertation Research and Preparation.
- Linguistics** 220A. Linguistic Areas. Africa.
 225M. Linguistic Structures: Berber.
- Near Eastern Languages** 200A-200B-200C. Bibliography and Method of Near Eastern Languages and Literatures.
 241. Folklore and Mythology of the Near East.
 290. Seminar in Paleography.
 596. Directed Individual Study.
- Persian** 220A-220B. Classical Persian Texts.
 250. Seminar in Persian Literature.
 596. Directed Individual Study.
 597. Examination Preparation.
- Political Science** 250F. Seminars in Regional and Area Political Studies. Middle Eastern Studies.
 250K. North African Studies.

- Semitics** 201A-201B-201C. Old Ethiopic.
 202A-202B-202C. Readings in Old Ethiopic Literature.
 209A-209B-209C. Comparative Study of the Ethiopian Languages.
 210A-210B. Ancient Aramaic.
 215A-215B-215C. Syriac.
 220A-220B-220C. Ugaritic.
 240. Seminar in Akkadian Language and Literature.
 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.
 211. Ottoman Diplomatics.
 596. Directed Individual Study.
 597. Examination Preparation.
 599. Dissertation Research and Preparation.

■ ITALIAN

(Department Office, 340 Royce Hall)

- Fredi Chiappelli, Dottore in Lettere, *Professor of Italian*.
 Franco Fido, Dottore in Lettere, *Professor of Italian*.
 Pier-Maria Pasinetti, Ph.D., *Professor of Italian*.
 Charles Speroni, Ph.D., *Professor of Italian*.
 Franco Betti, Ph.D., *Assistant Professor of Italian*.
 Margherita Cottino-Jones, Ph.D., *Assistant Professor of Italian*.
 ———, *Assistant Professor of Italian*.
 ———, *Assistant Professor of Italian*.

- Mirella Cheeseman, Dottorato Università di Napoli, *Lecturer in Italian*.
 Mario Pietralunga, Dottorato Università di Bologna, *Lecturer in Italian*.
 Maria Russell, M.A., Dottorato Università di Roma, *Lecturer in Italian*.
 Althea Soli, M.A., *Lecturer in Italian*.

Preparation for the Major

Courses 1, 2, 3, 4, 5, 8A, 8B, 8C.

The Major

Required: 12 upper division courses as follows: 101A, 101B, 101C, 102, 103A, 103B, 113A, 113B, 113C, 120 and a choice of two

courses between 116A, 116B and 119A, 119B. Recommended: History 148A, 148B, upper division courses in another literature, philosophy or fine arts, one course in a second language (Latin, French, Spanish or German) at least at level 3.

Requirements for the Master's Degree

General Requirements. See page 139. The Department favors the Comprehensive Examination Plan, but, with departmental approval, the Thesis Plan may be followed. See page 142.

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 comprehensive examination.

2. Courses. Twelve courses with a minimum of nine in the 200 series, chosen from the following: 214, 215, 216A, 216B, 217, 218A, 218B, 219A, 219B, 220, 250A, 250B, 250C.

3. The Comprehensive Examination. One four-hour written examination 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 143.

Departmental Requirements.

1. Foreign Language. A student normally will pass this requirement by giving evidence

of successful completion of courses through at least level 3 in Latin, French, and either German or Spanish (subject to departmental approval). Students may also pass a reading examination in French, German, or Spanish. All language requirements must be fulfilled prior to taking the qualifying examinations. Qualifying examinations will be given in the second week of the fall and spring quarters.

2. Required Courses. In addition to those required for the master's degree, or equivalent: courses 201, 205A, 205B, 210A, 210B, 210C, and at least four other quarter courses from the seminar series: 250A-258B. In addition, the student will take such courses as his guidance committee will prescribe in preparation for the qualifying examinations, such as 596, 597, 599.

3. Fields of Specialization. The Department recognizes the following fields of specialization, from which *one major* and *two minor* fields will be selected. Medieval, Renaissance and Baroque, Modern.

4. Qualifying Examinations. Part I. An M.A. in Italian from UCLA is accepted as Part I of the Ph.D. qualifying examinations. Graduate students entering the Ph.D. Program in Italian with an M.A. from another University will take Part I at the end of their first graduate year at UCLA. This qualifying examination Part I is similar to the comprehensive examination for the M.A. (see page 142).

5. Qualifying Examinations. Part II. The qualifying examinations will consist of: one four-hour written examination in the candidate's major field; one four-hour written examination covering the two 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.

6. 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. Russell

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.

Mr. Pietralunga

5. Intermediate Italian.

Sections meet five hours weekly. Prerequisite: course 4 or four years of high school Italian.

Mr. Pietralunga

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. Solf in charge

25. Advanced Italian.

Sections meet five hours weekly. Prerequisite: course 5. A preparatory course for Italian composition.

Upper Division Courses

Twenty-four quarter units in Italian or the equivalent are required for admission to any upper division course. Upper division courses will be conducted mainly in Italian.

101A-101B-101C. Grammar and Composition.

Classes meet four hours weekly.

Mrs. Russell in charge

102. Italian Culture and Institutions.

Class meets four hours weekly. Aspects and trends of the Italian historical and cultural development studied in specific examples.

Mr. Pietralunga

103A-103B. Survey of Italian Literature.

Classes meet three hours weekly. An introduction to the principal authors, works and movements of Italian Literature.

Mr. Betti

113A-113B-113C. Dante's "Divina Commedia."

Classes meet three hours weekly.

113A. Inferno.

113B. Purgatorio.

113C. Paradiso.

Mr. Speroni

114A-114B. Italian Literature of the Middle Ages.

Classes meet three hours weekly. Emphasis on "Stil Novo," Dante's minor works, Petrararch and Boccaccio.

Mrs. Cottino-Jones

116A-116B. Italian Literature of the Renaissance.

Classes meet three hours weekly. Emphasis on Lorenzo De'Medici, Poliziano, Castiglione, Machiavelli, Ariosto, Tasso.

Mr. Betti

118. Italian Literature of the Eighteenth Century.

Class meets three hours weekly. Emphasis on Goldoni, Parini, Alfieri.

Mr. Fido, Mr. Pasinetti

119A-119B. Italian Literature of the Nineteenth Century.

Classes meet three hours weekly. Emphasis on Foscolo, Leopardi, Manzoni.

Mr. Pasinetti

120. Italian Literature of the Twentieth Century.

Class meets three hours weekly. From Verga to Contemporaries.

Mr. Betti, Mr. Fido

130. Advanced Grammar and Composition.

Class meets three hours weekly. Prerequisite: course 101C.

Mrs. Cottino-Jones

131. Reading and Reciting. (½ course)

Prerequisite: Consent of the instructor based on sufficient knowledge of the language.

Mrs. Solf

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.

100B. The Renaissance.

100C. From the Mannerism to the 20th Century.

Mr. Betti

110A-110B-110C. The Divine Comedy in English.

Classes meet three hours weekly.

110A. The Inferno.

110B. The Purgatorio.

110C. The Paradiso.

Mr. Speroni

140. Readings in the Italian Theatre in Translation.

Class meet three hours weekly.

Mr. Fido

150. Modern Italian Fiction In Translation.

Class meets three hours weekly.

The Staff

Graduate Courses

201. Bibliography and Methods of Research.

Course meets two hours weekly.

Mrs. Cottino-Jones

205A-205B. History of Italian Literary Criticism.

Course meets two hours weekly.

Mr. Fido

210A-210B-210C. Italian Philology, with Reading of Early Italian Texts.

Course meets two hours weekly.

214. Italian Literature of the Fourteenth Century.

Course meets three hours weekly.

Mrs. Cottino-Jones

215. Italian Literature of the Fifteenth Century.

Course meets three hours weekly.

Mr. Fido

216A-216B. Italian Literature of the Sixteenth Century.

Course meets three hours weekly.

Mr. Speroni

217. Italian Literature of the Seventeenth Century. Mrs. Cottino-Jones

218A-218B. Italian Literature of the Eighteenth Century. Mr. Pasinetti

Course meets three hours weekly.

219A-219B. Italian Literature of the Nineteenth Century.

Course meets three hours weekly. Mr. Fido, Mr. Pasinetti

220. Italian Literature of the Twentieth Century.

Course meets three hours weekly.

230A-230B. Folk Tradition in Italian Literature.

(Same as Folklore 230A-230B.) Course meets two hours weekly. Mr. Speroni

Seminars

250A-250D. Seminar on Dante.

Course meets three hours weekly. Mr. Fido, Mrs. Cottino-Jones

251. Seminar on Petrarch.

Course meets three hours weekly. Mrs. Cottino-Jones

252. Seminar on Boccaccio.

Course meets three hours weekly. Mr. Fido

253A-253B-253C. Seminar on Chivalric Poetry in Italy.

Course meets three hours weekly. The relationship between the genre and its French medieval

sources, with a study of its evolution in Italy, through Pulci, Boiardo, Ariosto, and Tasso.

Mr. Speroni

254. Seminar on Machiavelli.

Course meets three hours weekly. Mr. Fido

255A-255B. Seminar on the Baroque.

Course meets three hours weekly. Mrs. Cottino-Jones

256A-256B. Seminar on the Eighteenth Century.

Course meets three hours weekly. Mr. Fido, Mr. Pasinetti

257A-257B. Seminar on Romanticism.

Course meets three hours weekly. Mr. Pasinetti

258A-258B. Seminar on Contemporary Italian Literature.

Course meets three hours weekly.

370. Problems and Methods in the Teaching of Italian.

Course meets two hours weekly. Mrs. Russell

Individual Study and Research

596. Directed Individual Studies. (1 to 2 courses)

The Staff

597. Preparation for Comprehensive Examinations.

(1 to 2 courses) The Staff

599. Doctoral Research and Writing. (1 to 2 courses)

The Staff

■ JOURNALISM

(Department Office, 55C Social Welfare Building)

Robert E. G. Harris, M.A., *Professor of Journalism.*

William W. Johnson, M.A., *Professor of Journalism.*

Robert A. Rutland, Ph.D., *Professor of Journalism.*

Walter Wilcox, Ph.D., *Professor of Journalism.*

Joseph A. Brandt, M.A. (Oxon.), B.Litt. (Oxon.), LL.D., *Emeritus Professor of Journalism.*

Jack Lyle, Ph.D., *Associate Professor of Journalism.*

John M. Smith, M.A., *Assistant Professor of Journalism.*



Maury Green, B.A., *Lecturer in Journalism.*

James H. Howard, M.A., *Lecturer in Journalism.*

Robert R. Kirsch, M.A., *Lecturer in Journalism.*

Alan Landsburg, B.A., *Lecturer in Journalism.*

Kenneth O. Smith, Ed.D., *Lecturer in Journalism.*

Mel Stuart, B.A., *Lecturer in Journalism.*



Frank LaTourette, Litt.M., *Assistant Professor of Theater Arts.*

The graduate program in journalism prepares students for editorial careers in the mass media. Ordinarily, students have no previous journalistic experience and received

their undergraduate degree in a field other than journalism. Such students enroll in the 400-series courses for instruction in news writing and editing, and also take the pre-

scribed courses (191, 204, 260 or 268, and 274), along with a comprehensive examination in the spring quarter. Other students with journalistic experience may seek a degree by writing a thesis, or by substituting course work for the 400-series, and successful completion of the comprehensive examination. Students planning teaching careers usually have considerable experience as working newsmen and are encouraged to write a thesis. Thesis students who pass a foreign language examination receive the Master of Arts degree; others will receive the Master of Journalism degree.

Enrollment in the Television Documentary News program is limited to twelve students. These students must begin their professional program in the summer quarter, enrolling for Section 2 of Journalism 400 (News Communication 1). This is followed by 180, 410A, 410B, 401 (sec. 2) and 402 (sec. 2). Each student works on a documentary film which is submitted as part of the requirements for the Master of Journalism degree.

Students destined for the print media take the 400 series in fall, winter and spring quarters.

For undergraduates there is a series of recommended courses for those who desire a broader knowledge of journalism or who wish preparation for graduate training. A journalism adviser will counsel undergraduates regarding the recommended program.

All students seeking instruction should have a superior knowledge of the English language. Before admission as degree candidates, graduate students must take the Graduate Record Examination which is periodically conducted at selected centers throughout the nation.

Lower Division Course

2. Fundamentals of Journalism.

Lectures, field trips, and workshops. Survey of journalism principles and techniques.

Upper Division Courses

101. Reporting.

Lecture, two hours; laboratory, three hours. The news communication process including communications theory, media analysis, and audience analysis. Style, structure, and organization. Readability formulas. Laboratory: exercises and experiments in news communication.

112. The History of American Journalism.

History of the news media and their ancillary agencies with special attention to the news and information function. Course emphasizes historical context, including the main forces in development of the free press and social responsibility concepts.

180. Radio and Television News.

Lecture, two hours; laboratory, three hours. Prerequisite: course 2 or equivalent. Fundamentals of broadcast news; FCC regulations; network, station, and news agency problems and policies. Laboratory: exercises and experiments in preparing the newscast, with emphasis on television.

181. Reporting of Public Affairs.

Prerequisite: course 2 or equivalent. Reporting governmental functions with emphasis upon judicial, legislative and administrative procedures at the city and county level.

182A. Magazine Writing.

Analysis of the general magazine. Writing non-fiction articles: research, style and structure.

182B. Magazine Writing.

Continuation of course 182A. Prerequisite: course 182A or equivalent and consent of the instructor.

183. Fundamentals of Public Relations.

Analysis of institutional policy, definition of publics, attitudes measurement, communications and evaluation of results; functional and ethical considerations.

190. The Foreign Press.

Analysis of the four theories of the press; study of the flow of international news; analysis of the foreign media including problems of propaganda, governmental control, language and economic support.

191. Law of Mass Communications.

Basic laws affecting the press: First and Fourteenth amendments; libel, copyright, postal regulations, sedition, privacy, obscenity. Special laws affecting broadcasting. Required.

192. The Media of Mass Communications.

Institutional analysis of the mass media with emphasis upon the press and broadcasting the mass communications process; interaction with other institutions; critical evaluation.

195. The Critical Function of the Press.

Analysis and evaluation of the press in its role as critic of the popular arts, including television, books and motion pictures. Special lectures by professional critics.

Graduate Courses

204. Ethics and Responsibility in Mass Communications.

Critical evaluation of the mass media with respect to ethical practices and responsibility. Required for the master's degree.

207. Graphic Arts in Mass Communications.

Principles and theory of the graphic arts in journalism, including photography, typography, and charts and graphs; emphasis on research.

210. Advanced Graphic Arts in Mass Communications.

Prerequisite: course 207. Advanced concepts in graphic communications, including computer-based systems. Emphasis on experimentation and review of research literature. Analysis of experimental graphic techniques will include examination of their social implications.

252. Seminar in Editing the Newspaper.

Study of editing problems with some emphasis upon role of special editorial divisions (urban, finance, science, etc.); guest lecturers.

253. Seminar in the History of Mass Communications.

Study of the historical trends in the development of the mass media.

260. Seminar in Issues in the News.

Relates significant writing and the main trends in modern social, economic, and political history to the contemporary newsworthy issues.

268. The Reporter and Society.

Study of media performance in relation to main forces in the contemporary cultural pattern; emphasis upon the role of interpretive reporting. Required for the master's degree.

274. Theories of Mass Communications.

Study of mass communications process in terms of source, message, medium, context, audience, and response. Required for the master's degree.

275. Mass Communications Research.

Theory and techniques of mass communications research methods.

282. Seminar in Magazine Journalism.

Analysis of dominant techniques in writing for American news and special quality magazines, emphasizing story structure and unique reporting methods; influence of nationally circulated news magazines on newspaper journalism.

290. Seminar in International and Comparative Journalism.

Investigative studies of newspapers now publishing in selected countries—their performance, goals,

and influence are analyzed against the background of international affairs.

291. Seminar in the Law of Mass Communications.

Provides a framework for in-depth studies of changing concepts in laws affecting the mass media.

295. Journalism as Literature.

Studies of the interaction between journalism and literature since the 18th century, with an emphasis on style, literary trends, writer experience, and other influences.

Professional Courses

400. News Communication I.

Laboratory and field work in newspaper journalism and television news documentary productions.

401. News Communication II.

Continuation of News Communication I.

402. News Communication III.

Continuation of News Communication I and II.

410. Workshop in the Documentary Film.

Prerequisite: admission to the television documentary film program in the Department of Journalism. Students will plan and direct, under laboratory conditions, news and documentary films. Emphasis will be on creativity under simulated production conditions.

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 76 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 139.

Preparation. The degree of Bachelor of Arts in Latin American Studies, or its equiv-

alent, 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. Reading and speaking proficiency in Spanish and Portuguese are required. In certain cases a major Indian language (i.e. Quechua or Nahuatl) may be substituted for the latter.

Normally the thesis plan is followed. The thesis is required of all students intending to continue beyond the M.A. in Latin American Studies to a Ph.D. in a particular discipline (no Ph.D. is offered in Latin American Studies). However, students planning to make the M.A. their terminal degree have the option of completing their degree requirements with a comprehensive examination.

Course Requirements. Ten courses, seven of which must be in one "major" discipline, i.e. anthropology, art, economics, education, geography, history, political science, Spanish or Portuguese. The Interdisciplinary Seminar in Latin American Studies (250A-250B), required of all M.A. candidates, counts as two of these major courses. Further, a student whose seminar project is approved for field work leading to the thesis will be permitted to count his quarter of field work as one course within the major field. The thesis is written under the direction of a member of the staff participating in the Interdisciplinary Seminar. The optional comprehensive examination plan for terminal M.A. degree candidates requires a major in one discipline and a minor in another, both with Latin American content.

Normally all work toward the M.A. degree must be completed within five consecutive quarters. Potential doctoral candidates doing field work after participation in the Interdisciplinary Seminar must complete their M.A. in seven consecutive quarters.

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. Woods

250A-250B. Interdisciplinary Seminar in Latin American Studies.

Required of all candidates for the master's degree in Latin American studies. Problem-oriented on critical areas stressed in the University's cooperative programs in Latin America. Preparation of thesis and field study. Mr. Furst, Mr. Wilbert

Related Courses

- Anthropology** 107. Peoples of South America.
109. Indians of Modern Mexico and Peru.
117. Introduction to Nahuatl Language and Literature.
121. Latin American Societies.
193A. Ancient Civilizations of Western Middle America (Nahuatl Sphere).
193B. Ancient Civilizations of Eastern Middle America (Maya Sphere).
134. Ancient Civilizations of Andean South America.
199. (When concerned with Latin America).
207. Indians of South America.
214B. Linguistic Areas: Aboriginal South America.

257. Indians of South America.
264. Problems of Higher Cultures of Nuclear America.
265. Contemporary Latin American Problems.
271. Selected Topics in Historical Reconstruction and Archaeology. (When concerned with Latin America.)
272. Selected Topics in Prehistoric Non-agricultural Societies. (When concerned with Latin America.)
274. Selected Topics in Prehistoric Civilizations of the New World.
596. (When concerned with Latin America.)

Art 118B. The Arts of Pre-Columbian America.

198. (When concerned with Latin America.)

Dance 146. Dance in Latin America.

- 171J. Dance of Mexico.

Economics 108. Economic Demography.

110. Economic Problems of Underdeveloped Countries.
111. Theories of Economic Growth and Development.
112. Policies for Economic Development.
199. (When concerned with Latin America.)
211. Economic Growth of Underdeveloped Areas: Theory and Structure.
212. Economic Growth of Underdeveloped Areas: Models and Policy.
213D. Selected Problems of Underdeveloped Areas: Latin America.
596. (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.)
225. Seminar in Cultural Geography. (When concerned with Latin America.)
281. Latin America.
290B. Seminar in Regional Geography: Middle America.
290C. Seminar in Regional Geography: South America.

596. (When concerned with Latin America.)
- History** 162A-162B. Latin America in the 19th and 20th Centuries.
 163A-163B. The History of Brazil.
 166. The Mexican Revolution.
 168A-168B. Colonial Latin America.
 169. Diplomatic History of Latin America.
 199. (When Concerned with Latin America.)
 230I. Advanced Historiography: Latin America.
 240I. Topics in History: Latin America.
 266A-266B. Seminar in Latin American History.
- Indigenous Languages of Latin America** 117. Introduction to Nahuatl Language and Literature.
 118A-118B-118C. Elementary Quechua.
 119A-119B-119C. Intermediate Quechua.
- Law** 233. Comparative Law: Latin America.
- Music** 131. Music of Latin America.
 171J. Music and Dance of Mexico.
 259. Seminar in Music of Latin America.
- Political Science** 131. Latin American International Relations.
 139. Special Studies in International Relations. (When concerned with Latin America.)
 168A-168B. Government and Politics in Latin America.
 169. Special Studies in Comparative Government. (when concerned with Latin America.)
 198. (When concerned with Latin America.)
 199. (When concerned with Latin America.)
 250A. Latin American Studies.
- Portuguese** 101A. Advanced Reading and Conversation.
 121A-121B. Survey of Brazilian Literature.
 131. The Brazilian Novel.
 133. Brazilian Poetry.
 199. (When concerned with Brazil.)
 203. The Development of the Portuguese Language.
 236. Modern Brazilian Novel.
 253B. Studies in Luso-Brazilian Literature: Brazilian Authors.
- Public Health** 256B. Seminar in Comparative and International Health.
 290E. Special Group Studies: International Health.
- Sociology** 131. Latin American Societies.
 199. (When concerned with Latin America.)
- Spanish** 118. History of the Spanish and Portuguese Languages.
 121A-121B. Survey of Spanish American Literature.
 137. The Literature of Colonial Spanish America.
 139. Nineteenth Century Spanish American Literature.
 143. Spanish American Literature in the Twentieth Century.
 149. Folk Literature of the Hispanic World.
 151. Folk Song in Spain and Spanish America.
 160B. Hispanic Literature in Translation (Latin America).
 199. (When concerned with Latin America.)
 203. The Development of the Spanish Language.
 209. Dialectology.
 237. Chroniclers of the Americas.
 239. Neo-Classical and Romantic Prose and Poetry in Spanish America.
 240. The Modernist Movement.
 243. Contemporary Spanish American Poetry.
 244. Contemporary Spanish American Novel and Short Story.
 245. Contemporary Spanish American Essay.
 249. Hispanic Folk Literature.
 256B. Studies in Dialectology.
 277. Studies in Colonial Spanish American Literature.
 278. Studies in Nineteenth Century Spanish American Literature.
 280A-280D. Studies in Contemporary Spanish American Literature.
 286B. Studies in Hispanic Folk Literature: Narrative and Drama.
 286C. Studies in Hispanic Folk Literature: Ballad, Poetry and Speech.

■ LAW

(Department Office, 1224 Law Building)

Benjamin Aaron, A.B., LL.B., *Professor of Law and Director of the Institute of Industrial Relations.*

²⁹Norman Abrams, A.B., J.D., *Professor of Law.*

John A. Bauman, B.S.L., LL.B., LL.M., Jur.Sc.D., *Professor of Law.*

³⁰L. Dale Coffman, A.B., J.D., LL.M., S.J.D., *Professor of Law.*

William Cohen, A.B., LL.B., *Professor of Law.*

Jesse J. Dukeminier, Jr., A.B., LL.B., *Professor of Law.*

Kenneth W. Graham, Jr., B.A., J.D., *Professor of Law.*

Donald G. Hagman, B.S., LL.B., LL.M., *Professor of Law.*

Harold W. Horowitz, A.B., LL.B., LL.M., S.J.D., *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.*

Leon Letwin, Ph.B., LL.B., *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.*

³⁰Melville B. Nimmer, A.B., LL.B., *Professor of Law.*

Paul O. Proehl, A.B., J.D., M.A., *Professor of Law.*

Ralph S. Rice, B.S., LL.B., LL.M., *Connell Professor of Law.*

Herbert E. Schwartz, B.S., LL.B., *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.*

James E. Krier, B.S., J.D., *Assistant Professor of Law.*

Barbara B. Rintala, B.A., M.A., J.D., *Assistant Professor of Law.*

Lawrence G. Sager, B.A., LL.B., *Assistant Professor of Law.*

Michael E. Tigar, B.A., J.D., *Assistant Professor of Law*



Michael R. Asimow, B.S., LL.B., *Acting Professor of Law.*

Robert C. Casad, A.B., MA., J.D., *Visiting Professor of Law.*

William A. Klein, A.B., LL.B., *Visiting Professor of Law.*

Wesley J. Liebeler, B.A., J.D., *Acting Professor of 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.*

Luis Schuchinski, B.A., LL.B., *Acting Associate Professor of Law.*

Robert A. Stein, B.S.L., J.D., *Visiting Professor of Law.*

John M. Suarez, M.D., *Assistant Professor of Psychiatry.*

¹⁰ Absent on leave, fall and winter quarters, 1969-1970.

LIBRARY SERVICE

(Department Office, 326 Powell Library Building)

- Harold Borko, Ph.D., *Professor of Library Service.*
 Robert L. Collison, F.L.A., *Professor of Library Service.*
 Robert M. Hayes, Ph.D., *Professor of Library Service.*
 Andrew H. Horn, Ph.D., *Professor of Library Service (Chairman of the Department).*
 Robert Vosper, M.A., *Professor of Library Service.*
 Seymour Lubetzky, M.A., *Emeritus Professor of Library Service.*
 Lawrence Clark Powell, Ph.D., Litt.D., L.H.D., *Emeritus Professor of Library Service.*
 Raymund F. Wood, Ph.D., *Associate Professor of Library Service.*
 †Raymond K. Olding, F.L.A.A., *Assistant Professor of Library Service.*
 ———, *Assistant Professor of Library Service.*



- Elizabeth R. Baughman, M.A., *Lecturer in Library Service.*
 Jerome Cushman, A.B., B.S.L.S., *Senior 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. M. Edelstein, M.A., *Lecturer in Library Service.*
 Elizabeth R. Eisenbach, M.L.S., *Lecturer in Library Service.*
 G. Edward Evans, M.A., *Acting Assistant Professor of Library Service.*
 Everett T. Moore, M.A., *Lecturer in Library Service.*
 Betty Rosenberg, M.A., *Lecturer in Library Service.*
 Johanna E. Tallman, A.B., C.L., *Lecturer in Library Service and Engineering Bibliography.*

Representatives of Other Departments on the Faculty of the School of Library Service

- Hugh G. Dick, Ph.D., *Professor of English.*
 B. Lamar Johnson, Ph.D., *Professor of Education.*
 Michel A. Melkanoff, Ph.D., *Professor of Engineering.*
 C. D. O'Malley, Ph.D., *Professor of Medical History.*
 Richard H. Rouse, Ph.D., *Assistant Professor of History.*
 Gustave E. von Grunebaum, Ph.D., *Professor of History.*

For information regarding admission to the School of Library Service and for requirements for the degrees Master of Library Science, Master of Science in Information Science (Documentation), or the Certificate of Specialization in Library Science, refer to the paragraphs on the School of Library Service under Schools and Colleges.

Graduate courses. 200-series. Consent of instructor is prerequisite to admission to all 200-series courses. For individual study courses, see 500-series. For professionally oriented courses, see 400-series.

Professional courses. 400-series. Planned primarily for the professional degree,

Master of Library Science, and for specialized professional study. Required for the M.L.S. degree are 400, 402, 404, 410, 411, 420, 421, 430 and four additional courses in the 200-, 400-, or 500-series selected with the approval of the candidate's faculty adviser.

Professional internship courses. 490-series. M.L.S. degree and consent of the Dean of the School of Library Service are prerequisite to admission. May not be applied in satisfaction of course requirements for a degree. Open to certificate candidates only.

Individual study courses. 500-series. Approval of the Dean of the School of Library Service is prerequisite to admission to all 500-series courses. Method of

† Absent on leave, 1969-1970.

instruction is by individual conferences with assigned members of the staff. Seminar courses are numbered in the 200-series.

Graduate Courses

205. History of Library Technology.

(Formerly numbered 213.) Seminar on the history of library techniques, methods, organization, equipment, architecture, legislation, and standards. Excluded is the traditional history of library founders, donors and collection development.

207. Seminar on Comparative Librarianship.

(Formerly numbered 240.) Library development and service patterns in European and other countries; comparisons of these with librarianship in the United States. Interlibrary cooperation between types of libraries and also between libraries of different political jurisdictions, including international cooperation.

210. Descriptive and Bibliographical Cataloging.

Bibliography and cataloging. Development of Anglo-American cataloging rules and international developments. Analysis of cataloging purposes, problems and principles. Evaluation of governing rules. Problems and potentialities of automation.

211. Subject Cataloging and Comparative Classification.

Bibliographic and subject control of collections. Subject headings and classification systems. Alphabetical and classed subject catalogs and indexes. Subject heading lists, thesauri, etc. D.C., U.D.C., Cutter, L.C., Bliss, Colon, and other classification systems. Automation of subject control.

213. Seminar on Indexing.

Prerequisite: consent of the instructor. Development of basic concepts as reflected in the history of scholarship. Current problems in the transition from individual to large-scale indexing projects. Contribution made by automation. Future of mechanized indexing. Trend toward international standardization. Acceleration systems in indexing.

214. Seminar on Abstracting and Abstracting Services.

Prerequisite: consent of the instructor. Historical background and current situation, particularly in science and technology. Possibilities and present limitations of automation. Role in coordination of information services. Problems of standardization to achieve international coordination. Influence of changing needs.

215. Seminar on Cataloging and Classification.

History of cataloging and classification and special problems in cataloging and classification.

221. Bibliography of Science, Engineering and Technology.

(Formerly numbered 217.) Scientific and technical literature, with emphasis on special types of publications, research material, reference and bibliographical aids to the physical sciences. Importance, purpose and nature of technical literature searches. Flow of information among scientists.

222. Bibliography of the Medical and Life Sciences.

(Formerly numbered 218.) Literature of the medical and life sciences: reference and bibliographical works; periodicals, serials and the abstracts and indexes to them; notable books in the history of the biomedical sciences; patterns of publication; applications of technological developments in the control of the biomedical literature.

223. Literature of the Social Sciences.

(Formerly numbered 219.) Seminar on the literature of the social sciences, including a review of the classics in the various fields, monumental source collections, periodicals, bibliographies, catalogs, indexes, abstracts, etc. Trends in scholarly and popular writing. Interdisciplinary nature of the literature.

224. Literature of the Humanities and Fine Arts.

(Formerly numbered 220.) Seminar on the literature of the humanities and fine arts, including a review of the classics in the various fields, comparisons of editions, periodicals, bibliographical apparatus and reviewing media. Trends in scholarly and popular writing.

230. Publishing and the Book Trade.

Publishing and book trade history, ancient to modern times, with particular reference to book collecting and libraries. Changing aspects of book production and distribution, emphasizing modern methods. Retail book trade, new and antiquarian; book auctions.

240. Information Systems Analysis and Design.

(Formerly numbered 243.) Theories and principles of special systems development, including determination of requirements, technical design and evaluation, and internal organization.

241. Management Information Systems.

Survey of information systems for the management of large scale projects and organizations, including systems for progress reporting, file control, and documentation.

242. Information Retrieval Systems.

Survey of principal specialized vocabularies, methods of file organization, and search strategies in the control of publications in mechanized form.

243. Data Base Systems.

Survey of methods for developing, implementing and operating mechanized data base systems such as socioeconomic data banks and technical data banks.

249. Seminar in Information Science.

(Formerly numbered 293.) Specialized studies in problem areas of information science: vocabulary development, representation coding, file organization and indexing, classification systems, searching procedures, measurement of relevancy, data reduction and presentation, and communication. May be repeated once for credit.

251. Reading and Reading Interests.

(Formerly numbered 215.) Interests of the common reader, excluding children, with special reference to types of library patrons. Fiction and subject categories, popular and standard: philosophy, religion, social sciences, art, music, literature, history, science. Influence of paperbacks, best sellers and current interest books on reading habits.

253. Special Studies in Children's Literature.

(Formerly numbered 209.) Special studies in children's books and reading interests. Historical backgrounds and development of: types of children's literature, folklore and oral tradition, levels of interest, criticism and evaluation, illustration, bibliography.

260. Historical Bibliography.

(Formerly numbered 211.) Early records and the manuscript period; history of the printed book and of periodical publications and newspapers, including materials and methods and production. Parallel history of scholarship, the book trade, and book collecting in ancient, medieval and modern Western civilization.

261. Analytical Bibliography.

History and methods of analytical bibliography with emphasis on recent scholarship. The book as a physical object and its relationship to the transmission of the text. Emphasis on hand-press books. Theories of Bradshaw, Proctor, Greg, McKerrow, Pollard, Esdaile, Bowers, Stevenson, Hinman, McKenzie, and others. Lectures, discussion, press demonstrations, and a written report on a bibliographical problem.

271. Seminar on Intellectual Freedom.

Prerequisite: consent of the instructor. Investigation of the idea of intellectual freedom: historical and constitutional bases; civil liberties and civil rights; censorship and other restraints on freedom of speech, the press, the arts, and access to ideas and information.

272. Seminar on Libraries in a Changing Society.

Prerequisite: consent of the instructor. Changing requirements for education, reeducation, information, cultural enrichment, and communication in response to changes in social, economic, intellectual and political environments. Effects of technological advances, population shifts, and population trends.

Professional Courses**400. Introduction to Librarianship.**

(Formerly numbered 203.) Introduction to the history of libraries and information centers, including their current status, organization, and problems. Professional education and research. Library literature and its bibliographical control. Trends in administration and management, national networks, standards, legislation, technology.

402. Introduction to Bibliography.

(Formerly numbered 200.) History of bibliography. Classification: historical, physical or critical (descriptive, analytical), enumerative or systematic, bibliographical apparatus, organization and control. Relationship to cataloging. New techniques and tools. Theory, methods, trends in bibliographical research.

404. Introduction to Information Science.

Scope of the information sciences and their relationship to libraries, information centers, information handling. Methods of systems analysis as applied to library operations; case studies of library systems, clerical operations, and information retrieval. Survey of data processing equipment.

410. Descriptive Cataloging.

(Formerly numbered 201A.) Entry and description of library materials. Constitution, structure, and

form of the library catalog. Cataloging services, tools, and procedures. Cataloging rules and their application.

411. Subject Cataloging and Classification.

(Formerly numbered 201B.) Subject treatment of library materials. Structure of subject heading lists and their application. Organization of the subject catalog. Structure and application of the Dewey Decimal and Library of Congress classification systems. Organization of the classed catalog and the shelflist.

412. Cataloging and Classification of Special Materials.

(Formerly numbered 201C.) Problems in cataloging and classification of audio-visual and other non-book materials (e.g., manuscripts, maps, microforms, motion pictures, pictorial works, sound recordings, magnetic tapes) as separate collections and/or as parts of general collections.

420. Basic Sources of Information.

(Formerly numbered 202A.) History, methods and materials of reference service and information retrieval. Survey of devices for bibliographical control of information. Encyclopedias, dictionaries, biographical compilations, directories, etc.

421. Comprehensive Bibliography.

(Formerly numbered 202B.) Analysis and evaluation of bibliographical control of published and unpublished documents (books, periodicals, government publications, dissertations, reports, manuscripts). Systems of national bibliography, trade bibliography, indexing, abstracting, etc. American, British, French, German, Russian and other systems. Information retrieval using this apparatus.

422. Secondary Bibliography.

(Formerly numbered 202C.) Comparative analysis of the organization of information sources in the humanities, fine arts, social sciences, life sciences, physical sciences and technologies. Problems of special libraries and information centers; reference and research service in general research libraries.

430. Selection and Acquisition of Library Materials.

(Formerly numbered 204.) Background of publishing and the book trade (new and antiquarian) pertinent to order departments of public, school, academic and special libraries. Theory and practice of selecting and ordering books and other materials. Organization and administration of order departments.

431. Special Problems in the Selection of Materials and Evaluation of Collections.

(Formerly numbered 205.) Subject and area collecting; special collections and rare books; building new collections. Evaluating and weeding collections. Cooperative collecting—regional, national and international. Storage centers; subject specialization. Special format materials: films, maps, sound recordings, etc. Copying methods; facsimile reprinting; changing character of research collections.

440. Data Processing in the Library.

(Formerly numbered 406.) Principles of application of data processing technique to library procedures. Survey of available equipment and computation components; methods of using them with em-

phasis on programming in PL/1. Evaluation of specific programs and systems for various library clerical and administrative processes.

441. Management of Libraries.

Prerequisite: consent of the instructor. Principles of management, emphasizing management techniques applicable to libraries of various types and to library systems. Special attention to aspects of technical services.

461. College, University and Research Libraries.

(Formerly numbered 401.) Organization, administration, collections, facilities, finances, and problems of college and university libraries and their relationships within the institutions of which they are a part. Functions of research libraries and work of their staffs in serving scholars.

463. Public Libraries.

(Formerly numbered 402.) The government, organization, and administration of municipal, country, and regional public libraries; developments in the changing patterns of public library service.

464. School Libraries.

(Formerly numbered 403.) A general survey of elementary and secondary school libraries. Emphasis on the function, administration, organization, services, materials, and the planning and equipment of school libraries in relation to the modern school.

465. Children's Libraries.

(Formerly numbered 404.) Public library service to children and young people. Function, administration, organization, services, materials, planning and equipment of children's libraries in relation to the public and school library.

470. Special Libraries and Special Collections.

(Formerly numbered 405.) Organization, administration, collections, facilities, finances and problems of special libraries and of special collections within general libraries. Methods of handling non-book materials. Current trends in documentation and mechanization.

471. Medical and Biological Libraries.

(½ course)

(Formerly numbered 418.) Required for Grade 1 certification by Medical Library Association, and enrollment limited to candidates for this certificate. Organization, administration, services and problems of biomedical libraries; relationships with institutions of which they are a part, and with the community.

479. Libraries and Literature of the Southwest.

(Formerly numbered 241.) Special readings, reports and discussions on the history, resources, and problems of libraries in the southwestern United States and northwestern Mexico. Literature of the Southwest.

481. Information Centers.

Prerequisite: consent of the instructor. Organization, administration, services, and problems in the

operation of information centers and agencies concerned with research information science. Brief internship training in Institute of Library Research. Observation of on-campus and off-campus information centers.

Professional Internship Courses

490. University Library Internship.

Supervised professional training in one or more departments of the UCLA College Library or University Research Library. Field trips, when appropriate, to other libraries (e.g., Clark, Huntington, etc.). Minimum of 120 hours per quarter, including weekly critiques of bibliographical, administrative and service problems. Written reports; final oral examination. May be repeated twice.

491. Medical Library Internship.

(Formerly numbered 449M.) Supervised library service, at a professional level, in the UCLA Biomedical Library for a minimum of 120 hours per quarter, including weekly critiques of bibliographical administrative and service problems. Written reports, final oral examination. May be repeated twice.

492. Science and Engineering Library Internship.

(Formerly numbered 449S.) Supervised library service, at a professional level, in the UCLA Engineering and Mathematical Sciences Library for a minimum of 120 hours per quarter, including weekly critiques of bibliographical, administrative and service problems. Written reports, final oral examination. May be repeated twice.

Individual Study Courses

596. Directed Individual Study or Research.

(½ or 1 course)

Directed special studies in the fields of bibliography, librarianship, and information science. Report of studies to be planned for publication. Variable conference time and unit credit, depending upon complexity of research project. May be repeated to a total of two courses.

597. Preparation for the Master's Comprehensive Examination.

Directed study in preparation for the Comprehensive Examination, M.L.S. degree. Readings, conferences, reports. To be graded S/U.

598. Research for and Preparation of the Master's Thesis. (½ or 1 course)

Research and writing leading to the Master's Thesis in Information Science (Documentation). May be repeated to a total of two courses. To be graded S/U.

Related Courses in Other Departments

Education 329. Supervised Library Service.

441D. Junior College Administration.

English 112. Children's Literature.

■ LINGUISTICS

(Office, 6292 Graduate School of Business Administration Building)

- William Bright, Ph.D., *Professor of Linguistics and Anthropology.*
 Peter Ladefoged, Ph.D., *Professor of Phonetics.*
 Robert P. Stockwell, Ph.D., *Professor of Linguistics (Chairman of the Department).*
 William E. Welmers, Ph.D., *Professor of Linguistics and African Languages.*
 Paul M. Schachter, Ph.D., *Associate Professor of Linguistics.*
 George D. Allen, Ph.D., *Assistant Professor of Phonetics.*
 George D. Bedell, Ph.D., *Assistant Professor of Linguistics.*
 Karen R. Courtenay, Ph.D., *Assistant Professor of Linguistics and African Languages.*
 Victoria A. Fromkin, Ph.D., *Assistant Professor of Linguistics.*
 Daniel P. Kunene, Ph.D., *Assistant Professor of African Languages.*
 Barbara H. Partee, Ph.D., *Assistant Professor of Linguistics.*
 ———, *Assistant Professor of Linguistics.*
 ———, *Assistant Professor of Linguistics.*
 ———, *Assistant Professor of Linguistics.*
 ———, *Assistant Professor of Linguistics and African Languages.*



- Sandra S. Annear, M.A., *Acting Assistant Professor of Linguistics.*
 Pavle Ivić, Ph.D., *Visiting Professor of Linguistics and Slavic Languages.*
 Martin Kay, Ph.D., *Lecturer in Linguistics.*
 Frederick Longan, M.A., *Lecturer in African Languages.*



- Raimo A. Anttila, Ph.D., *Assistant Professor of Indo-European Studies.*
 Bradford Arthur, Ph.D., *Assistant Professor of English.*
 Henrik Birnbaum, Ph.D., *Professor of Slavic Languages.*
 J. Donald Bowen, Ph.D., *Professor of English.*
 Giorgio Buccellati, Ph.D., *Assistant Professor of Ancient Near East.*
 William E. Bull, Ph.D., *Professor of Spanish.*
 Russell N. Campbell, Ph.D., *Assistant Professor of English.*
 Edward C. Carterette, Ph.D., *Associate Professor of Psychology.*
 Kenneth G. Chapman, Ph.D., *Associate Professor of Scandinavian Languages.*
 Walter J. Dowling, Ph.D., *Assistant Professor of Psychology.*
 Janos Eckmann, Ph.D., *Professor of Turkish.*
 Harry Hoiyer, Ph.D., *Professor of Anthropology.*
 Wolf Leslau, Docteur-ès-Lettres, *Professor of Hebrew and Semitic Linguistics.*
 Donald G. MacKay, Ph.D., *Assistant Professor of Psychology.*
 Lois McIntosh, Ph.D., *Associate Professor of English.*
 C. P. Otero, Ph.D., *Associate Professor of Spanish.*
 Thomas G. Penchoen, Ph.D., *Assistant Professor of Near Eastern Languages.*
 Clifford H. Prator, Ph.D., *Professor of English.*
 Jaan Puhvel, Ph.D., *Professor of Indo-European Studies.*
 Earl Rand, Ph.D., *Assistant Professor of English.*
 Stephen P. Schwartz, Ph.D., *Assistant Professor of German.*
 Andreas Tietze, Ph.D., *Professor of Turkish.*
 Terence H. Wilbur, Ph.D., *Assistant Professor of German.*
 Robert Wilson, Ph.D., *Assistant Professor of English in Residence.*
 Dean S. Worth, Ph.D., *Professor of Slavic Languages.*

The Undergraduate Major

This major should be elected only by students with an exceptional interest in and aptitude for the study of languages and linguistics. It enables the undergraduate to gain substantial familiarity with several languages and types of linguistic structure, and to become conversant with the historical study of language and formal theories of linguistic analysis.

Preparation for the Major. In the lower division, in addition to the general University requirements, the student must complete the equivalent of the sixth quarter of work in two foreign languages, or the sixth quarter in one language and the third quarter in each of two others; Philosophy 31; and one course in Cultural Anthropology.

Requirements for the Major. A minimum of fourteen upper division courses of which nine must be in the Department of Linguistics. These nine must include Linguistics 100, 103, 110, 120, 160 and 190. The remaining eight courses must include English 121 and 122; three courses in a non-Indo-European language (which may, but need not, be in the Department of Linguistics, which offers African languages, Quechua, Thai, Hindi, and Tagalog); and three courses selected from Linguistics 105, 125, 150, 170, 180, 185A-185B, Indo-European Studies 160, 161, 162, Philosophy 127A, 127B, 192, Psychology 122, Speech 103; or upper division courses in any foreign language for which the student's lower division preparation qualifies him.

The Graduate Linguistics Program

The Programs leading to the M.A. and Ph.D. degrees in linguistics are open to qualified graduate students who are interested in the theory and methods of structural and historical linguistics. Preparation for graduate study in linguistics should be equivalent in as many respects as possible to the undergraduate curriculum in linguistics.

Admission to the Program

In addition to meeting the requirements of the Graduate Division, the applicant should have (1) an A.B. degree in linguistics or in a language or social science field, and (2) must have completed Linguistics 100 and 120 or their equivalents. For Programs A, B, and C, Linguistics 103 and 110 are also required. Letters from the applicant's former instructors should be provided, and the ap-

plicant should submit to the Chairman a detailed account of his aims in graduate study of linguistics and his background for it. A sample of the applicant's research should be submitted to the chairman (e.g., a term paper from some relevant course). 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 a graduate adviser about the planning of his studies.

Requirements for the Master's Degree

General Requirements. See those of the Graduate Division.

Plan and Language Requirements. All candidates for the M.A. degree in linguistics are required to pass a comprehensive examination in accordance with the Comprehensive Examination Plan to be taken during the quarter following the completion of the courses required for the degree. During that quarter the student should ordinarily register for Linguistics 597, Preparation for Master's Comprehensive and Doctoral Qualifying Examinations. The comprehensives are offered twice a year, toward the end of the fall and spring quarters. A reading examination in one foreign language, ordinarily French, German, Spanish, or Russian, is required. With permission of the chairman, the candidate may substitute another language.

The M.A. degree is offered under four programs. These are programs (A) with theoretical and descriptive specialization, (B) with language-specific historical/comparative specialization, (C) with phonetic/experimental specialization, and (D) with specialization in relation to the teaching of English as a Second Language (TESL). These programs have little flexibility, since they are designed to provide the foundation necessary for advanced doctoral-level research in the field and must include all the fundamental theoretical and methodological concepts needed for that purpose. However, students with equivalent training may be exempt from any of the required courses and permitted to take other graduate courses in preparation for the comprehensive examinations. Programs A, B, and C are designed to lead on to the Ph.D. for students who intend to teach in colleges and universities. Program D is primarily for students who desire advanced training in lin-

gistics for its utility to other careers, such as the teaching of language. Those who take the M.A. degree in Program D may, on the recommendation of the faculty of the Department, proceed to the Ph.D., but they will not be eligible for qualifying examinations until they have completed the course requirements listed for one of the other programs.

1. Program A: Nine courses as follows: Linguistics 200A, 200B, 202, 205A, 205B, 210A, 210B; one option selected from 215, 220, or 225; and a second option selected from 215, 220, 225, 230A, 230B, or 235. Because these courses are arranged with interlocking prerequisites, the normal sequence in which they should be taken by full-time students is the following: fall—200A, 202, 205A; winter—200B, 205B, 210A; spring—210B and two options as above. Students who cannot carry a full course program and wish to spread their programs over a longer period will normally sequence their courses as follows: first year, fall—200A, 205A; winter—200B, 210A; spring—210B and one option; second year, fall—202 and one option; winter—205B.

2. Program B: Language-Specific Historical/Comparative Specialization. Program B is geared to the needs of those candidates who wish to combine work in general linguistic theory with in-depth studies in historical methodology and the comparative investigation of specific language families or sub-families. To this end the candidate must possess adequate advanced training in the language area of his choice and must select one of the fields currently designated for specialization. These fields are Ancient Indo-European, Germanic including English, Semitic, and Turkic. Others such as Romance and Finno-Ugric will be added as available staff permits.

Program B requires three areas of theoretical and descriptive work: phonology (courses 200A and 200B), grammar (courses 205A and 205B), and historical linguistics (course 202). The additional four courses required for the degree are chosen in consultation with appropriate advisers (Ancient Indo-European: Professors Anttila, Birnbaum, Puhvel, Schwartz, Wilbur, Worth; Germanic including English: Professors Chapman, Schwartz, Stockwell, Wilbur; Semitic: Professors Leslau, Buccellati; Turkic: Professors Tietze, Eckmann). The four courses in the language specialization must be selected from the following lists: for

Ancient Indo-European: Indo-European Studies 210 and three courses from Indo-European Studies 170 (or more advanced), 215A–215B, 218A–218B, 220A–220B, 222A, 224, 225, 230A, Armenian 130A (or more advanced), German 231, Slavic 201; for Germanic including English: German 230, English 210; one course chosen from German 231, 232, 233, Scandinavian 151 (or more advanced); one course chosen from German 217, English 212; for Semitic: two full course equivalents chosen from Semitics 280A–280B–280C and 290A–290B–290C and one advanced language course in each of two Semitic languages, chosen in consultation with the adviser; for Turkic: two full course equivalents chosen from Turkish 110A–110B–110C and 190A–190B–190C, and one advanced course in each of two Turkic languages, chosen in consultation with the adviser.

3. Program C: Nine courses as follows: Linguistics 200A, 200B, 205A, 205B, 210A, 210B, 225R, 230A, and 230B. Program C should be elected only if the candidate intends to pursue the doctorate in the phonetics channel.

4. Program D: Nine courses taken as graduate work, as follows: Linguistics 103, Linguistics 120; four courses selected from Linguistics 200A, 200B, 205A, 205B, 210A, 210B; three courses selected from the preceding or from Linguistics 110, 140, 202, 215–235, 260K, 261K, English 122 or 213, English 241, 250K. At least five of the nine courses must be graduate courses (200 series). Because most students in Program D have either taken the Certificate in the Teaching of English as a Second Language (the TESL certificate) in the year preceding their M.A. work in linguistics, or wish to combine the M.A. in linguistics with considerable advanced study in the English language and in English as a Second Language, consideration should be given to the following aspects of planning such a combined program: during the TESL year, students should complete all undergraduate linguistics deficiencies, in particular Linguistics 100 and 120; if they do not take a TESL year but wish to include key courses from the TESL program, they should take Linguistics 100 and 120 before the fall quarter (e.g., during the preceding summer session); and they should consult with a graduate adviser in the TESL program, as well as with an adviser in the Linguistics Department, regarding the planning of their programs.

Requirements for the Doctor's Degree

Candidates for the Ph.D. degree in linguistics must have earned with distinction the M.A. degree in linguistics under Programs A, B, or C (or their equivalent, as demonstrated by passing the M.A. comprehensive examination), and must conform to the general requirements set by the Graduate Division for the Ph.D. degree.

Every candidate must take written qualifying examinations (which may be in the form of specialized research papers) and oral qualifying examination, in specified doctoral fields, as follows: If the student has come out of Program A and wishes to pursue the doctorate in the general linguistics channel, one field must be general linguistic theory. He must have two other fields, of which one is normally a specific language area, by which is meant one or two languages studied in depth, plus all that is known of their genetic, areal, and typological relationships to other languages; and the other is selected from mathematical and/or computational linguistics, sociolinguistics and/or ethnolinguistics, experimental and/or general phonetics, historical and comparative linguistics, psycholinguistics, or linguistics in relation to language teaching (the last two often combined).

If he has come out of Program B and wishes to pursue the doctorate in the historico-comparative channel, the student selects two fields, one of which is general linguistic theory and the other is the historico-comparative aspects of his Program B language specialization.

If he has come out of Program C and wishes to pursue the doctorate in the phonetics channel, the student selects two fields, one of which is general linguistic theory and the other is general and experimental phonetics, including detailed phonetic investigation within some particular language area.

Candidates in Programs A and C are expected to acquire experience in linguistic field work, in the course of which they may collect data for a dissertation.

(The dissertation and the final oral examination are required in accordance with the requirements of the Graduate Division.) Before the dissertation is begun, the subject must be approved by the faculty of the Department, on the basis of a prospectus submitted to the candidate's doctoral committee, with a copy to the Department. Prerequisite to such approval is a presentation by the candidate of the proposal and the prelim-

inary 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. The section on South Asian Languages offers instruction in Thai, Tagalog, and Hindi.

General Linguistics

Lower Division Courses

1. Introduction to the Study of Language.

A summary of what is known about human language: the unique nature of human language, its structure, its universality, and its diversity; language in its social and cultural setting; language in relation to other aspects of human inquiry and knowledge.

Miss Annear, Mr. Bedell, Mrs. Fromkin

2. Linguistics and Minority Dialects.

Prerequisite: course 1. A survey of the main features of vocabulary, grammar, and pronunciation which distinguish the usage of Afro-American and Spanish-American speakers of English, and their historical origins.

Mr. Bright

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.

The Staff

103. Introduction to General Phonetics.

The phonetics of a variety of languages and the phonetic phenomena that occur in languages of the world. Extensive practice in the perception and production of such phenomena. A special section emphasizes those languages likely to be of interest to teachers of English as a Second Language.

Mr. Allen, Mrs. Fromkin, Mr. Ladefoged

105. Science of Speech.

(Same as Speech 104.) Prerequisite: course 100. An introduction to the anatomy and neuro-physiology

of the speech organs in relation to the acoustic characteristics of the speech signal.

Mr. Allen, Mrs. Fromkin

110. Introduction to Historical Linguistics.

(Formerly numbered 171. Same as Anthropology 113 and Indo-European Studies 149.) Prerequisite: course 100. The methods and theories appropriate to the historical study of language, such as the comparative method and method of internal reconstruction. Sound change, grammatical change, semantic change.

Mr. Anttila, Mr. Bright, Mr. Stockwell

120. Linguistic Analysis.

(Formerly numbered 173. Same as Anthropology 114.) Prerequisite: course 100. Descriptive analysis of phonological and grammatical structures.

Miss Annear, Mr. Bedell, Mr. Bright

123. Psycholinguistics.

(Same as Psychology 123.) A survey of current theory and research in psycholinguistics: the description of language in generative grammars; the acquisition of language by children; experiments on speech recognition, production and comprehension; errors in speech perception and production; speech physiology and pathology.

Mr. Dowling

125. Cybernetics and Human Communication.

An introductory survey of the communication process from the point of view of linguistics, mathematics, engineering, physiology, and psychology.

Mr. Allen, Mrs. Fromkin, Mr. Ladefoged

140. Linguistics in Relation to Other Disciplines.

(Formerly numbered 172.) Prerequisite: course 100. The role of linguistics in language learning, communications engineering, translation, literary criticism, psychology, and psychotherapy; recent developments in applied linguistics.

The Staff

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. Pulvel

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.

Mr. Bedell, Mrs. Fromkin

170. Language and Society: Introduction to Sociolinguistics.

(Same as Sociology 127.) Prerequisite: course 100. Study of the patterned covariation of language and society; social dialects and social styles in language; problems of multilingual societies.

Mr. Bright

180. Mathematical Backgrounds for Linguistics.

Prerequisite: course 120. Introduction to selected topics in set theory, logic and formal systems, modern algebra, and automata theory, with elementary applications to linguistics. No previous mathematics assumed.

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185A-185B. Linguistic Field Methods in Anthropology.

(Same as Anthropology 185A-185B.) Prerequisite: course 100; course 185A is prerequisite to 185B. An introduction to linguistic field methods and analysis intended to prepare students to record and analyze linguistic data pertinent to ethnological studies. Informants will be used and emphasis will be placed on practical problems.

Mr. Hoijer

190. Language in Culture.

(Same as Anthropology 110.) The study of language as an aspect of culture; the relation of habitual thought and behavior to language; the problem of meaning.

Mr. Bright, Mr. Hoijer

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, having been approved by the Graduate Council as nonrepetitive in content.

200A. Phonology I.

(Formerly numbered 200.) Prerequisite: courses 103 and 120. The nature of phonological theory; the relation between phonological and phonetic units; traditional and current views of phonological theory.

Mrs. Fromkin, Mr. Ladefoged

200B. Phonology II.

(Formerly numbered 203.) Prerequisite: course 200A. Generative phonology and phonological universals.

Mr. Bedell, Mr. Schachter

202. Historical Linguistics.

(Same as Indo-European Studies 209.) Prerequisite: course 110 or equivalent. Advanced study of the comparative method, historical and internal reconstruction, internal and external borrowing.

Mr. Anttila, Mr. 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.

Miss Annear, Mr. Bedell, Mr. Kay

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.

Miss Annear, Mr. Bedell, Mr. Kay

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, Mr. Schachter, Mr. Welmers

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, Mr. Schachter, Mr. Weimers

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.

Mr. Ivić

220. Linguistic Areas.

Prerequisite: course 120; recommended preparation: courses 200B and 205A; may be repeated, in different sections, for credit. Analysis and classification of languages spoken in a particular area. Offered in one or more of the following sections each year.

The Staff

220A. Africa. (Formerly numbered 216.)

*220B. The Balkans.

220C. South Asia. (Formerly numbered 218.)

*220D. Southeast Asia. (Formerly numbered 221.)

*220E. Australia.

220F. Aboriginal North America. (Formerly numbered 214. Same as Anthropology 214A.)

*220G. Aboriginal South America. (Same as Anthropology 214B.)

*220H. The Far East. (Formerly numbered 219.)

225. Linguistic Structures.

Prerequisite: course 120; recommended preparation: courses 200B and 205A; may be repeated, in different sections, for credit. Phonological and grammatical structure of a selected language, and its genetic relationships to others of its family. Though sectioned by families, the same language will not necessarily be the subject of study each time that family is offered. Offered in one or more of the following sections each year.

The Staff

*225A. Indo-European. (Formerly numbered 210.)

225B. Germanic. (Formerly numbered 212.)

*225C. Slavic. Formerly numbered 211. Same as Slavic 225.)

*225D. Dravidian.

*225E. Indo-Aryan.

*225F. Uto-Aztecan.

225G. Romance.

*225H. Japanese.

*225J. Tai.

225K. Malayo-Polynesian. (Formerly numbered 220.)

*225L. Finno-Ugric. (Formerly numbered 217. Same as Finno-Ugric Studies 210.)

225M. Berber. (Formerly numbered 215. Same as Berber 201.)

*225N. Athabascan.

225P. Chinese.

225R. English Phonology. (Formerly numbered Speech 214.)

*225S. Swahili.

230A. Experimental Methods in Linguistics.

(Formerly numbered 207.) Prerequisite: course 200A. Techniques of experimental research in linguistics, including instrumentation in experimental phonetics and psycholinguistics, experimental design, and statistical evaluation.

Mr. Allen

230B. Experimental Design and Analysis.

(Formerly numbered Speech 201.) Prerequisite:

• Not to be given, 1969-1970.

course 200A. Theory and practice, control and measurement encountered in experimental research in speech.

Mr. Allen

*235. Mathematical Linguistics.

(Formerly numbered 261B.) Prerequisite: course 180 or equivalent. Formal properties of various types of grammars, including linear, context-free, and context-sensitive phrase structure grammars and unrestricted rewriting systems. Related formal properties of natural language.

Mrs. Partee

240A-240B. Computational Linguistics.

(Formerly numbered 261C.) Prerequisite: course 180 or equivalent; course 240A is prerequisite to 240B. 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. Schachter

250B. Grammatical Theory. Seminar.

(Formerly numbered 255B.) Prerequisite: course 205B. Problems in grammatical and lexical theory and in the analysis of a variety of languages.

Mrs. Partee, Mr. Schachter, Mr. Stockwell

250C. Topics in Linguistic Theory. Seminar.

(Formerly numbered 255C.) Prerequisite: course 250B. The metatheory of language description and the history of linguistic theory.

The Staff

255A. Acoustic Phonetics. Seminar.

(Formerly numbered 267A.) Prerequisite: course 230A.

Mr. Allen, Mrs. Fromkin, Mr. Ladefoged

255B. General Phonetics. Seminar.

(Formerly numbered 267B.) Prerequisite: course 200A.

Mr. Allen, Mrs. Fromkin, Mr. Ladefoged

255C. Physiological Phonetics. Seminar.

(Formerly numbered 267C.) Prerequisite: course 200A.

Mr. Allen, Mrs. Fromkin, Mr. Ladefoged

260A. Psycholinguistics I. Seminar.

(Formerly numbered 262A. Same as Psychology 260A.) Prerequisite: course 230A. Current psycholinguistic theory and research problems; coding and decoding; psycholinguistic parameters in language learning; speech recognition and perception.

Mr. MacKey

260B. Psycholinguistics II. Seminar.

(Formerly numbered 262B. Same as Psychology 260B.) Prerequisite: course 260A or equivalent. Continuation of 260A.

Mr. Dowling, Mr. MacKey

260K. Psycholinguistics and Language Teaching.

Seminar.

(Formerly numbered 262K. Same as English 260K.) Prerequisite: course 100, English 370K, and English 103K, or their equivalents with consent of instructor. An exploration of those areas of psycholinguistics covering foreign language acquisition; types and theories of bilingualism; learning theories

underlying the current methods of teaching foreign languages; basic experimental designs to test existing assumptions about learning and teaching foreign languages.
The Staff

261K. Bilingual Comparative Studies. Seminar.

(Formerly numbered 251K. Same as English 251K.) Prerequisite: English 213 or equivalent, and 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, Mr. Wilson

***265A. Ethnolinguistics. Seminar.**

(Formerly numbered 263A. Same as Anthropology 263.) Prerequisite: course 190. 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: course 170.
Mr. Bright

270A. Historical Linguistics I. Seminar.

(Formerly numbered 268A. Same as Indo-European Studies 270A.) Prerequisite: course 202. Course 270B is normally prerequisite of 270A. Problems in the use of the comparative method in historical linguistics.
Mr. Anttila

***270B. Historical Linguistics II. Seminar.**

(Formerly numbered 268B. Same as Indo-European Studies 270B.) Prerequisite: course 270A in the preceding quarter. Problems in the internal reconstruction of the history of languages. Mr. Anttila

Individual Study and Research

598A. Directed Studies. (¼ to 2 courses)

(Formerly numbered 297.) Prerequisite: courses 200B and 205B. Up to one full course may be applied toward fulfillment of M.A. course requirements. Directed individual study or research. May be repeated for credit. Graded satisfactory/unsatisfactory.
The Staff

598B. Directed Informant Work. (¼ to 2 courses)

(Formerly numbered 298.) Prerequisite: pass with distinction on the M.A. comprehensive examination. Intensive informant work by students individually. May be repeated for credit. Graded satisfactory/unsatisfactory.
The Staff

**597. Preparation for Master's Comprehensive and Doctoral Qualifying Examinations.
(¼ to 2 courses)**

Prerequisite: courses 200B and 205A. Can be taken *only* in the quarters in which the student expects to stand for his comprehensive or qualifying examinations. May not be applied toward fulfillment of M.A. course requirements. May be repeated for credit. Graded satisfactory/unsatisfactory. The Staff

599. Research for Dissertation. (¼ to 4 courses)

(Formerly numbered 299.) Prerequisite: advancement to candidacy for the Ph.D. degree. May be repeated for credit. Graded satisfactory/unsatisfactory.
The Staff

African Languages

Upper Division Courses

101A-101B-101C. Elementary Swahili.

Five hours. The major language of East Africa, particularly Tanzania.
Mr. Longan

102A-102B-102C. Intermediate Swahili.

Five hours. Prerequisite: courses 101A-101B-101C or consent of the instructor.
Mr. Longan

103A-103B-103C. Advanced Swahili.

Prerequisite: courses 102A-102B-102C or consent of the instructor. Readings in Swahili literature and the contemporary press. Discussions mainly in Swahili.
Mr. Longan

***104-104B-104C. Elementary Luganda.**

Five hours. A major language of Uganda.

The Staff

***107A-107B-107C. Elementary Sotho.**

Five hours. Southern Sotho, spoken primarily in Basutoland and Orange Free State, mutually intelligible with adjacent Northern Sotho and Tswana.
Mr. Kunene

***108A-108B-108C. Elementary Zulu.**

Five hours. The most widely spoken of the Nguni languages of South Africa, mutually intelligible with other members of this group.
Mr. Kunene

***109A-109B-109C. Elementary Xhosa.**

Five hours. A major Nguni language of South Africa, mutually intelligible with other members of this group.
Mr. Kunene

110A-110B-110C. Intermediate Xhosa.

Five hours. Prerequisite: courses 109A-109B-109C or consent of the instructor.
Mr. Kunene

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

(Formerly numbered 121A-121B.) Five hours. The major language of western Nigeria.
Miss Courtenay

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

(Formerly numbered 122A-122B.) Five hours. Prerequisite: courses 111A-111B-111C or consent of the instructor.
Miss Courtenay

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

Five hours. The major language of eastern Nigeria.
Mr. Welmers

114A-114B-114C. Intermediate Igbo.

Five hours. Prerequisites: courses 113A-113B-113C or consent of the instructor.
Mr. Welmers

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

(Formerly numbered 109A-109B.) Five hours. The major language of Ghana, including Ashanti, Fante, and other mutually intelligible dialects.
The Staff

***121A-121B-121C. Elementary Fula.**

Five hours. The language of the Fulani, spoken in widely scattered areas of West Africa, including major concentrations in Guinea and the Nigeria-Cameroon area.
The Staff

* Not to be given, 1969-1970.

***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. Miss Courtenay

132A-132B-132C. Intermediate Bambara.

Prerequisite: courses 131A-131B-131C or consent of instructor. Miss Courtenay

141A-141B-141C. Elementary Hausa.

(Formerly numbered 112A-112B.) Five hours. The major language of northern Nigeria and adjacent areas. The Staff

142A-142B-142C. Intermediate Hausa.

(Formerly numbered 113A-113B.) Five hours. Prerequisite: courses 141A-141B-141C or consent of the instructor. The Staff

150A-150B. African Literature in English Translation

Three hours. Courses 150A and 150B may be taken independently for credit. Narrative and didactic oral prose and poetry of sub-Saharan Africa, and written prose and poetry of South Africa. Mr. Kunene

190. Survey of African Languages.

An introduction to the languages of Africa, their distribution and classification, and their phonological and grammatical structures; illustrations from several representative languages, with appropriate language laboratory demonstrations and drills. Mr. Welmers

192. Comparative Studies in African Languages.

Prerequisite: two quarter courses in an African language, or course 190; Linguistics 110 is recommended as a prior or concurrent course. Comparison of structural and lexical features of a group of closely related languages, such as southern Bantu, southwestern Mande, Akan, or Senufo. The Staff

199. Special Studies in African Languages.

($\frac{1}{4}$ to $1\frac{1}{2}$ courses)

Prerequisite: consent of the instructor. Instruction or supervised research based on the needs of the individual student, in any language or group of languages for which appropriate facilities are available. The Staff

Graduate Courses***201A-201B. Comparative Niger-Congo.**

Prerequisites: Linguistics 202, 220A; three quarter courses in one language selected from courses 101-131, 199. Investigation of relationships within the Niger-Congo family as a whole, or within selected branches of the family. Mr. Welmers

202A-202B. Comparative Bantu.

Prerequisites: Linguistics 202, 220A; three quarter courses in one Bantu language selected from African Languages 101-109, 199. Investigation of relationships among the Bantu languages; the extent and external relationships of Bantu. The Staff

260. Seminar in African Languages. The Staff

270. Seminar in African Literature. The Staff

Individual Study and Research**596. Directed Studies. ($\frac{1}{4}$ to 2 courses)**

Directed individual study or research. Up to one full course may be applied toward fulfillment of M.A. course requirements. May be repeated for credit. Graded satisfactory/unsatisfactory. The Staff

Indigenous Languages of Latin America**Upper Division Courses****118A-118B-118C. Elementary Quechua.**

The language of the Incas and its present day dialects, as spoken in Andean South America. The Staff

119A-119B-119C. Intermediate Quechua.

Prerequisite: courses 118A-118B-118C. The Staff

South Asian Languages**Upper Division Courses****151A-151B-151C. Elementary Thai.**

Five hours. The major language of Thailand. Mr. Campbell

161A-161B-161C. Elementary Tagalog.

(Formerly numbered Oriental Languages 7A-7B-7C.) Five hours. The national language of the Philippines. Mr. Bowen

171A-171B-171C. Hindi.

(Formerly numbered Indo-European Studies 190, 191, 192 and Oriental Languages 180A-180B.) Five hours. The Staff

Related Courses in Other Departments**(Other than Language Courses)**

Indo-European Studies (Department of Classics) 210. Indo-European Linguistics: Advanced Course.

226. Celtic Linguistics.

280. Seminar in Indo-European Linguistics.

English 121. History of the English Language.

122. The Structure of Modern American English.

212. History of the English Language.

213. The Development of Modern English.

240. Phonological Structure and Dialectology.

241. Grammatical and Lexical Structure.

250K. Contrastive Analysis of English and Other Languages.

Folklore 217. Folk Speech.

French 204A. Phonology and Morphology from Vulgar Latin to French Classicism.

204B. Syntax and Semantics from Vulgar Latin to French Classicism.

* Not to be given, 1969-1970.

Germanic Languages 117. Language and Linguistics.

- 217. History of the German Language.
- 230. Survey of Germanic Philology.
- 290. Seminar in Germanic Linguistics.

Scandinavian Languages (Department of Germanic Languages) 211. Typology of the Scandinavian Languages.

- 212. History of the Scandinavian Languages.

Latin (Department of Classics) 240. History of the Latin Language.**Hebrew (Department of Near Eastern Languages) 190A-190B. Survey of Hebrew Grammar.**

- 210A-210B. History of the Hebrew Language.

Semitics (Department of Near Eastern Languages) 209A-209B-209C. Comparative Study of the Ethiopian Languages.

- 280A-280B-280C. Seminar in Comparative Semitics.
- 290A-290B-290C. Comparative Morphology of the Semitic Languages.

Turkic Languages (Department of Near Eastern Languages) 190A-190F. 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 202. Introduction to Comparative Slavic Linguistics.

- 242A-242B. Comparative Slavic Linguistics.
- 281. Seminar in Slavic Linguistics.
- 282. Seminar in Structural Analysis.

Russian (Department of Slavic Languages)

- 241. Russian Phonology.
- 242. Russian Morphology.
- 264A-264B. The Evolution of Literary Russian.
- 265. Russian Syntax.

Spanish (Department of Spanish and Portuguese) 100. Phonetics and Phonemics.

- 103. Morphology and Syntax.
- 115. Applied Linguistics.
- 118. History of the Spanish and Portuguese Languages.
- 203. The Development of the Spanish Language.
- 206. Linguistics.
- 209. Dialectology.
- 256A-256B. Studies in Linguistics and Dialectology.

Portuguese (Department of Spanish and Portuguese) 203. The Development of the Portuguese Language.**Speech**

- 102. Background and Theories of Oral Communication.
- 103. Phonetics of English.

■ MATHEMATICS

(Department Office, 6364 Mathematical Sciences Building)

¹Richard 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 (Chairman of the Department).*

†Philip C. Curtis, Jr., Ph.D., *Professor of Mathematics.*

Henry A. Dye, Ph.D., *Professor of Mathematics.*


Thomas S. Ferguson, Ph.D., *Professor of Mathematics.*

Basil Gordon, Ph.D., *Professor of Mathematics.*

John W. Green, Ph.D., *Professor of Mathematics.*

¹ In residence summer quarter only, 1969-1970.

† Absent on leave, 1969-1970.

- Magnus R. Hestenes, Ph.D., *Professor of Mathematics.*
 *Paul G. Hoel, Ph.D., *Professor of Mathematics.*
 Alfred Horn, Ph.D., *Professor of Mathematics.*
 *S. T. Hu, Ph.D., *Professor of Mathematics.*
 Paul B. Johnson, Ph.D., *Professor of Mathematics.*
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 Theodore S. Motzkin, Ph.D., *Professor of Mathematics.*
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 Lowell J. Paige, Ph.D., *Professor of Mathematics.*
 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.*
 V. S. Varadarajan, Ph.D., *Professor of Mathematics.*
 Paul H. Daus, Ph.D., *Emeritus Professor of Mathematics.*
 I. S. Sokolnikoff, Ph.D., *Emeritus Professor of Mathematics.*
 Donald G. Babbitt, Ph.D., *Associate Professor of Mathematics (Vice-Chairman—Graduate).*
 Robert J. Blattner, Ph.D., *Associate Professor of Mathematics.*
 †Robert F. Brown, Ph.D., *Associate Professor of Mathematics.*
 David Cantor, Ph.D., *Associate Professor of Mathematics.*
 T. Gamelin, Ph.D., *Associate Professor of Mathematics.*
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 Alfred Hales, Ph.D., *Associate Professor of Mathematics.*
 Paul J. Koosis, Ph.D., *Associate Professor of Mathematics.*
 Ronald J. Miech, Ph.D., *Associate Professor of Mathematics.*
 Tilla Klotz Milnor, Ph.D., *Associate Professor of Mathematics.*
 Yiannis N. Moschovakis, Ph.D., *Associate Professor of Mathematics.* 
 Donald S. Passman, 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.*
 Bertram J. Walsh, Ph.D., *Associate Professor of Mathematics.*
 N. Donald Ylvisaker, Ph.D., *Associate Professor of Mathematics.*
 Leonard Asimow, Ph.D., *Assistant Professor of Mathematics.*
 Kirby Baker, Ph.D., *Assistant Professor of Mathematics.*
 Douglas Clark, Ph.D., *Assistant Professor of Mathematics.*
 Michael G. Crandall, Ph.D., *Assistant Professor of Mathematics.*
 Rodolfo DeSapio, Ph.D., *Assistant Professor of Mathematics.*
 Hector Fattorini, Ph.D., *Assistant Professor of Mathematics.*
 Burton Fein, Ph.D., *Assistant Professor of Mathematics.*
 Fred Galvin, Ph.D., *Assistant Professor of Mathematics.*
 John Garnett, Ph.D., *Assistant Professor of Mathematics.*
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* In residence summer quarter only, 1969–1970.

† Absent on leave, fall quarter, 1969–1970.

‡ Absent on leave, 1969–1970.

- Kenneth Hannsgen, Ph.D., *Assistant Professor of Mathematics.*
 Richard Herman, Ph.D., *Assistant Professor of Mathematics.*
 Albert E. Hurd, Ph.D., *Assistant Professor of Mathematics.*
 William B. Jones, Ph.D., *Assistant Professor of Mathematics.*
¹Robion C. Kirby, Ph.D., *Assistant Professor of Mathematics.*
 Thomas M. Liggett, Ph.D., *Assistant Professor of Mathematics.*
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 Kalyan Mukherjea, Ph.D., *Assistant Professor of Mathematics.*
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 Edmund B. Staples, Ph.D., *Assistant Professor of Mathematics.*
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 James White, Ph.D., *Assistant Professor of Mathematics.*
 William Wickless, Ph.D., *Assistant Professor of Mathematics.*
 ———, *Assistant Professor of Mathematics.*
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 ———, *Assistant Professor of Mathematics.*
 Guy H. Hunt, C.E., *Assistant Professor of Mathematics, Emeritus.*
 Euphemia R. Worthington, Ph.D., *Assistant Professor of Mathematics, Emeritus.*



- Shimshon A. Amitsur, Ph.D., *Visiting Professor of Mathematics.*
 E. Graham Evans, Jr., Ph.D., *Acting Assistant Professor of Mathematics.*
 R. N. Gupta, Ph.D., *Visiting Assistant Professor of Mathematics.*
 Robert Herrera, M.A., *Lecturer in Mathematics.*
 Robert I. Jennrich, Ph.D., *Lecturer in Mathematics and Assistant Professor of Biomathematics in Residence.*
 John McGhee, M.A., *Lecturer in Mathematics.*
 Hans Zassenhaus, Ph.D., *Visiting Professor of Mathematics.*
 ———, *Visiting Professor of Mathematics.*
 ———, *Visiting Professor of Mathematics.*
 ———, *Visiting Professor of Mathematics.*
 ———, *Visiting Professor of Mathematics.*
 ———, *Visiting Professor of Mathematics.*
 ———, *Visiting 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 Mathematics 11AH-11BH-11CH, 12AH-12BH-12CH. Three courses in physical sciences other than mathematics; the courses may be in physics, astronomy, chemistry or meteorology; the general physical science sequence is also acceptable. Recommended: courses in physics. A reading knowledge of French, German or Russian is strongly recommended and the stu-

dent should select his foreign language to this end.

Transfer Students

Transfer students must consult with a departmental adviser at their earliest opportunity. Particular areas where evaluation and direction may be necessary are linear algebra and differential equations. Students with less than a half-course credit of linear algebra should plan to take course 12A. The requirement for linear algebra may also be satisfied by taking a final examination for course 12A. Those with more than a half course but less than a full course should dis-

¹ In residence summer quarter only, 1969-1970.

cuss their eligibility for entrance to course 110A. Students with a half course or more of differential equations may upon the approval of an adviser satisfy the requirements for course 130A by taking course 133.

The Major in Mathematics

Courses 110A, 120A, 130A, 131A, and at least six additional courses in the 100 series numbered higher than 105. At least one course must be the B course in a sequence. Highly recommended for students who may wish to obtain a graduate degree: courses 110B-110C, 131B.

Undergraduate Honors Program

A student majoring in mathematics and wishing to graduate with Honors in Mathematics should apply for admission to the Honors Program. This may be done any time after the fifth undergraduate quarter. Minimum entrance requirements for fifth quarter students are the completion of courses 11ABC and 12A with three A's and one B. Honors will be granted to students in the program who in addition to the usual course requirements: (a) complete courses 110BC and 131B or approved graduate substitutes; (b) complete course 190, Honors Mathematics Seminar; (c) earn a grade point average of at least 3.6 in upper division and graduate mathematics courses. Students who demonstrate exceptional ability will be awarded High Honors.

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, 152A. Other recommended courses include 107, 111A-111B-111C, 120A-120B-120C, 130B-130C, 132, 152B.

The Teaching Minor

Course 370 and seven and a half additional courses. The courses recommended for candidates for the standard secondary credential are 1, 2A-2B-2C or 3A-3B-3C or 11A-11B-11C, 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 3C. Students wishing to continue in mathematics after completing 2C should take 3C, followed by 12A or 13A. Other changes should be made only with the concurrence of a departmental adviser who will determine the total allowable credit. Similar caution applies to transfer students entering with incomplete calculus sequences. Such students should be prepared to supply complete information as to texts used and chapters covered in their previous work. A placement examination, described below, may be required.

Undergraduate Placement Examinations

An examination covering high school algebra and trigonometry is given each quarter during registration week. The exact time and place will be posted on the departmental bulletin board. This examination determines which students may be exempt from the prerequisites to courses 2A, 3A, 11A and which students are to be considered for course 11AH. No permanent records are kept and no penalty is attached to poor performance on this examination.

A student entering from high school who believes that he has had the equivalent of a course offered by the Department of Mathematics may demonstrate his proficiency in this course by examination. If, in the opinion of the Department, his level of achievement is sufficiently high, he will be permitted to enter the next course in the sequence. No University credit is earned by passing such an examination. Arrangements for such an examination must be made with the Department secretary in room 6356, Mathematical Sciences Building, on or before the Monday of registration week. Departmental advisers may request transfer students to take similar examinations as an aid in determining the correct sequence and course for initial placement.

Requirements for the Master's Degree

Candidates for the degree of Master of Arts in mathematics must qualify under The Comprehensive Examination Plan. For the general requirements, see pages 139-143.

Eleven quarter courses must be offered. One alternative is to offer eight or more courses in the graduate list; the remainder may be approved upper division courses. The other alternative involves the preparation of a report under the direction of some member of the Department. This is a project designed to train the student in independent study of mathematical literature and the reduction to orderly form of the knowledge thus gained. This alternative requires six or more graduate courses and the remainder approved undergraduate courses; the preparation of the report may be given credit as one of the graduate courses. The candidate must pass a set of qualifying written examinations, one in basic analysis and one in basic algebra.

Requirements for the Master of Arts in Teaching (M.A.T.) Degree

The Department also offers a program leading to the degree of Master of Arts in Teaching (M.A.T.). Seven courses in mathematics are required, of which six are in the 200 series. Recommended are several courses of particular value to teachers, one of which leads to the preparation of a Master's essay. In addition, three courses in the Department of Education are required, as well as the course in supervised teaching. The comprehensive examinations cover both subject matter based upon the mathematical requirements and the content and philosophy of school mathematics. A variation of this program is available for those interested in a junior college credential.

Requirements for the Doctor's Degree

The requirements are, in general, in accordance with those listed under general requirements for the doctor's degree, pages 143-145. At present, the qualifying examinations which must be taken within the Department before the student is advanced to candidacy consist of an examination divided into four parts. The parts consist of (1) algebra, (2) real analysis, (3) complex analysis, and (4) mathematical electives. These written examinations are given twice each year; the student normally should take them during his second year of graduate study. As an additional requirement for the Ph.D. degree, students are required to actively participate in two seminars during the course of their graduate study. A student pursuing the Ph.D. degree can obtain a Master's degree by fulfilling the eleven course requirement, and by passing the Ph.D. algebra qualifying exam-

ination and one of the other Ph.D. qualifying examinations.

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. A student pursuing the Ph.D. degree in Applied Mathematics can obtain a Master's degree by fulfilling the eleven course requirement and by passing the Applied Algebra and Applied Real and Complex qualifying examinations.

Foreign Language

No foreign language is required for the M.A. degree. For the Ph.D. degree, one foreign language is required. Preferred languages are French, German and Russian.

Lower Division Courses

1. College Algebra.

Not open for credit to students who have credit for other mathematics courses except 38, 41, 50 and 100. Sets, real and complex numbers, fundamental operations, inequalities, relations and functions, set functions, polynomial, exponential, and trigonometric functions and their graphs; matrices, determinants, permutations, combinations, binomial theorem, sequences and series.

2A-2B-2C. Mathematics for Social Science

Students.

Prerequisite: three years of high school mathematics or course 1. 2A: finite mathematics consisting of elementary logic, sets, combinatorics, probability, vectors and matrices. 2B: functions, graphs, differentiation and integration with applications, transcendental functions. 2C: sequences and series, functions of several variables, further applications of the calculus.

3A-3B-3C. Calculus for Life Science Students.

Prerequisite: three years of high school mathematics (including trigonometry) or course 1 or 2A. Course 3A is not open for credit to students with credit in another calculus sequence. 3A: techniques and applications of the differential calculus. 3B: techniques and applications of the integral calculus. 3C: prerequisite: course 2C or 3B. Functions of several variables, vectors, partial differentiation, and multiple integration.

11A-11B-11C. Calculus and Analytic Geometry—

Initial Sequence.

Prerequisite: at least three years of high school mathematics including some coordinate geometry

and trigonometry, or the passing of a special examination. 11A: Introduction to differentiation and integration with applications. 11B: Transcendental functions, extremal problems, techniques and applications of integration, elementary differential equations. 11C: Vectors and curves in two and three dimensions, infinite series.

11AH-11BH-11CH. Calculus and Analytic Geometry—Initial Honors Sequence.

Prerequisite: satisfactory performance on a placement examination and consent of the instructor. An honors sequence parallel to 11A-11B-11C.

12A-12B-12C. Linear Algebra and Calculus.

Prerequisite: course 11C, or 3C or consent of the instructor. 12A: Linear algebra, including real vector spaces, linear transformations, matrices and determinants. 12B: Vector differential calculus, line integrals, Green's theorem. 12C: Multiple integration, surface integrals, Stokes' theorem.

12AH-12BH-12CH. Linear Algebra and Calculus—Honors Sequence.

Prerequisite: course 11CH, or 11C with grade A or consent of the instructor. An honors sequence parallel to 12A-12B-12C.

13A-13B-13C. Intermediate Calculus and Applications.

Prerequisite: course 11C, 3C or consent of the instructor. 13A: linear differential equations and partial differentiation and applications. 13B: Laplace transforms, power and Fourier series, differential equations with variable coefficients. 13C: line and surface integrals, vector field theory, linear algebra.

36. 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.

50. Elementary Statistics.

(Formerly numbered Statistics 1.) Not open for credit to students having credit for an advanced statistics course. Emphasis is placed on the understanding of statistical methods. Topics covered are empirical and theoretical frequency distributions, sampling, estimation, hypothesis testing, correlation, regression, modern techniques.

Upper Division Courses

GENERAL AND TEACHER TRAINING

100. The Nature of Mathematics.

Prerequisite: junior standing. Not open to students majoring in mathematics, engineering, or physical science. A course designed to acquaint students 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 12A. 101A is not open to students having credit for course 110A. A sequence

intended primarily for prospective secondary teachers. Group theory, numbers and number systems, relations and equivalence, topics from elementary number theory, the rational numbers, integral domains, rings and fields, the real numbers, cardinals, complex numbers, polynomials, vector spaces, nonconstructibility, nonsolvability.

102A-102B-102C. Topics in Geometry.

Prerequisite: course 12C. A sequence intended primarily for prospective secondary teachers. Axiomatic methods, advanced topics in Euclidean geometry, hyperbolic and other geometries, constructions, symmetries, isometry and related topics, projective geometry, map coloring, Jordan curve theorem.

103A-103B. Fundamental Concepts of Algebra and Geometry.

Prerequisite: course 2C or 3B. Designed for the general secondary candidate with a mathematics minor who is not majoring in one of the physical sciences. Number systems, logical concepts, algebraic operations, determinants and matrices. Deductive geometry, axiomatic approach and application to Euclidean geometry, non-Euclidean geometry, projective, metric, and affine geometry.

106. History of Mathematics.

Prerequisite: course 11C or 3C. Topics in the history of mathematics with emphasis on the development of modern mathematics.

107. Mathematical Ideas.

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.

($\frac{1}{4}$ 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.

Prerequisite: course 12A. Course 110A is not open to students having credit for Mathematics 101A. Integral domains, fields, polynomial domains, factorization theory, groups, vector spaces and linear transformations, rational and Jordan canonical forms, quadratic and Hermitian forms. Rings and ideals, linear algebras, field extensions, algebraic numbers, Galois theory.

111A-111B-111C. Theory of Numbers.

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.

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.

114. Theory of Computability.

Prerequisite: upper division standing or consent of the instructor. Machines and recursive functions. Church's thesis. Gödel numbers, enumeration theorem, universal machines. Unsolvable problems. Relative recursiveness. Further topics selected from: word problems, arithmetical relations, subrecursive hierarchies, primitive recursive functions, computational complexity.

GEOMETRY AND TOPOLOGY

120A-120B. Differential Geometry.

Prerequisite: course 12C or 13C. Curves in 3-space, Frenet formulas, surfaces in 3-space, normal curvature, Gaussian curvature. Congruence of curves and of surfaces. Intrinsic geometry of surfaces, isometries, geodesics, Gauss-Bonnet theorem.

121. Introduction to Topology.

Prerequisite: course 131A. Metric and topological spaces, topological properties, completeness, mappings and homeomorphisms, the metrization problem.

ANALYSIS

130A-130B-130C. Differential Equations.

Prerequisite to course 130A: course 12B. Course 130A is not open for credit to students who have credit for course 13A. Prerequisite to course 130B: 130A or 13B and 133. Linear ordinary equations and systems, existence and uniqueness of solutions, self-adjoint eigenvalue problems, first and second order linear partial differential equations, separation of variables, special equations and techniques, harmonic functions.

131A-131B. Analysis.

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.

Prerequisite: course 12C or 13C. Complex numbers, functions, differentiability, series, extensions of elementary functions, integrals, calculus of residues, conformal maps and mapping functions with applications.

133. Differential Equations. (¼ course)

Prerequisite: course 12C or 13C. Not open for credit for students having credit for course 130A. A course primarily intended for transfer students with credit for less than one course in differential equations. Existence and uniqueness theorems for differential equations.

APPLIED MATHEMATICS

140A-140B-140C. Numerical Analysis.

(Formerly numbered 135A-135B.) Prerequisite: course 130A. Interpolation and approximation, numerical differentiation and integration, solution of nonlinear equations, error analysis; numerical methods in linear algebra; numerical methods in ordinary differential equations.

143. Analytic Mechanics.

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.

145A-145B. Methods of Applied Mathematics.

Prerequisites: course 130A, or 13C and consent of the instructor. Calculus of variations, linear integral equations (Volterra and Fredholm) and applications to differential equations, Fourier series and integrals, elements of tensor calculus, special topics as time permits.

PROBABILITY AND STATISTICS

150A-150B-150C. Probability and Statistics.

Prerequisite: course 12C or 13C and, for 150C, course 131A. The first two quarters constitute a basic introduction to the theory of probability and statistics. The third quarter will be devoted to more advanced topics, as selected by the instructor.

152A-152B. Applied Mathematical Statistics.

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.

190. Honors Mathematics Seminar.

Prerequisite: admission to Mathematics honors program and consent of the instructor. A participating seminar on advanced topics in mathematics.

Graduate Courses

TEACHER PREPARATION

201A-201B-201C. Topics in Algebra and Analysis.

(Formerly numbered 284A-284B.) Prerequisite: B.A. degree with mathematics major or equivalent. A course for students in the mathematics-education program. Important ideas of algebra, geometry and calculus leading effectively from elementary to modern mathematics. Approaches to the number system, point sets, geometric interpretations of algebra and analysis, integration, differentiation, series and analytic functions.

202A-202B. Mathematical Models and Applications.

(Formerly numbered 280.) Prerequisite: B.A. degree with mathematics major or equivalent. A course designed for students in the Mathematics-Education program. A development of mathematical theories describing various empirical situations. Basic characterizing postulates are discussed and a logical structure of theorems developed. Modern topics such as operations research, linear programming, game theory, learning models, models in social and life sciences.

NUMBER THEORY**205A-205B-205C. Number Theory.**

(Formerly numbered 205 and 206.) Prerequisite: courses 246A and 210A or consent of the instructor. Topics from analytic algebraic and geometric number theory, including distribution of primes and factorization in algebraic number fields. Also selected topics from additive number theory, Diophantine approximation, partitions, class-field theory, lattice point problems, valuation theory, etc.

206. Combinatorics.

Prerequisite: consent of the instructor. Selected topics from: combinatorial structures and their automorphism groups; counting principles of Sylvestor and Polya; partitions, coloring problems, binary structures, polyhedral structures, generating functions, combinatorial problems in geometry, number theory and statistics.

ALGEBRA**210A-210B-210C. Algebra.**

(Formerly numbered 221A-221B.) Prerequisite: courses 110A-110B-110C or consent of the instructor. Students may not receive credit toward the Master's degree for both 210B and 110B and/or 210C and 110C. 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 134. Students may not receive credit for both Mathematics 221A-221B-221C and Philosophy 221A-221B-221C. Sets, relations, functions. Partial and total orderings; well-orderings. Ordinal and cardinal arithmetic, finiteness and infinity, the continuum hypothesis, inaccessible numbers. Formalization of set theory, Zermelo-Fraenkel theory, von Neumann-Gödel theory. Constructibility. Results on relative consistency and independence.

222A-222B. Distributive Lattices and Boolean Algebras.

(Formerly numbered 239.) Prerequisite: course 121 or 235A or consent of the instructor. Partially ordered sets, lattices, distributivity laws, completeness properties, ideal theory, Heyting algebras, Boolean algebras, closure algebras, representation theory, applications to topology and logic.

223. Advanced Topics in Mathematical Logic.

Prerequisite: consent of the instructor. Content will vary from quarter to quarter.

GEOMETRY**225. Differentiable Manifolds.**

(Formerly numbered 216.) Prerequisite: course 131A or 120A-120B. Fundamentals of manifold theory: vector fields and integral curves, the calculus of differential forms. Submanifolds, Fröbenius theorem. Stokes' theorem. Mappings, covering manifolds.

226A-226B-226C. Differential Geometry.

(Formerly numbered 210A-210B.) Prerequisite: course 225 or consent of the instructor. Connections, curvature and torsion, covariant differentiation, holonomy, Riemannian geometry, completeness manifolds of constant curvature. Variation theory of geodesics; conjugate points, Myers and Synge theorems. Isometric imbeddings. Selections from Kähler manifolds, symmetric spaces, or the generalized Gauss-Bonnet theorem.

227A-227B. Fibre Bundles.

Prerequisite: course 225, and for 227B one quarter of algebraic topology. Principal bundles, associated bundles, bundle maps. Coset manifolds, covering spaces. Vector bundles, characteristic classes, the Euler class. Sheaves, de Rham theorem.

228A-228B. Convex Sets.

(Formerly numbered 214.) Prerequisite: course 121 or 245A or consent of the instructor. Basic concepts for convex sets in topological linear spaces; separation theorems and support functions; local convexity; convex functions; Helly type theorems; duality. Course 228B will contain selected topics from current literature on convexity and research problems.

229A-229B. Lie Groups.

(Formerly numbered 235.) Prerequisite: course 225. Lie algebra of a Lie group, exponential mapping, analytic homomorphisms, covering groups. The correspondence between subalgebras and subgroups. Classical groups. Semisimple groups and algebras.

TOPOLOGY

235A-235B. Topology.

(Formerly numbered 226A-226B.) Prerequisite: courses 131A-131B and 110A or consent of the instructor. Students may not receive credit toward the Master's degree for both 235A and 121. 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-convective 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 and course 121 or the equivalent (Eg. 235A can be taken concurrently). Abstract integration theory, convergence theorems, regular Borel measures, Riesz representation theorem, elementary Hilbert space theory, Banach space techniques, L^p -spaces, Radon-Nikodym theorem, Fubini theorem, differentiation of set functions, special topics.

248A-248B-248C. Complex Analysis.

(Formerly numbered 224A-224B.) Prerequisite: courses 131A-131B-131C. Students may not receive credit toward the Master's degree for both 248A and 132. Introduction to the rigorous theory of functions of a complex variable. Linear fractional 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 and Optimal Control Theory.

(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 Poincare-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 Real and Complex Analysis.**

(Formerly numbered 229A-229B.) Prerequisite: course 131A or 131B or consent of the instructor. Students may not receive credit toward the Master's degree for any quarter of 265 and 245A, 245B, 246A, 246B, 131C, and 132. This is an integrated course in real and complex analysis developing concepts most frequently applied in physical sciences. Measure theory, Lebesgue integration, Fubini's theorem, L^p -spaces, Fourier series, Fourier transforms, basic complex function theory, residues and integrals.

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: knowledge of coding, courses 110A, 140A-140B-140C, 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. No more than two 285 courses can be applied toward the Master's degree course requirement, except by prior permission of the Vice-Chairman for Graduate Studies. Topics in various branches of mathematics and their applications by means of lectures and informal conferences with members of the staff.

285A. Seminar in the History and Development of Mathematics.

285B. Seminar in Number Theory.

285C. Seminar in Algebra.

285D. Seminar in Logic.

285E. Seminar in Geometry.

285F. Seminar in Topology.

285G. Seminar in Analysis.

285H. Seminar in Differential Equations.

285I. Seminar in Functional Analysis.

285J. Seminar in Applied Mathematics.

285K. Seminar in Probability.

285L. Seminar in Statistics.

290. Seminar in Current Literature.

A seminar for Ph.D. candidates. Readings and presentations of papers in mathematical literature under the supervision of a staff member.

Professional Course in Method

370. The Teaching of Mathematics.

Prerequisite: course 12A or 2C or 3C and senior standing. A critical inquiry into present-day tendencies in the teaching of mathematics.

Individual Study and Research

596. Directed Individual Study or Research.

(1/2 to 1 course)

Supervised individual reading and study on a project approved by a faculty member, which may be preparation for the master's essay. May be taken multiply or repeated for credit, but only two such courses may be applied toward the master's degree unless departmental approval is obtained.

596X. Directed Individual Study or Research.

Individual study to prepare for foreign language examinations. May not be used for credit toward M.A. or M.A.T. degree. Registration is limited to three quarters.

597. Preparation for Master's Comprehensive and Doctoral Qualifying Examinations.

Individual study to prepare for comprehensive and qualifying examinations. May not be used for credit toward M.A. or M.A.T. degree. Registration is limited to four quarters.

599. Research in Mathematics. (1/2 to 2 courses)

Study and research for the Ph.D. dissertation. May be taken multiply or repeated for credit.

■ MEDICAL HISTORY

(Department Office, 50-074 Center for the Health Sciences)

John Field, II, Ph.D., *Professor of Medical History and Physiology.*

Franklin D. Murphy, M.D., Sc.D., *Professor of Medical History.*

C. D. O'Malley, Ph.D., *Professor of Medical History (Chairman of the Department).*

Hans Simmer, M.D., *Professor of Medical History, Obstetrics and Gynecology and Physiology in Residence.*

L. R. C. Agnew, M.D., *Associate Professor of Medical History.*

M. Peter Amacher, Ph.D., *Assistant Professor of Medical History and Physiology in Residence.*



Elmer Belt, M.D., *Lecturer in Medical History and Clinical Professor of Surgery.*

Louise M. Darling, M.A., *Lecturer in Medical History and Library Service.*

Robert J. Moes, M.D., *Lecturer in Medical History.*

Admission to Graduate Status

Candidates for admission to graduate status in the Department of Medical History must meet the general requirements set by the Graduate Division for admission to such status.

Requirements for the M.A. Degree

1. Requirements for admission will be such as have been established by the Graduate Division, with the further requirement that the program will be limited to those already possessing the M.D. or D.D.S. degree, or a Ph.D. degree in one of the basic medical or biological sciences.

2. The residence requirement will be a minimum of one year.

3. A reading knowledge normally of French or German will be required.

4. A minimum of nine courses (equalling 36 quarter units) will be required, and of these, five courses (equalling 20 quarter units) will be at the graduate level. The student will be required to pass an examination covering the general field of medical history.

Requirements for the Ph.D. Degree

1. The general requirements for admission to the Graduate Division must be met. Normally, students admitted to this program will hold the M.D. or D.D.S. degree, or an M.A. degree, including a background in a basic medical or biological science. Other students may be admitted with, for example, an M.A. degree in history, but will be required to take appropriate medical or biological courses as part of the program.

2. The minimum residence requirement will be two years.

3. Before taking the qualifying examination, the student will be required to demonstrate a reading knowledge of normally French and German. Other languages, such as Latin, might also be required depending upon the area or period emphasized by the student.

4. The program of study will be arranged in accordance with the student's academic background, to prepare him for the qualifying examination and for preparation of the dissertation. The qualifying examination will be divided into three parts: (a) a test of the student's general comprehension of the field of Medical History; (b) a more intensive test of his knowledge of a selected area within the general field of Medical History; (c) a test of his knowledge of one of the fields of the History of Science as already established at UCLA. This last test will be administered by whoever may be responsible for the subject. The fields of intensive examination within the history of medicine will be the following:

Medicine to 1600

Medicine in the 17th and 18th centuries

Medicine in the 19th and 20th centuries

Successful completion of the several parts of the written examination will be followed by an oral examination conducted by the student's advisory committee, composed of representatives of the History of Medicine and the History of Science, and any others deemed necessary as representatives of other disciplines in accordance with the student's program.

5. A dissertation on a subject related to the student's field of intensive study, approved by his advisory committee, will be required.

The dissertation must be the result of original research and constitute a genuine contribution to knowledge.

6. There will be a final, oral examination conducted by the student's advisory committee that will center on the dissertation and its relation to the field of intensive study.

Upper Division Courses

107B. Historical Development of Medical Sciences.

Three hours per week in the spring quarter. The major contributions of medicine and medical personalities from the 5th century B.C. to the 19th century A.D. Illustrated lectures and required readings from selected texts. Mr. Agnew, Mr. O'Malley

Graduate Courses

240A-240B. History of Medical Sciences.

(½ course each)

One hour per week in the winter and spring quarters. Survey of the development of scientific and medical thought from ancient times to the present. Mr. O'Malley

241A-241B. History of Clinical Sciences. (½ course each)

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

245. History of Ovarian Endocrinology. (½ course)

One hour per week in the fall quarter. Open to medical students and qualified graduate students. Survey of the development of ovarian endocrinology. Specific topics will be: Ovarian anatomy and histology; Oophorectomy; Transplantation of ovaries; Use of ovarian extracts; Isolation of estrogens; Function of the corpus luteum; Isolation of gestagens; Ovarian androgens; Gonadotropins and Hormonal contraception. Mr. Simmer

250. History of Neurology and Medical Psychology.

(¼ course)

One hour per week in the fall quarter. Lectures on the history of neurology and medical psychology from antiquity to the 20th century. The lectures discuss concepts held by medical scientists on the structure and function of the nervous system and on the interaction of mind and body, as well as the influence of these concepts on therapy of nervous and mental disorders. Mr. Amacher

252A-252B. Seminar in Medical History.

One 2-hour session per week in the fall and winter quarters. Prerequisite: ability to read at least one foreign language. Bibliography and readings, class discussion and papers on selected topics in the history of medicine: course, 252A, beginnings to 1600; course 252B, 1600 to present. Mr. O'Malley

253. Development of the Basic Medical Sciences and Their Impact Upon Clinical Medicine.

Prerequisite: open to medical students and qualified graduate students. The influence of the basic medical sciences as they develop from the 16th to the 19th century upon clinical medicine, and demonstration of the resulting advancement of medicine. Mr. Agnew, Mr. O'Malley, Mr. Simmer

596. Directed Individual Studies in Medical History.

Investigation of subjects in medical history selected by students with the advice and direction of the instructor in the fall, winter and spring quarters. Individual reports and conferences. Mr. Agnew, Mr. O'Malley

599. Research for and Preparation of the Doctoral Dissertation.

Investigation of materials relative to the doctoral dissertation, their evaluation and written presentation. Mr. Agnew, Mr. O'Malley

■ **MEDICAL MICROBIOLOGY AND IMMUNOLOGY**

(Department Office, 43-239 Center for the Health Sciences)

Marcel A. Baluda, Ph.D., *Professor of Microbiology and Immunology.*

Ruth A. Boak, M.D., Ph.D., *Professor of Microbiology and Immunology, Pediatrics, and Public Health.*

John M. Chapman, M.D., *Professor of Microbiology and Immunology, Public Health, and Preventive Medicine and Public Health.*

William H. Hildemann, Ph.D., *Professor of Microbiology and Immunology (Acting Chairman of the Department).*

- A. F. Rasmussen, Jr., M.D., Ph.D., *Professor of Microbiology and Immunology.*
 Telford H. Work, M.D., *Professor of Infectious and Tropical Diseases in Medical Microbiology and Immunology and in Public Health.*
 Stephen Zamenhof, Ph.D., *Professor of Microbial Genetics and Biological Chemistry.*
 John F. Kessel, Ph.D., *Emeritus Professor of Infectious Diseases.*
 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.*
 Margret I. Sellers, Ph.D., *Associate Professor of Microbiology and Immunology.*
 Jack G. Stevens, D.V.M., 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.*
 Debi P. Nyak, Ph.D., *Assistant Professor of Microbiology and Immunology in Residence.*
 Jerrold A. Turner, M.D., *Assistant Professor of Microbiology and Immunology and Medicine in Residence.*
 Maurice L. White, Ph.D., *Instructor of Microbiology and Immunology in Residence.*



- Frances A. Hallman, M.S., *Lecturer in Microbiology and Immunology.*
 Seymour Froman, Ph.D., *Associate Clinical Professor of Microbiology and Immunology.*
 Kent H. Thayer, M.D., *Assistant Clinical Professor of Microbiology and Immunology.*

The Department of Medical Microbiology and Immunology in the School of Medicine offers the M.S. and Ph.D. degrees in medical microbiology and immunology. Graduate study may be in the fields of bacteriology, immunochemistry, immunogenetics, microbial genetics, mycology, parasitology, or virology. The graduate program is primarily designed for students seeking advanced training leading to the Ph.D. degree in any one of these special fields, or for students with a broader interest in the biology of infectious agents, immunology and host-parasite relationships who may elect to combine two or more fields. Occasional students may be accepted for the M.S. degree.

Admission to Graduate Status

For admission to the graduate program, a student must meet the requirements of the Graduate Division, and must hold an approved bachelor's degree with a major in either the biological or physical sciences.

Candidates are selected on the basis of an evaluation of the applicant's potential for graduate work as determined by:

1. Undergraduate, and where applicable, graduate scholastic record.
2. An interview with members of the Department, when possible.
3. Letters of recommendation.

Requirements for the Master's Degree

1. The general Graduate Division requirements (pages 139-143).
2. Microbiology and Immunology 201A-201B.
3. General Biochemistry 152A-152B or Biological Chemistry 101A-101B.
4. Comprehensive Examination.

Requirements for the Doctor's Degree

1. The general Graduate Division requirements (pages 143-145). (Proficiency in only one foreign language required.)

2. Three "core" courses in biochemistry: Chemistry 153, Chemistry 253, or equivalent, and one course selected from Chemistry 255, Chemistry 263, Chemistry 267, or the equivalent. Preparation for these courses includes mathematics through calculus and general physical chemistry.

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

206. Animal Virology.

Prerequisite: course in general biochemistry and in general microbiology, including virology. Consent of the instructor may be obtained in special cases. A study of viral structure, basic mechanisms of virus cell interaction, biochemistry of virus replication, and oncogenesis of viruses.

Mr. Baluda

208. 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: Bacteriology 100A-100B; recommended Bacteriology 110. Consent of the instructor may be obtained in special cases. 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. Zamenhof and the Staff

252. Seminar in Medical Virology. (¼ course)

Review of current literature in the field of medical virology emphasizing fundamental host-cell interrelationships in human disease of viral origin. Selected topics will be discussed and results interpreted; conclusions and experimental methods will be evaluated.

Miss Sellers

253. Seminar in Medical Parasitology. (¼ course)

Review of current and recent literature in the field of medical parasitology, emphasizing experimental work of medical or public health importance. Students will be expected to prepare reviews of selected subjects, and to discuss the contributions of various workers from the standpoint of experimental methods, results, their interpretation and their evaluation.

Mrs. Vogt

254. Seminar in Immunogenetics. (½ course)

Review of current and recent literature in the field of immunogenetics, with emphasis on fundamental studies involving genetic and immunologic principles and techniques. Selected topics will be discussed and results interpreted; conclusions and experimental methods will be evaluated.

Mr. Hildemann

255. Seminar in Medical Mycology. (¼ course)

Review of current and recent literature in the field of medical mycology, with emphasis on the host-parasite relationships in the human and animal mycoses. Students will be expected to prepare reviews of selected subjects and to discuss contributions of various workers from the standpoint of experimental methods, results, their interpretation and evaluation.

Mr. Howard

256. Seminar in Viral Oncology. (½ course)

An advanced research seminar designed to consider the current developments in the field. Selection of current subjects and publications dealing with tumor viruses, oncogenesis, development, and cellular regulation.

Mr. Baluda

257. Seminar in Host-Parasite Relationships. (½ course)

(Same as Bacteriology 257.) A discussion of recent advances in our knowledge of host-parasite interactions and means for controlling the parasites.

Mr. Miller

Individual Study and Research

597. Preparation for the Examinations for the M.S. Degree or for the Ph.D. (½ to 1½ courses)

The Staff

599. Research for and Preparation of the Doctoral Dissertation. (½ to 2 courses)

Prerequisite: Bacteriology and/or Biochemistry. 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. Fields of study may be in bacteriology, immunochemistry, immunogenetics, microbial genetics, mycology, parasitology or virology.

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.*

†Morton G. Wurtele, Ph.D., *Professor of Meteorology.*

**Jacob Bjercknes, Ph.D., *Emeritus Professor of Meteorology and Geophysics.*

Akio Arakawa, D.Sc., *Associate Professor of Meteorology.*

James G. Edinger, Ph.D., *Associate Professor of Meteorology.*

Hans Pruppacher, Ph.D., *Associate Professor of Meteorology.*

Sekharipuram V. Venkateswaran, Ph.D., *Associate Professor of Meteorology.*

William D. Bonner, Ph.D., *Assistant Professor of Meteorology.*

George L. Siscoe, Ph.D., *Assistant Professor of Meteorology.*

Richard M. Thorne, Ph.D., *Assistant Professor of Meteorology.*

Preparation for the Major

Course 4A-4B-4C; Physics 7A-7B-7C-7D; Mathematics 11A-11B-11C and 13A-13B-13C.

The Major

Course 109A-109B-109C, Physics 110A, 110B, 112A, 131; Mathematics 132; three courses from courses 143, 151A-151B, 161, 204A, 221, 223A, 225A, 242. In addition, students preparing for graduate studies in atmospheric radiation or upper atmospheric physics should take as electives the following four courses in physics: Physics 113, 115A, 115B, 108 or 122; students preparing for graduate studies in cloud physics should take as electives the following five courses: Physics 112B, 140, Chemistry 110B, 113, 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 follow-

ing: meteorology, physics, mathematics, astronomy, chemistry, geophysics or engineering.

A study program, approved by the Departmental graduate advisers. This shall include Meteorology 260, and graduate courses in at least three of the following fields of specialization; Dynamic Meteorology, Synoptic Meteorology, Cloud Physics, Atmospheric Radiation, Physics of the Upper Atmosphere and Planetary and Space Physics.

A passing grade on a written comprehensive examination, to be conducted in two parts, one in the candidate's field of specialization and one in related fields. The candidate will choose his related fields with the approval of the graduate advisers.

The Department operates under the "comprehensive examination plan" rather than the "thesis plan." However, arrangements can be made for a student to write a master's thesis provided he has a worthwhile research problem, and provided some professor is willing to undertake the guidance of his work. In this case the student must petition the Department for permission to pursue the "thesis plan." The comprehensive examination requirement will be waived if the petition is approved.

A reading knowledge of a foreign language is not required.

Requirements for the Doctor's Degree

For the general requirements, see pages 143-145.

A reading knowledge of one foreign language is required and should be taken dur-

†Absent on leave, 1969-1970.

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

ing 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 410.

4A-4B-4C. Introduction to Meteorology.

Lecture, three hours; laboratory, six hours. Prerequisite: Mathematics 11A-11B-11C, and Physics 7A-7B. 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, Mr. Pruppacher

Upper Division Courses

109A. Dynamics of the Atmosphere I.

Lecture, three hours; laboratory, three hours. Prerequisite: course 4C; Mathematics 13C. Kinematics of fluid motion. Lamellar and solenoidal fields. Vorticity and divergence theorems. Laplacian field. Dynamics of barotropic flow, of shear flow. Rayleigh surface and Helmholtz waves. Instability of stratified shear flow. Buoyancy instability, in dry and moist layers. Mr. Arakawa

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. Arakawa

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. Arakawa

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. Meteorological Measurements and Observations

Lecture, two hours; laboratory, six hours. Prerequisite: course 4C. Techniques of meteorological measurement and observation in the laboratory and in the field. Mr. Edinger

199. Special Studies in Meteorology.

($\frac{1}{2}$ 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

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. Holmboe

***206A-*206B. Atmospheric Convection.**

Lecture, three hours. Cellular and turbulent convection over a uniform surface, with applications to atmospheric motion; cloud dynamics. Mr. Wurtele

***208A-*208B. Atmospheric Turbulence and Diffusion.**

Lecture, three hours. Kinematics of homogeneous and shear flow turbulence; surface and planetary boundary layers; survey of field and laboratory observations and their interpretation by theory. Turbulent diffusion, with applications to air pollution. Mr. Neiburger, Mr. Wurtele

***210A. Theory of Planetary Circulation I.**

Lecture, three hours. Dynamics of geostrophic motion. Anelastic balance and hydrostatic balance. Gravity-inertia waves and geostrophic adjustment. Filtered equations. Quasi-geostrophic balance. β -plane approximation. Integral constraints. Wave instability. Physical basis of numerical weather prediction. Mr. Arakawa

***210B. Theory of Planetary Circulation II.**

Lecture, three hours. Prerequisite: course 210A. Thermally forced circulation in a rotating fluid. Hadley regime and Rossby regime. Generation of eddy transports. Theory of finite amplitude disturbances. Viscillation. Maintenance against friction. Effect of topography and heat sources. Mr. Arakawa

***212A. Numerical Weather Prediction I.**

(Formerly Numbered 214A.) Lecture, three hours. Basic computational methods in numerical weather prediction and in other numerical studies of atmospheric motion. Finite difference methods and truncation error. Initial value problem. Linear and nonlinear computational instability. Aliasing error. Boundary value problem. Relaxation. Computational boundary conditions. Mr. Arakawa

***212B. Numerical Weather Prediction II.**

(Formerly numbered 214B.) Lecture, three hours. Prerequisite: courses 212A, 210A or instructor's consent. Physical and computational design of numerical weather prediction and climate simulation models. Map projection. Barotropic model. Solution of balance equation. Quasi-geostrophic baroclinic model. Balanced model. Primitive equation and its initial condition. Inclusion of topography, heat and friction. Mr. Arakawa

214A-214B. General Circulation of the Atmosphere.

(Formerly numbered 216A-216B.) Lecture, three hours. Simulation of the global circulation and climate by numerical integration of the governing equations of motion, and comparisons with observations. Global heat, momentum and water vapor budgets, and energy transformation integrals. Numerical experiments on atmospheric predictability, climate modification, paleoclimates and the circulation and climate on Mars. Mr. Mintz

***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 electric charges in clouds. Physics of water substance: molecular structure, thermal and electrical properties of water vapor, liquid water, aqueous solutions and ice. Surface phenomena. Mr. Pruppacher

223B. Cloud and Precipitation Physics II.

Lecture, three hours. Prerequisite: course 223A. Basic thermodynamic principles including surface effects. Concept of thermodynamic equilibrium applied to systems with plane and curved interfaces. Thermodynamics of phase transition. Application of the kinetic theory of gases and liquids to homogeneous and heterogeneous nucleation in water vapor and supercooled liquid water. Mr. Pruppacher

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

* Not to be given, 1969-1970.

ATMOSPHERIC RADIATION**225A-225B. Radiation Processes in the Atmosphere.**

Lecture, three hours. Scattering of radiation by electrons and atoms. Transmission of molecular bands along homogeneous and atmospheric paths—**atmospheric emission—radiative equilibrium—techniques of atmospheric probing.** Mr. Sekera

225C. Scattering Processes in the Atmosphere.

(Formerly numbered 227A-227B.) Lecture, three hours. Scattering of radiation by atoms, molecules and aerosols. Mr. Sekera

***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.

PHYSICS OF THE UPPER ATMOSPHERE**240. Waves in Ionized and Non-ionized Media.**

Lecture, three hours. Acoustic, electromagnetic and plasma waves; longitudinal and transverse propagation; instabilities occurring in the Earth's environment; magnetotonic theory, Earth-ionosphere wave guide, ray tracing techniques. Mr. Thorne

246. Physics of the Ionosphere.

Lecture, three hours. Prerequisite: Physics 110A-110B or consent of the instructor. Structure, composition and dynamics of ionospheric layers. Mr. Venkateswaran

247A-247B. Non-Thermal Radiation Processes.

Lecture, three hours. Prerequisite: Physics 210A or consent of the instructor. Origin and characteristics of non-thermal radiation; solar flare phenomenology and theory, geophysical influences; radio noise from planetary atmospheres; sferics; noise associated with particle precipitation. Interplanetary scintillation; incoherent scattering by plasmas; observational results and techniques. Mr. Thorne, Mr. Venkateswaran

248A. Solar Wind Structure.

Lecture, three hours. Derivation of the magneto-hydrodynamic equations and their application to the solar wind; Parker's solution; spiral magnetic field and sector structure; deviations from spherical symmetry; radial dependence of fluctuations; shock waves; discontinuities and waves. Mr. Siscoe

248B. Aerodynamic Aspects of Magnetospheric Stresses and Motions.

Lecture, three hours. Prerequisite: course 248A or consent of the instructor. Solar wind-geomagnetic field interaction; formation of the magnetosphere; the bow shock and magnetosheath; the magnetospheric field; magnetospheric convection; the geomagnetic tail; static and dynamic equilibrium of the magnetosphere; geomagnetic storms. Mr. Siscoe

249A-249B-249C. Coupling Phenomena in the High Atmosphere.

Lecture three hours. Topics selected from magnetospheric-ionospheric coupling and ionosphere-neutral atmosphere coupling (e.g., plasmopause and polar trough, polar electrojet and substorms, magnetospheric ducts, conjugate point effects, dynamo currents, sporadic E, ionospheric drifts, winds and irregularities, aeronomic processes, auroral models). Mr. Siscoe, Mr. Thorne, Mr. Venkateswaran

Seminars**260. Seminar in Meteorology. (½ course)**

Mr. Arakawa, Mr. Pruppacher, Mr. Siscoe

261. Seminar in Atmospheric Dynamics. (½ course)

Mr. Arakawa, Mr. Mintz

262. Seminar in Cloud and Precipitation Physics.

(½ course)

Mr. Neiburger

263. Seminar in Atmospheric Radiation. (½ course)

Mr. Sekera

264. Seminar in Physics of the Upper Atmosphere.

(½ course)

265. Seminar in Weather Analysis and Forecasting.

(½ course)

Mr. Bonner

Individual Study and Research**596. Directed Studies for Graduate Students.**

(½ to 1 course)

The Staff

597. Preparation for the Master's Comprehensive Examinations and the Doctoral Qualifying Examinations. (½ to 1 course)

The Staff

598. Research and Preparation of the Master's Thesis. (½ to 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 110A-110B; 113; 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; 143; 150A-150B-150C; 152A-152B.

Physics 108; 110A-110B; 112A-112B; 122; 131.

Planetary and Space Science 101.

Graduate Courses of Special Interest to Qualified Meteorology Majors.

Astronomy 201A-201B-201C.

Chemistry 215; 223.

* Not to be given, 1969-1970.

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 210; 218; 240; 260A-260B-260C; 265.

■ MICROBIOLOGY

Graduate Study

The M.A. and Ph.D. degrees in microbiology are offered in the Department of Bacteriology (see page 177). Programs of study and research leading to the M.A. and Ph.D. degrees in the general area of microbiology are also offered in the Department of Botanical Sciences (see page 186), in the Depart-

ment of Medical Microbiology and Immunology, School of Medicine (see page 360), and in the Department of Zoology (see page 507). More detailed information regarding admission requirements and opportunities for graduate studies in these programs may be obtained by writing to the graduate adviser in the department concerned.

■ MILITARY SCIENCE

(Department Office, 132 Men's Gymnasium)

Donald G. Moore, B.A., Lieutenant Colonel, Infantry, *Professor of Military Science (Chairman of the Department)*.

Donald L. McShane, B.S., Major, Infantry, *Associate Professor of Military Science*.

James T. Bushong, B.S., Major, Chemical Corps, *Assistant Professor of Military Science*.

Robert W. Menig, B.A., Captain, Infantry, *Assistant Professor of Military Science*.

Curtis E. Riegel, B.S., Major, Armor, *Assistant Professor of Military Science*.

College of Letters and Science

Most department majors have sufficient free electives to allow all courses in this Department to be included in meeting the minimum degree requirements in Letters and Science. Students should check with this Department and with major Department counselors for details on number of courses acceptable toward a baccalaureate degree.

College of Engineering

The number of courses in this Department which may be included in meeting the minimum requirements for an engineering degree will be determined on an individual basis. The student should check with this Department and with his engineering counselor for details.

College of Fine Arts

At least six courses of this Department are acceptable toward meeting the minimum degree requirements in the College of Fine Arts. Students should check with this Department and with their fine arts counselor for details.

Army Reserve Officers' Training Corps

The Army R.O.T.C. program provides

training in the general military science curriculum leading to a commission in the Army. Students in all academic fields are eligible for admission in the general military science program. The purpose of the program is to provide a general type of training to produce officers who may serve in any arm of service of the Army after post graduate 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. High School seniors 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 com-

plete the Basic Course in most cases and the Advanced Course in all cases before commissioning. A limited number of two-year scholarships are available for outstanding students who have successfully completed the Basic Course and are about to enter the Advanced Course. See the Military Science Department for details.

Four-Year Program. Students are enrolled in the Basic Course on a voluntary basis. Upon completion of the Basic Course and entrance into the Advanced Course, students are required to execute a contract with the Department of the Army agreeing to complete the Advanced Course, enlist in the United States Army Reserve, and accept a commission if offered. Advanced Course students receive \$50 per month, military science books, and uniforms.

Two-Year Program. This program is primarily designed for transfer students from junior colleges and four-year institutions that do not offer Army R.O.T.C. Competition for existing spaces is extremely keen. (UCLA students are encouraged to enroll in the four-year program.) Students are enrolled in this program during the Winter Quarter of their sophomore year and must attend a six-week summer camp between their sophomore and junior years. Upon successful completion of this summer camp, the student will enter the Advanced Course under the same requirements as for the four-year program. He will receive \$50 per month, military science books, and uniforms.

The Army R.O.T.C. program is divided into two parts: (1) the two-year Basic Course for all qualified male students who select Army R.O.T.C., and (2) the Advanced Course for selected students who desire to complete an additional two years of R.O.T.C. training leading to a commission in the United States Army Reserve. Successful completion of the two- or four-year R.O.T.C. branch general curriculum qualifies graduates for a commission in any arm of service. The interests, aptitudes, and educational accomplishments of the student are given careful consideration in order that he may be recommended for a commission in the arm of service for which he is best qualified.

The Universal Military Training and Service Act (65 Stat. 75; 50 U.S.C. App. 451-467) as amended, and as further amended by the Reserve Forces Act of 1955 (PL305, 84th Congress; DA Bul. 12, 1955) defers from the draft students who are enrolled in a military science program and who meet the stand-

ards for acceptance and who agree to complete the Advanced Course training upon completion of the Basic Course. The purpose of deferring a student's active military service until completion of the R.O.T.C. course of instruction is to permit him to complete the entire four-year R.O.T.C. program prior to undertaking his active military service obligations. Additional information may be obtained from the Department.

Basic Course (Lower Division)

The Basic Course is offered on an elective basis to all qualified lower division male students. (The two-year Basic Course may be compressed into one year with the approval of the professor of military science.)

The objective of the two-year Basic Course is to acquaint the student with the fundamental principles of national security through the study of the military history of this country, to introduce the techniques and principles of modern warfare, and to develop the traits of character and leadership necessary to prepare him to meet his citizenship obligations. These courses prepare the student for the Advanced Course. Draft deferments may be granted to qualified Basic Course students who intend to pursue the four-year R.O.T.C. training program.

All necessary equipment, uniforms, and textbooks are provided free of charge to students.

1A-1B-1C. First Year Basic Military Science.

(½ course each)

One hour of classwork and one hour of leadership laboratory. Organization of the Army R.O.T.C., United States Army and National Security, individual weapons and marksmanship, and leadership. In addition, one hour of classwork and one hour of leadership laboratory; the student in course 1B is also required to participate in a six-hour Saturday field trip. The student must complete a two-unit (½ course) elective during one quarter in one of the following fields: effective communication, science comprehension, general psychology, political development, and political institutions. The Staff

20A-20B-20C. Second-Year Basic Military Science.

(½ course each)

Prerequisites: courses 1A-1B-1C or may be taken concurrently with 1A-1B-1C. Two hours of classwork and one hour of leadership laboratory. The student in course 20A is also required to participate in a six-hour Saturday field trip. The areas of studies are American military history, map and aerial photography reading, introduction to basic tactics and techniques and leadership laboratory. The Staff

20SC. First- and Second-Year Basic Military Science.

Six-week summer camp taken in lieu of 1A, 1B,

1C, 20A, 20B, and 20C. Contact Department for eligibility.

The Advanced Course (Upper Division)

The Advanced Course of instruction is designed to produce junior officers who by their education, training, and inherent qualities are suitable for continued development as officers in any arm or service of the United States Army. Training in military leadership is emphasized. Instruction is given in subjects common to all branches of the Army and qualifies the graduate for the duties of a junior officer. Students in this program, pursuing courses in basic science and engineering, are fully qualified for commissions in the arms or service related to their academic course of study.

Admission to the Advanced Course is by selection from qualified regularly enrolled students who meet the academic and physical requirements and who have demonstrated positive interest and leadership potential. Students may apply if they have successfully completed the Basic Course or have credit for the Basic Course from other institutions authorized to present the equivalent instruction or can present evidence of satisfactory service in the Armed Forces. A student must qualify for appointment as second lieutenant prior to reaching twenty-eight years of age. Normally, students accepted for entrance into the Advanced Course must have at least two more academic years remaining before qualifying for their first baccalaureate degree.

Students, other than scholarship program students, accepted for admission to the Advanced Course are paid approximately \$1000 during the two-year period (exclusive of summer camp). All students have the use of all necessary equipment and textbooks free of charge. The officers uniform provided each student becomes his personal property upon successful completion of the Advanced Course.

Advanced Course students are required to attend a six-week course of training at R.O.T.C. summer camp during the summer vacation period following the completion of the first year of the Advanced Course; this summer camp is attended by Advanced Course R.O.T.C. students from several uni-

versities. 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 one-half pay of a second lieutenant and travel expenses to and from camp. Academic credit of four units or one course for the six weeks of camp is granted by the University.

Flight Training Program. Flight instruction is offered to students in the second year of the Advanced Course. Under this program the Army will pay for flight training for selected qualified R.O.T.C. students. To qualify, the student must have an aptitude for flying and meet required physical standards.

103A-103B-103C. First-Year Advanced Military Science.

Three hours of classwork and one hour of leadership laboratory. Prerequisite: basic course, or basic summer camp, or six or more months active-duty service in the Armed Forces. Leadership, military teaching principles, branches of the Army, small-unit tactics and communications, precamp orientation, leadership laboratory. In addition, the student must complete a two-unit (½ course) elective during one quarter in one of the following fields: effective communications, science comprehension, general psychology, political institutions. The student is required to participate in a four day field training exercise at a local military reservation, scheduled during the break between the winter and spring quarters. (With consent of the Professor of Military Science, extracurricular special training conducted during the fall and winter quarters may be substituted for this requirement.) The student is required to maintain a B average or higher in R.O.T.C. upper division courses and meet minimum standards of physical fitness established by the Department; the student who fails to meet these standards must enroll in Physical Education 1 (Military Conditioning) each quarter until standards are met.

The Staff

104A-104B-104C. Second-Year Advanced Military Science.

Three hours of classwork and one hour of leadership laboratory.

Prerequisite: 103A-103B-103C. Operations, logistics, Army administration, military law, the role of the United States in world affairs, service orientation, leadership laboratory. In addition, the student must complete a two-unit (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 appro-

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)

Frank A. D'Accone, Ph.D., *Professor of Music.*

Roy Harris, Hon. Doc., *Professor of Music in Residence.*

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.*

J. H. Nketia, B.A., *Professor of Music.*

H. Jan Popper, Ph.D., *Professor of Music.*

Gilbert Reaney, M.A., *Professor of Music.*

Walter H. Rubsamen, Ph.D., *Professor of Music (Chairman of the Department).*

Clarence E. Sawhill, Mus.D., *Professor of Music.*

Robert M. Stevenson, Ph.D., *Professor of Music.*

Roy E. Travis, M.A., *Professor of Music.*

Donald K. Wilgus, Ph.D., *Professor of English and Anglo-American Folk Song.*

Raymond Moremen, M.S.M., *Emeritus Professor of Music.*

Laurence A. Petran, Ph.D., F.A.G.O., *Emeritus Professor of Music and Psychology.*

§Feri Roth, Mus.D., *Emeritus Professor of Music.*

John N. Vincent, Jr., Ph.D., *Emeritus Professor of Music.*

Paul E. Des Marais, M.A., *Associate Professor of Music.*

Maurice Gerow, Ph.D., *Associate Professor of Music.*

Edwin H. Hanley, Ph.D., *Associate Professor of Music.*

William R. Hutchinson, Ph.D., *Associate Professor of Music.*

Henri Lazarof, M.F.A., *Associate Professor of Music.*

Robert L. Tusler, Ph.D., *Associate Professor of Music.*

§ Recalled to active service.

Alden Ashforth, M.F.A., *Assistant Professor of Music.*
 Paul S. Chihara, A.M.D., *Assistant Professor of Music.*
 Malcolm Cole, Ph.D., *Assistant Professor of Music.*
 Frederick Hammond, Ph.D., *Assistant Professor of Music.*
 Richard A. Hudson, Ph.D., *Assistant Professor of Music, and Music Librarian.*
 David Morton, Ph.D., *Assistant Professor of Music.*
 James Porter, M.A., *Assistant Professor of Music.*
 ———, *Assistant Professor of Music.*
 ———, *Assistant Professor of Music.*



Ruth Adams, M.A., M.L.S., *Lecturer in Music.*
 Judith Balsam, *Associate in Music.*
 Martin Bernheimer, M.A., *Lecturer in 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.*
 Alan Gilbert, *Lecturer in Music.*
 Gary G. Gray, M.M., *Lecturer in Music.*
 Thomas Harmon, M.A., *Acting Assistant Professor of Music.*
 Maureen Hooper, M.A., *Lecturer in Music.*
 Freeman K. James, M.A., *Lecturer in Music.*
 Leon Knopoff, Ph.D., *Research Musicologist in Ethnomusicology.*
 Douglas H. Leedy, M.A., *Acting Assistant Professor of Music.*
 Natalie Limonick, B.A., *Lecturer in Music.*
 Sinclair R. Lott, B.A., *Lecturer in Music.*
 Tsun Y. Lui, *Lecturer in Music.*
 Mitchell Lurie, *Lecturer in Music.*
 Mehli Mehta, *Lecturer in Music.*
 Peter Mercurio, M.A., *Lecturer in Music.*
 Frederick W. Moritz, *Lecturer in Music.*
 Roy H. Morton, *Lecturer in Music.*
 Theodore Norman, *Lecturer in Music.*
 Cesare A. Pascarella, *Lecturer in Music.*
 Barbara Patton, B.A., *Lecturer in Music.*
 Stanley Plummer, *Lecturer in Music.*
 Sven H. Reher, M.A., *Lecturer in Music.*
 Charles Seeger, B.A., *Research Musicologist in Ethnomusicology.*
 Peggy Ann Sheffield, M.M., *Associate in Music.*
 Hardja Susilo, M.A., *Lecturer in Music.*
 Paul O. W. Tanner, M.A., *Lecturer in Music.*
 Suenobu Togi, *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.*
 Mitsuru Yuge, *Lecturer in Music.*

- , *Lecturer in Music.*
 ———, *Lecturer in Music.*
 ———, *Lecturer in Music.*
 ———, *Lecturer in Music.*
 ———, *Lecturer in Music.*
 ———, *Lecturer in Music.*

Requirements for Entering Music Students

Students planning to complete a major or minor in music whether or not they have 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 in musicianship and harmony by examination. Further information may be obtained from the Department of Music.

Music Department Honors Program

This program is designed for the senior student majoring in music who has achieved a 3.25 overall academic average and who has been recommended by the Department. If the student qualifies for this program, he must obtain the permission of the faculty member with whom he wishes to work. The program will allow the qualified student to work on an individual project in his field of specialization during one quarter of his senior year and obtain unit credit equivalent to one course. During this quarter the student need not enroll in any other courses. A public presentation will conclude the project, whether it be a composition, musicological paper, or a recital.

Preparation for the Major

Courses 10A-10B-10C, 11A-11B-11C, 12A-12B, 13A-13B. Three quarters of either French, German, or Italian, or the equivalent.

COLLEGE OF FINE ARTS

Distribution of Units

The total number of courses in the Music Department which may be included in the 45 courses required for the Bachelor of Arts degree may not exceed 21.

The Major

A minimum of 15 courses in the upper division, including 100A-100B, 106A, 107A; three courses from 120-146 including one

course from 120-122 and one from 123-125; two years of performance organization courses 170, 171 (performance specialists may use two units of 164D for this requirement); and five courses selected from one of the specializations listed below:

1. Composition and Theory: courses 106B, 107B-107C and two elective courses from 101, 103A-103B, 104, 105, 106C, 108, 141-146, 192 and 194.

2. History and Literature: two additional courses, one chosen from 120-122, one from 123-125, and three elective courses. Recommended: courses 120-129, 130-140, 150-151, and 191.

3. Ethnomusicology: 140A-140B-140C and two courses selected from 120-129, 141-147, or 190A-190B.

4. Performance: three courses in applied music classes 160-165, and two elective courses of which no more than one can be in applied music classes or performance organizations. Recommended: 101, 110A-110B, 111A-111B, 171, and additional courses in performance.

5. Music Education: five courses toward credential requirements selected from one of the following groups: (a) Instrumental and General Music: Music 111A, 114, three from 115A-115B-115C-115D, 116, 193, (Proficiency examinations covering the equivalent of two quarters in piano and one quarter in voice are required for the credential.†) (b) Choral and General Music: Music 110A-110B, 114, 193, and two elective courses. (Proficiency examinations covering the equivalent of six quarters in piano and six quarters in voice are required for the credential.†) (c) Elementary Music: Music 113, three from 115A-115B-115C-115D, 193 and one and one-half elective courses. (Proficiency examinations covering the equivalent of three quarters in piano and three quarters in voice are required for the credential.†)

NOTE: For further information on teach-

† 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.

ing credentials, consult the UCLA ANNOUNCEMENT OF THE GRADUATE SCHOOL OF EDUCATION and the music education adviser in the Department of Music.

COLLEGE OF LETTERS AND SCIENCE

The Major

Twelve courses of upper division work distributed as follows: courses 100A-100B, 106A, 107A; three courses from courses 120-146, including one course from 120-122 and one from 123-125; two years of performance organization courses 170, 171; and two additional upper division courses in music.

GRADUATE DIVISION

All graduate students are required to take placement examinations in the following subjects: *harmony, counterpoint, history and literature of music* (part I, before 1750; part II, after 1750), *formal analysis and identification of styles* (part I, before 1750; part II, after 1750), *score reading* (including basic piano), and *solo performance* in the student's principal performing medium. The placement examinations are given just prior to the fall quarter and again during the year at times to be announced. Entering students are required to take at least five of the eight examinations prior to their first quarter of residence, and the remaining examinations during the following two quarters. Where deficiencies are indicated, the student will retake the examination(s) or complete appropriate course work with a minimum grade of B. (A listing of appropriate courses is available from the secretary of the departmental graduate committee.) In addition, the student's transcript must show at least a grade B average in each of the following subjects: musicianship (dictation, sight singing, and keyboard harmony) and orchestration. Deficiencies in these areas must be removed by examination or appropriate course work.

The completion of all of the above requirements is prerequisite to the final examination for the M.A. degree and the qualifying examinations for the Ph.D. degree.

Requirements for the Secondary Credential and Elementary Credential

Consult the UCLA ANNOUNCEMENT OF THE GRADUATE SCHOOL OF EDUCATION.

Requirements for the Master of Arts Degree

For general requirements, see page 139. In addition, candidates for the Master of

Arts degree in music must satisfy the following:

Admission. The candidate must have completed a Bachelor of Arts degree with a major in music (or the equivalent degree) as described in this bulletin, on page 140. 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 142). 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), and a proseminar or seminar appropriate to his discipline during each quarter of attendance: historical musicology, courses 191, 210, 211, 250, 256, 260; composition, courses 192, 194, 249, 251, 252; ethnomusicology, courses 190A, 190B, 280; systematic musicology, courses 269, 272, 275; music education, courses 193, 270. Exceptionally a student may be allowed, upon petition, to substitute courses 596A, 596B, 596C for a seminar in his discipline. Course 598 serves to guide the preparation of the thesis and should normally be taken for one quarter after the completion of the placement examinations. All candidates are required to complete a minimum of nine courses in graduate residence, five of which must be at the graduate level. A maximum of two courses in performance may be counted toward the master's degree; no more than one may be from courses 160-165, nor more than one from courses 170-171. In addition to these, only the following upper division courses will be allowed to count toward the course requirement for the master's degree: 101, 103, 104, 105,

106B, 106C, 107B||, 107C||, 108, 109, 110‡, 111‡, 113‡, 120, 121, 122, 123, 124, 125, 129, 130, 131, 138, 139, 140A§, 140B§, 140C§, 141, 142, 143, 144, 145, 146, 150, 180, 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 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

‡ 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.

143. 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 372. The degree normally will have been in the same field of concentration as the proposed doctorate. If a student wishes to obtain a doctorate in a field other than that of his M.A. he must complete additional work as prescribed by the Department. All prospective graduate students in composition should submit scores for evaluation at the time they apply for admission to the Graduate Division. Those unable to do so, can only be admitted provisionally, subject to the submission and ultimate approval of their compositions by the faculty.

Fields. The Ph.D. is offered in historical musicology, ethnomusicology, systematic musicology, music education, and composition.

Dissertation. In all fields but composition the dissertation will be an extended musicological monograph. In the field of composition, the dissertation will be a composition in an extended form, accompanied by an essay that analyzes the work thoroughly, describes its techniques and style, and shows its relationship to the tradition.

Course of Study. Each student should plan his program under the guidance of a graduate adviser. He is required to take courses 200A-200B (exception: students whose field is composition need only take course 200A). He is also expected to attend a seminar appropriate to his discipline during each quarter of attendance until the Ph.D. qualifying examinations have been passed: historical musicology, courses 210, 211, 250, 256, 260; ethnomusicology, course 280, or with an interdisciplinary emphasis, 258; systematic musicology, courses 269, 272; music education, course 270; composition, courses 249, 251, 252. Candidates for the Ph.D. in composition are required to complete at least seven courses beyond the M.A. degree. In exceptional circumstances, and upon petition, a student may substitute course 596A, 596B, 596C for the seminar in his discipline. Course 599 serves to guide the preparation of the dissertation and should normally be taken for three quarters after the completion of the qualifying examinations.

Foreign Language. In all fields except composition, candidates must have a command of French (or Italian, upon petition) and German, and of such other languages (e.g.,

Latin, Japanese, Russian, Spanish) and skills (notation, statistics) as the field of specialization may require. In the field of composition the candidate will elect two languages from the following: German, French, Italian, Russian, or Latin.

Examinations. Before he is admitted to candidacy, the student must pass a series of qualifying examinations; after he has completed his dissertation he must pass a final examination, concerned primarily with the defense of his dissertation. The qualifying examinations are both written and oral. In all fields but composition the written examinations consist of the following: (a) history of musical styles in Western civilization (three hours); (b) analysis of form, style and texture in Western music (three hours); (c) an examination to demonstrate a basic knowledge of the music of non-Western cultures (two hours); and (d) a choice of one or more: acoustics of music, aesthetics of music, psychology of music, and organology (two hours).

In the following fields of specialization further written examinations, totaling six hours, are required in two areas:

Historical musicology. One area to be selected from Ancient, Medieval, Renaissance, or Baroque music; the other area from classical, romantic, or 20th-century music.

Ethnomusicology. Two areas to be selected from contrasting musical cultures.

Systematic musicology. Two areas to be selected from acoustics, psychology of music, aesthetics of music and organology.

Music education. Two areas, one to encompass historical, philosophical, and psychological bases, the other to be selected from music education emphasizing elementary, secondary, college-university levels, or adult education.

Composition. The written qualifying examinations consist of the following: (a) general history of music (three hours); (b) one or more of the following: acoustics, psychology of music, aesthetics of music, or ethnomusicology (three hours); (c) 20th century music and analysis (three hours); and (d) music theory from the medieval period to the present (three hours).

The written qualifying examinations are administered by the student's guidance committee. At their conclusion an oral examination, covering the general and specialized areas mentioned above, is administered by the doctoral committee.

Lower Division Courses

1. Fundamentals of Music.

(Formerly numbered 31.) Five hours weekly, including two laboratory hours. 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 or consent of the instructor 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.

The Staff

3A-3B-3C. Fundamentals of Voice. (½ course each)

(Formerly numbered 40A.) Four hours weekly. Prerequisite: Music 1 or consent of the instructor. 3A is prerequisite to 3B; 3B is prerequisite to 3C.

Mrs. Patton, Mr. Windward, Mr. Winger

4. Fundamentals of Piano. (½ course)

(Formerly numbered 40E.) Three hours weekly. May be repeated for credit.

Mrs. Turill

5. Sight Reading (Choral). (No credit)

Three hours weekly. Designed as an aid for students who need sight reading techniques for solo and ensemble singing.

The Staff

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 355. Students must enroll in the corresponding course and section of the 11 series. Ear training, sight singing, dictation, and keyboard harmony are correlated with the corresponding quarter of course 11A-11B-11C.

The Staff

11A-11B-11C. Harmony. (½ course each)

(Formerly numbered 3A-3B-3C.) Two hours weekly. For prerequisites see Requirements for Entering Music Students, page 355. Students must enroll in the corresponding course and section of the 10 series. The study of harmony in music from Bach through the 20th century.

The Staff

12A-12B. Counterpoint.

(Formerly numbered 5A-5B.) Four hours weekly. Prerequisites: courses 10A-10B-10C and 11A-11B-11C. Writing and analysis of representative contrapuntal works. First quarter: modal counterpoint; second quarter: tonal counterpoint.

The Staff

13A-13B. Introduction to Musical Styles.

(½ course each)

(Formerly numbered 20A-20B-20C-20D.) Three 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.

The Staff

60-65. Applied Study of Music Literature:

Intermediate. (½ course each)

Two hours weekly. Prerequisites: consent of the instructor. Students enrolling in the following courses must be able to perform scales in all keys

for the instrument or voice and must demonstrate proficiency in a repertoire of smaller forms. May be repeated for credit.

String Classes. 60A. Violin; 60B. Viola; 60C. Cello; 60D. String Bass; 60E. Harp; 60F. Classical Guitar; 60G. Viola da gamba. (Formerly numbered 41K, 41L, 41M, 41N, 41X respectively.) The Staff

Woodwind Classes. 61A. Flute; 61B. Oboe; 61C. Clarinet; 61D. Bassoon; 61E. Saxophone. (Formerly numbered 41P, 41Q, 41R, 41S respectively.) The Staff

Brass Classes. 62A. Trumpet; 62B. French Horn; 62C. Trombone (Formerly numbered 41U, 41T, 41V respectively.) The Staff

Percussion Classes. 63. Percussion (Formerly numbered 41W.) The Staff

Keyboard Classes. 64A. Piano; 64B. Organ; 64C. Harpsichord. (Formerly numbered 41E, 41J, 41Y respectively.) The Staff

Voice Classes. 65. Voice. (Formerly numbered 41A.) The Staff

70A-70N. Performance Organizations.

(½ course each)

(Formerly numbered 42D, 42C, 42F, 42E, 42J, 42C, 42A, 42B, 42K, 42H respectively.) Prerequisite: consent of the instructor. May be repeated for credit.

70A. A Cappella Choir; 70B. University Chorus; 70C. Madrigal Singers; 70D. Men's Glee Club; 70E. Women's Choral Society; 70F. Collegium Musicum; 70G. Chamber Music; 70H. Symphony Orchestra; 70J. Symphonic Band; 70K. Marching and Varsity Bands; 70L. Opera Workshop; 70N. Chamber Orchestra. The Staff

71A-71N. Ethnomusicology Performance Organizations. (½ course each)

(Formerly numbered 45A, 45B, 45C, 45D, 45E, 45F, 45G, 45H, 45J, 45K, 45L, 45M respectively.) Prerequisite: consent of the instructor. May be repeated for credit.

71A. Music and Dance of Bali; 71B. Music and Dance of the Balkans; 71C. Music of China; 71D. Music and Dance of Ghana; 71E. Music and Dance of Greece; 71F. Music of India; 71G. Music and Dance of Japan; 71H. Music and Dance of Java; 71J. Music and Dance of Mexico; 71K. Music of Persia; 71L. Music of the Philippines; 71M. Music of Thailand; 71N. Music of Korea. The Staff

Upper Division Courses

100A-100B. Studies in Analysis.

(Formerly numbered 108A-108B.) Five hours weekly. Prerequisites: courses 10A-10B-10C, 11A-11B-11C, 12A-12B, 13A-13B; course 100A is prerequisite to 100B. Analysis of significant works from each of the style periods of Western music with emphasis upon the techniques of composition.

100A: Gregorian Chant through 1750; 100B. Roccoco to the Present. The Staff

101. Keyboard Harmony and Score Reading.

(Formerly numbered 101 and 102.) Four hours weekly. Prerequisites: courses 10A-10B-10C, 11A-11B-11C, 12A-12B, 13A-13B. Emphasizes the reading of figured bass, sequences, modulations in the harmonic vocabulary of the 18th and 19th centuries. Reading at the piano of multi-staff notation, the various C clefs, and parts for transposing

instruments; chamber music and simple orchestral scores. The Staff

103A-103B. Advanced Harmony.

Three hours weekly. Prerequisites: courses 10A-10B-10C, 11A-11B-11C, 12A-12B, 13A-13B. The advanced study of harmonic practices. Mr. Travis

104. Advanced Modal Counterpoint.

(Formerly numbered 105.) Three hours weekly. Prerequisites: courses 10A-10B-10C, 11A-11B-11C, 12A-12B, 13A-13B. Writing in three and more voices, with emphasis on 16th century practices. Mr. Nelson

105. Fugue.

(Formerly numbered 106.) Three hours weekly. Prerequisites: courses 10A-10B-10C, 11A-11B-11C, 12A-12B, 13A-13B. Fugal writing for three and more voices. Mr. Nelson

106A-106B-106C. Orchestration.

(Formerly numbered 109A-109B.) Three hours weekly. Prerequisites: courses 10A-10B-10C, 11A-11B-11C, 12A-12B, 13A-13B; course 106A is prerequisite to 106B; course 106B is prerequisite to 106C.

106A: Instrumentation; 106B-106C: Scoring for Ensembles and Full Orchestra. The Staff

107A-107B-107C. Composition.

Three hours weekly. 107A. Prerequisites: courses 10A-10B-10C, 11A-11B-11C, 12A-12B, 13A-13B, and 100A-100B which may be taken concurrently. Vocal and instrumental composition in the smaller forms 107B. Prerequisite: course 107A. Primarily for the student whose specialization is composition. 107C. Prerequisites: course 107B and consent of the instructor. Primarily for the student whose specialization is composition. The Staff

108. Acoustics.

(Formerly numbered 118.) Four hours weekly. Prerequisite: one year of high school physics, Physical Sciences 1, or the equivalent. A course covering the physical basis of musical sounds, including a discussion of the objective cause of consonance and dissonance, together with a treatment of the generation and the analysis of the tones produced by the various musical instruments and the voice. Illustrated lectures and class discussions. The Staff

109A-109B-109C. Composition for Motion Pictures and Television. (½ course each)

Two hours weekly. Prerequisites: courses 106A-106B and 107A-107B-107C, and consent of the instructor. 109A is prerequisite to 109B; 109B is prerequisite to 109C. Composition of music for the dramatic and documentary film in cinema and television. Techniques used in recording and editing. The Staff

110A-110B. Study and Conducting of Choral Literature. (½ course each)

(Formerly numbered 110 and 179B.) Three hours weekly. Prerequisites: courses 10A-10B-10C, 11A-11B-11C, 12A-12B, 13A-13B; 110A is prerequisite to 110B. The theory and practice of conducting as related to the study of choral works from the Renaissance to the present day. Mr. Gerow, Mr. Weiss

111A-111B. Study and Conducting of Instrumental Literature.

(Formerly numbered 111 and 179A.) Five hours

weekly. Prerequisites: courses 10A-10B-10C, 11A-11B-11C, 12A-12B, 13A-13B; 111A is prerequisite to 111B. The theory and practice of conducting as related to the study of instrumental works for string and wind ensembles. Mr. Sawhill

112. Band Scoring.

Four hours weekly, including two laboratory hours. Prerequisite: course 106A. Scoring for the modern band and wind ensembles. Mr. James

113. Music Literature for Children.

(Formerly numbered 179C.) Four hours weekly, including one laboratory hour. Prerequisite: any one of the following: course 1, 2A, 13A, or consent of the instructor. Study of folk and art music suitable for children, including vocal and orchestral literature of selected periods and countries. Mr. Gerow, Miss Hooper

114. Music Literature for the Adolescent.

Five hours weekly, including one laboratory hour. Prerequisites: courses 10A-10B-10C, 11A-11B-11C, 12A-12B, 13A-13B, 193. The study of basic concert repertoire of selected periods and countries suitable for use with the adolescent. Emphasis will be placed upon the development of the skills of analysis and research needed in the preparation of musical materials for the beginning and intermediate young listener. Mr. Gerow, Miss Hooper

115A-115D. Study of Instrumental

Techniques. (½ course each)

Four hours weekly. Prerequisites: courses 10A-10B-10C, 11A-11B-11C, 12A-12B, 13A-13B. The study of instruments and the techniques used in the development of tone, intonation, fingering, relationships and transposition. Mr. Sawhill, Mr. Tanner

116. Study of Instrumental Ensembles.

(½ course)

Four hours weekly. Prerequisite: courses 115A-115B-115C-115D, 193. Students will be assigned to small string and/or wind ensembles as soon as they become proficient in their playing. Written arrangements for small ensembles in various combinations will be performed in class. Mr. James

120. Music in the Middle Ages.

(Formerly numbered 123.) Four hours weekly. Prerequisites: courses 10A-10B-10C, 11A-11B-11C, 12A-12B, 13A-13B. A detailed study of the musical forms and an introduction to sacred and secular music from early Christian times to the end of the 14th century. The Staff

121. Music in the Renaissance Period.

(Formerly numbered 124.) Four hours weekly. Prerequisites: courses 10A-10B-10C, 11A-11B-11C, 12A-12B, 13A-13B. The meaning of the Renaissance as it applies to music. A study of musical forms, techniques, and aesthetic attitudes from the pre-Renaissance through the age of Palestrina. The Staff

122. Music in the Baroque Period.

(Formerly numbered 125.) Four hours weekly. Prerequisites: courses 10A-10B-10C, 11A-11B-11C, 12A-12B, 13A-13B. A study of representative works from Monteverdi through Handel and J. S. Bach. The Staff

123. Music in the Classic Period.

(Formerly numbered 126.) Four hours weekly. Prerequisites: courses 10A-10B-10C, 11A-11B-11C, 12A-12B, 13A-13B. A study of representative works from Domenico Scarlatti through Haydn, Mozart, and Beethoven. The Staff

124. Music of the Romantic Period.

(Formerly numbered 127.) Four hours weekly. Prerequisites: courses 10A-10B-10C, 11A-11B-11C, 12A-12B, 13A-13B. The growth of Romanticism in the works of Weber and Schubert; the expansion of the style and its culmination in Brahms, Wagner, and Mahler. The Staff

125. Music of the Twentieth Century.

(Formerly numbered 128.) Four hours weekly. Prerequisites: courses 10A-10B-10C, 11A-11B-11C, 12A-12B, 13A-13B. Form, style, and idiom in music from 1900 to the present. The Staff

129. Byzantine Music.

Three hours weekly. Prerequisites: course 2A, or course 13A, or consent of the instructor. An introduction to the structure of Byzantine liturgies, offices, and their chants before 1453. The Staff

130. Music of the United States.

(Formerly numbered 121A.) Four hours weekly. Prerequisite: course 2A, or 13A or consent of the instructor. A survey of art music from colonial times to the present. Mr. Marrocco

131. Music of Latin America.

(Formerly numbered 121B.) Four hours weekly. Prerequisite: consent of the instructor. A survey of art music from the earliest times to the present. Mr. Stevens

132. Development of Jazz.

(Formerly numbered 153.) Four hours weekly, including one laboratory hour. Prerequisite: course 2A or 13A or consent of the instructor. An introduction to jazz; its historical background and its development in the United States. Mr. Tanner

133. Bach.

(Formerly numbered 150.) Four hours weekly, including two laboratory hours. Prerequisite: course 2A or 13A or consent of the instructor. The life and works of Johann Sebastian Bach. The Staff

134. Beethoven.

(Formerly numbered 151.) Four hours weekly, including two laboratory hours. Prerequisite: course 2A or 13A or consent of the instructor. The life and works of Ludwig van Beethoven. The Staff

135A-135B-135C. History of the Opera.

(Formerly numbered 152.) Five hours weekly, including one laboratory hour. Prerequisite: course 2A or 13A or consent of the instructor. 135A: Opera of the Baroque and Classical Periods; 135B: Opera of the Romantic Period; 135C: Opera of the Twentieth Century. Mrs. Limonick, Mr. Popper

136. Music for the Legitimate Drama and Dramatic Motion Picture.

(Formerly numbered 137.) Four hours weekly. Prerequisite: consent of the instructor. A history and analysis of incidental music for the theater from ancient Greece to the present. The place and func-

tion of background or mood music, overtures, entr'actes, and music that relates to the action or locale.
Mr. Rubsamen

137. Political Influence on Music.

(Formerly numbered 136.) Four hours weekly. Prerequisite: consent of the instructor. The influence of revolution and dictatorship upon music and its allied arts from antiquity to the present. The Staff

138. Aesthetics of Music.

(Formerly numbered 139.) Three hours weekly. Prerequisite: course 2A or 13A or consent of the instructor. A survey of the literature of music aesthetics from Plato to the present. Mr. Marrocco

139. History and Literature of Church Music.

(Formerly numbered 171.) Four hours weekly. Prerequisite: course 2A or 13A or consent of the instructor. A study of the forms and liturgies of western church music. Mr. Weiss

140A-140B-140C. Musical Cultures of the World.

(Formerly numbered 136A-136B.) Five hours weekly. Prerequisite: consent of the instructor. Course 140A is not prerequisite to 140B, 140B is not prerequisite to 140C. 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. The Staff

141A-141B. Music of Indonesia.

(Formerly numbered 122.) Five hours weekly, including two laboratory hours. Prerequisite: course 140A-140B-140C, 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. The emphasis in 141A will be on Java; in 141B, on Bali. Mr. Hood

142. Music of the Balkans.

(Formerly numbered 129.) Five hours weekly, including two laboratory hours. Prerequisite: course 140A-140B-140C, or consent of the instructor. A survey of the music of the Balkan countries, including a study of eastern and western elements; performance on representative instruments. Mr. Kremenliev

143A-143B. Music of Africa.

(Formerly numbered 176A-176B.) Five hours weekly, including two laboratory hours. Prerequisite: course 140A-140B-140C, or consent of the instructor. Course 143A is prerequisite to 143B. An investigation of the historical aspects, social functions and relationships of music to other art forms in selected areas of Africa. The Staff

144. American Folk and Popular Music.

(Formerly numbered 120 and same as Folklore 144.) Four hours weekly, including one laboratory hour. Prerequisite: course 2A or 13A or consent of the instructor. A survey of the history and characteristics of the music developed in or for general American culture and various subcultures. Mr. Wilgus

145. History and Theory of Persian Music.

Five hours weekly. Prerequisites: courses 140A-140B-140C, or consent of the instructor. A detailed

analytical study of the history, the theory and the aesthetics of Persian classical music, covering both instrumental and vocal tradition. The Staff

146. Music of Thailand.

Five hours weekly, including one laboratory hour. Prerequisites: courses 140A-140B-140C, 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

147. Music of China.

Five hours weekly. Prerequisites: courses 140A-140B-140C or consent of the instructor. A detailed study of the history and evolution of Chinese music with analysis of representative compositions. Mr. Lai

150A-150B-150C. Music Criticism. (½ course each)

Two hours weekly. Prerequisites: courses 2A, 13A, or consent of the instructor. A study of factors in critical evaluation of musical works in performance. Mr. Bernheimer

151. History of Musical Performance Practices.

(½ course)

Two hours weekly. Prerequisites: courses 2A, 13A, or consent of the instructor. A study of musical interpretation and re-creation from the viewpoint of stylistic authenticity. The Staff

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. May be repeated for credit.

String Classes: 160A. Violin; 160B. Viola; 160C. Cello; 160D. String Bass; 160E. Harp; 160F. Classical Guitar; 160G. Viola da gamba; 160H. Master Class in Violin; 160J. Harp Ensemble. (Formerly numbered 141K, 141L, 141M, 141N, 141X respectively.) The Staff

Woodwind Classes. 161A. Flute; 161B. Oboe; 161C. Clarinet; 161D. Bassoon; 161E. Saxophone. (Formerly numbered 141P, 141Q, 141R, 141S respectively.) The Staff

Brass Classes: 162A. Trumpet; 162B. French Horn; 162C. Trombone. (Formerly numbered 141U, 141T, 141V respectively.) The Staff

Percussion Classes: 163. Percussion. (Formerly numbered 141W.) The Staff

Keyboard Classes: 164A. Piano; 164B. Organ; 164C. Harpsichord; 164D. Accompanying; 164E. Performance Practices in Piano—enrollment only by consent of the instructor. Designed for the most advanced students. (Formerly numbered 141E, 141J, 141Y, 143, 144 respectively.) The Staff

Voice Classes: 165. Voice. (Formerly numbered 141A.) The Staff

170A-170N. Performance Organizations. (½ course each)

(Formerly numbered 142D, 142C, 142F, 142E, 142E, 142J, 142G, 142A, 142B, 142K, 142H, 142B respectively.) Prerequisite: consent of the instructor. May be repeated for credit.

170A. A Cappella Choir; 170B. University Chorus; 170C. Madrigal Singers; 170D. Men's Glee Club; 170E. Women's Choral Society; 170F. Collegium Musicum; 170G. Chamber Music; 170H. Symphony Orchestra; 170J. Symphonic Band; 170K. Marching

and Varsity Bands I; 170L. Opera Workshop; 170M. Symphonic Wind Ensemble; 170N. Chamber Orchestra. The Staff

171A-171N. Ethnomusicology Performance Organizations. (½ course each)

(Formerly numbered 145A, 145B, 145C, 145D, 145E, 145F, 145G, 145H, 145J, 145K, 145L, 145M respectively.) Prerequisite: consent of the instructor. May be repeated for credit.

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; 171N. Music of Korea. The Staff

180. Transcription, Analysis, and Classification of Folk Music.

(Same as Folklore 180.) Five hours weekly. Prerequisites: course 140 or 144. An intensive study of methods and techniques necessary to the study of folk music. The Staff

181. Folk Music of Central and Western Europe.

(Same as Folklore 181.) Prerequisite: course 2A or 13A or consent of the instructor. An illustrated examination of the musical styles indigenous to the area between Ireland and Czechoslovakia. Particular attention will be paid to the psychological function of folk music in its social and political context. Mr. Porter

Proseminars

190A-190B. Proseminar in Ethnomusicology.

(Formerly numbered 197.) Three hours weekly. Prerequisites: courses 140A-140B-140C; may be taken concurrently. The Staff

191. Proseminar in Historical Musicology.

Three hours weekly. Prerequisite: two courses from 120, 121, 122, 123, 124, 125. The Staff

192. Proseminar in Composition.

Three hours weekly. Prerequisite: course 107C. The Staff

193. Proseminar in Music Education.

Three hours weekly. Prerequisites: courses 10A-10B-10C, 11A-11B-11C, 12A-12B, 13A-13B. Mr. Gerow, Miss Hooper

194. Proseminar in Orchestration.

Three hours weekly. Prerequisite: course 106A-106B-106C. The Staff

198A-198F. Special Courses in Music.

(½ to 1 course)

Four hours weekly. Prerequisites: courses 10A-10B-10C, 11A-11B-11C, 12A-12B, 13A-13B. The Staff

199. Special Studies in Music.

Individual studies and Music Department Honors Program. May be repeated to a maximum of eight units. The Staff

†Does not fulfill the performance organization requirement for music majors unless 170J is taken concurrently.

Graduate Courses

200A. Research Methods and Bibliography.

Three hours weekly. A survey of general bibliographic material in music. The Staff

200B. Research Methods and Bibliography.

Three hours weekly. Prerequisite: course 200A. Guided writing, utilizing specific bibliography in historical musicology, systematic musicology, ethnomusicology, and music education. The Staff

210. Seminar in Medieval Notation.

(Formerly numbered 210A.) Three hours weekly. Prerequisite: course 120. Vocal and instrumental notation; paleography of the period. Mr. Reaney

211. Seminar in Renaissance Notation.

(Formerly numbered 210B.) Three hours weekly. Prerequisite: course 121. Vocal and instrumental notation; paleography of the period. Mr. Rubsamem

249. Seminar in Theory.

Three hours weekly. Prerequisite: course 107C. The Staff

250. Seminar in the History of Music Theory.

Three hours weekly. Prerequisite: courses 200A and 210 or 211. The Staff

251. Seminar in Orchestration.

(Formerly numbered 251A-251B.) Three hours weekly. Prerequisites: courses 106B and 107C. May be repeated for credit. The Staff

252. Seminar in Composition.

(Formerly numbered 252A-252B.) Three hours weekly. Prerequisites: courses 106B and 107C. May be repeated for credit. The Staff

253. Seminar in Notation and Transcription in Ethnomusicology.

Three hours weekly. Prerequisites: 190A-190B or consent of the instructor. The Staff

254. Seminar in Field and Laboratory Methods in Ethnomusicology.

Three hours weekly. Prerequisites: 190A-190B or consent of the instructor. Mr. Hood

255. Seminar in Musical Instruments of the Non-Western World.

Three hours weekly. Prerequisites: 190A-190B or consent of the instructor. The Staff

256. Seminar in Musical Form.

Three hours weekly. Prerequisites: course 100A-100B. The Staff

257. Seminar in Music of the United States and Canada.

(Formerly numbered 257A.) Three hours weekly. Prerequisite: course 130. Mr. Marrocco

258. Seminar in Anglo-American Folk Music.

(Same as Folklore 258.) Three hours weekly. Prerequisite: course 144. Mr. Wilgus

259. Seminar in Music of Latin America.

(Formerly numbered 257B.) Three hours weekly. Prerequisite: course 131. Mr. Stevenson

260. Seminar in Historical Musicology.

(Formerly numbered 260A-260B.) Three hours weekly. Prerequisites: courses 200A and 200B; 210 or 211. Students may enroll in 200B, 210 or 211 concurrently. May be repeated for credit.

Mr. Hanley, Mr. Rubsamen

266. Seminar in Music of the Twentieth Century.

Three hours weekly. Prerequisite: course 125.

The Staff

269. Seminar in the History of European Instruments.

Three hours weekly.

The Staff

270. Seminar in Music Education.

(Formerly numbered 270A-270B.) Three hours weekly. Prerequisite: course 193. May be repeated for credit.

Mr. Gerow

272. Seminar in Systematic Musicology.

(Formerly numbered 272A-272B.) Three hours weekly. Prerequisite: course 108, Psychology 188A-188B, or consent of the instructor. May be repeated for credit.

Mr. Petran

273. Seminar in Acoustics of Music.

Prerequisite: course 108 or consent of the instructor.

275. Seminar in Aesthetics of Music.

Three hours weekly. Prerequisite: course 138.

Mr. Marocco

280. Seminar in Ethnomusicology.

(Formerly numbered 280A-280B.) Three hours weekly. Prerequisite: courses 190A-190B and 200A-200B. May be repeated for credit.

Mr. Hood

Professional Courses**330. Music in the Elementary School.**

Five hours weekly, including one laboratory hour. A professional course to equip the student to teach many phases of music in the modern school. Emphasis is placed upon the study of musical literature and interpretive activities. Recommended for candidates for the elementary credential.

Miss Hooper

370. Music in General Education. (½ course)

Two hours weekly. Prerequisite: courses 110 or 111, 114, 193. Must be taken concurrently with two

quarters of supervised teaching. May be repeated for credit up to six units. 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

One full course may be applied to course requirements for M.A.

The Staff

599. Guidance of Doctoral Dissertation.

The Staff

Related Courses in Other Departments

Dance 154. Music as Dance Accompaniment.

206. Music for Dance.

Folklore 106. Anglo-American Folk Song.

243. The Ballad.

Integrated Arts 1A-1B-1C. Integrated Arts.

Psychology 188A-188B-188C. Psychology of Music.

NAVAL SCIENCE

(Department Office, 123 Men's Gymnasium)

Stephen G. Warren, B.S., Colonel, U. S. Marine Corps, *Professor of Naval Science (Chairman of the Department).*

Adam G. Alexander, B.S., Commander, U. S. Navy, *Associate Professor of Naval Science.*

William A. Dempsey, B.S., Lieutenant, U. S. Naval Reserve, *Assistant Professor of Naval Science.*

James M. Giles, M.S., Lieutenant, U. S. Navy, *Assistant Professor of Naval Science.*

Gordon S. Jones, M.S., Lieutenant-Commander, U. S. Navy, *Assistant Professor of Naval Science.*

George H. Ng, B.S., Lieutenant, U.S. Navy, *Assistant Professor of Naval Science.*

Barry P. Rust, B.S., Major, U. S. Marine Corps, *Assistant Professor of Naval Science.*

Application of Naval Science Courses Toward the Departmental Major Requirements. Naval science courses may be taken as free elective courses and applied toward the total departmental course requirements. Contact the Naval R.O.T.C. unit and the cognizant college or department to determine the number of free elective courses for which naval science courses may be substituted.

Naval Reserve Officers' Training Corps

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

The primary objective of the Naval Reserve Officers' Training Corps is to provide at civil institutions systematic instruction and training which will qualify selected students of such institutions for appointment as officers in the regular Navy, Naval Reserve, Marine Corps, and Marine Corps Reserve.

Courses in naval science are given for those who intend to complete the four years of training for a commission in the Navy or Marine Corps. In addition to the courses in naval science described herein, Naval R.O.T.C. students are required to take each week a one-hour laboratory in leadership and a one-hour laboratory associated with the naval science course.

Initial enrollment is restricted to able-bodied male students who are citizens of the United States between the ages of seventeen and twenty-one years. Students must pass a physical examination prior to acceptance in this program.

All courses listed are the professional courses prescribed by the Navy Department for the Naval R.O.T.C. In addition Regular and Contract students must complete, in suitable combinations approved by the Professor of Naval Science, a three quarter sequence in mathematics (calculus); a three quarter sequence in physics or chemistry or physical sciences; a course in American Military Affairs (History) and National Security Policy (Political Science); and a course in computer science. 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 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 subsistence allowance 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 nation-wide 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. During their junior and senior years they are enlisted in the U.S. Naval Reserve and are entitled to subsistence allowance at the rate of \$50 per month. Contract N.R.O.T.C. students agree to accept a commission in the Naval Reserve or 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 and to serve not less than three years of active duty when ordered. Contract students participate in two summer training cruises. The Contract N.R.O.T.C. may be completed in two years provided the student has participated in a special Naval Science Summer Institute of six weeks duration.

Regular and contract students are deferred from induction until after completion or termination of their courses of instruction and so long as they continue in a regular or reserve status upon being commissioned. Credit may be allowed for work completed during training cruises and summer camps at the rate of $\frac{1}{2}$ unit per two weeks duty performed, not to exceed a total of six units.

3. Naval science students are civilians

who, with the approval of the academic authorities and the Professor of Naval Science, may be permitted to pursue Naval Science courses for college credit. They are neither eligible to take N.R.O.T.C. training cruises nor to be paid any compensation or benefits. When vacancies occur in the N.R.O.T.C. Unit quota, naval science students are encouraged to apply for enrollment.

Freshman Year

1A. Naval Organization. (½ course)

An introduction to the structure of the Department of the Navy and its legal framework. Relationships in the Department of Defense. Components of the naval service. Naval organization and practices are examined within the context of American social and industrial organization and practice. Shipboard organization. LCDR Jones

1B. Naval Management.

An introduction to the principles of naval management and leadership practices dictated by the requirements of sea power. Command and control, service and support, logistics management functions and systems. Communications. LCDR Jones

1C. Naval Ships Systems.

A familiarization with naval ship design structure, type and purpose. Propulsion systems and basic thermodynamics. Auxiliary power systems, electrical and interior communications. Damage control and ship stability characteristics. LCDR Jones

Sophomore Year

2A. Seminar: Seapower and Maritime Affairs.

(½ course)

The seminar is designed to develop the concept of seapower in relation to national power and its application to international relations. The course discusses the precepts of seapower as postulated by Mahan and examines them in light of current world events. LT Dempsey

2B. Seminar: Seapower and Maritime Affairs.

(½ course)

Prerequisite: course 2A. The seminar continues to develop the concepts presented in course NS 2A and examines them in relation to World War II and the Sea War in Korea. LT Dempsey

2C. Seminar: Seapower and Maritime Affairs.

(½ course)

Prerequisite: course 2A and 2B. The seminar continues development of principles presented in 2A and 2B. Also examined are current problems involving seapower (e.g. Vietnam, the decline of U.S. merchant marine, the U.S.S.R. presence in the Mediterranean, etc.) LT Dempsey

Junior Year

101A. Dead Reckoning Navigation.

A study of piloting, coastal navigation, navigational aids and rules of the road. Elements of weather applied in an operational reference. LT Giles

101B. Celestial Navigation.

Prerequisite: course 101A. A study of the theory, principles and procedures employed in the determination of position at sea through the use of celestial points of reference. Course includes spherical trigonometry, mathematical analysis, sights, sextants, publications and report logs. LT Giles

101C. Naval Operations. (½ course)

Prerequisite: course 101A and consent of the instructor. An introduction to tactical formations and dispositions, ship maneuvers, relative motion, maneuvering board. Tactical plots are analyzed for force effectiveness and unity. LT Giles

†103A. Evolution of the Art of War, I.

Provides history, missions, and organization of the Marine Corps. Examines the evolution of the art of land warfare with emphasis on the principles of offensive and defensive combat employing historical examples. MAJ Rust

†103B. Evolution of the Art of War, II.

Further development of the principles of offensive and defensive combat employing historical examples from the Civil War through World War II. MAJ Rust

†103C. Basic Strategy and Tactics. (½ course)

Further development of the principles of offensive and defensive combat with emphasis on Marine Corps small unit tactics. An introduction to basic strategy and tactics with an examination of the strategic philosophies of other nations. MAJ Rust

Senior Year

102A. Naval Engineering.

A study of naval machinery and auxiliary equipment with emphasis on the basic steam cycle. Concepts of heat transfer, flow of fluids, gas turbine cycle, distillation and refrigeration are included. An introduction is made to principles and problems of nuclear reactors. LT Ng

102B. Ship Stability and Damage Control.

(½ course)

Introduction to ship design and construction with special emphasis on damage control as related to stability considerations. Ship models will be used to determine metacentric height, righting arm, and associated stability characteristics. LT Ng

102C. Leadership, the Naval Judicial System and Functions and Concepts of Naval Management.

Conceptual approaches to leadership, interpersonal relationships, motivational practices and counseling techniques, ethical and moral responsibilities of persons in authority, extragroup relations as a representative of the Navy. Function of the division officer, study of military law. LT Ng

†104A. Amphibious Warfare, I.

The primary mission of the Marine Corps is to conduct amphibious warfare. The evolution of amphibious doctrines and techniques is examined with emphasis on the U. S. landings in the South Pacific during World War II. MAJ Rust

† 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.

†104B. **Amphibious Warfare, II.**

Continuation of the examination of the evolution of amphibious warfare techniques with emphasis on the U. S. landings in the European Theater in World War II. Marine Corps operations in Korea are examined. A detailed study is made of the phases of an amphibious operation. MAJ Rust

†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. MAJ Rust

■ NEAR EASTERN LANGUAGES

(Department Office, 302 Royce Hall)

- Arnold J. Band, Ph.D., *Professor of Hebrew.*
 Seeger Bonebakker, Ph.D., *Professor of Arabic.*
 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.*
 Avedis K. Sanjian, Ph.D., *Professor of Armenian.*
 Andreas Tietze, Ph.D., *Professor of Turkish (Chairman of the Department).*
 Pinhas Delougaz, Baccalaureate, *Professor in Residence of Near Eastern Archaeology.*
 Amin Banani, Ph.D., *Associate Professor of Persian and Persian History.*
 Giorgio Buccellati, Ph.D., *Associate Professor of Ancient Near East.*
 Herbert A. Davidson, Ph.D., *Associate Professor of Hebrew.*
 Joseph Eliash, Ph.D., *Assistant Professor of Arabic.*
 Thomas Penchoen, Ph.D., *Assistant Professor of Berber.*
 ———, *Assistant Professor of Arabic.*
 ———, *Assistant Professor of Hebrew.*



- Suzan Akkan, licence, *Lecturer in Turkish.*
 Shimeon Brisman, *Lecturer in Hebrew.*
 John Callender, B.A., *Acting Assistant Professor of Egyptology.*
 Jay D. Frierman, M.A., *Lecturer in Near Eastern Archaeology.*
 Aaron Haddad, Ph.D., *Lecturer in Arabic.*
 Kazem Kazemzadeh, M.A., *Lecturer in Persian.*
 David L. Lieber, D.H.L., *Lecturer in Hebrew.*
 ———, *Visiting Associate Professor of Georgian.*
 Stanford Shaw, Ph.D., *Professor of History.*
 ———, *Visiting Associate Professor of Georgian.*

Bachelor of Art Degree

The degree is offered in Hebrew, Arabic and Ancient Near Eastern Civilizations. In each case the student must both meet the prerequisites and take the courses prescribed for majors.

For a Hebrew major the prerequisites are Hebrew 1A-1B-1C, 102A-102B-102C, 150A-150B or their equivalents. The student is required to take 16 quarter courses distributed as follows: Hebrew 103A-103B-

103C; three courses from Hebrew 120A, 120B, 120C, 120D, 120E, 120F; two courses from 130A, 130B, 130C, 130D; two courses from Hebrew 140A, 140B, 140C, 140D, 160A, 160B. both 190A and 190B; three additional courses in Hebrew or Aramaic to be approved by Department Adviser; History 138A or 138B.

For an Arabic major the prerequisites are Arabic 1A-1B-1C, 102A-102B-102C, 150A-150B or their equivalents. The student is required to take 17 quarter courses distributed as follows: 14 courses in Arabic selected with approval of Department Adviser from Arabic 103A-103B-103C, 111A-111B-111C, 113A-

† 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.

113B-113C, 130A-130B-130C, 140A-140B-140C, 180A-180B-180C, 199; one elective in the 200 series; History 134A, 134B.

For a major in Ancient Near Eastern Civilizations the prerequisites are History 1A-1B-1C, 9D, Anthropology 5A-5B-5C, Geography 10C, and (only for students taking option 3) Hebrew 1A-1B-1C and 102A-102B-102C (or their equivalents). The student is required to take 16 quarter courses including: Near Eastern Languages 150A-150B, History 117, 200A-200B, 203; six quarter courses out of Ancient Near East 160A-160B, 161A-161B-161C, Art 101A-101B-101C, 104; and one of the following options: (1) Semitics 140A-140B, 141A-141B; (2) Ancient Near East 120A-120B-120C, 121A; (3) four courses out of Hebrew 120A-120B-120C-120D-120E-120F, Semitics 130. For recommended courses the student will consult with the Departmental Adviser.

No credit will be allowed for completing a less advanced course after satisfactory completion of a more advanced course in grammar and/or composition.

Requirements for the Master's Degree

General Requirements. See page 139.

Department Program. (1) The master's degree is offered in six specialties: Ancient Near Eastern Civilizations, Hebrew, Arabic, Semitics, Persian and Turkish. The candidate for the degree in Ancient Near Eastern Civilizations will be required to study two ancient languages one of which has to be one of the major languages of the Ancient Near East (Ancient Egyptian, Akkadian, or Hebrew), and the history and archaeology of the related area. The candidate for the degree in Hebrew will be required to study Hebrew plus one other Semitic language. The candidate for the degree in Semitics will be required to study three Semitic languages. The candidate for the degree in Arabic or Persian will be required to study his language of choice plus one other 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 other than English. The choice of the language will be determined in consultation with the departmental adviser. The student must pass the Graduate Foreign Language Reading Examination in this language by the end of the third quarter of residence. It is also strongly recommended that the student who intends to continue toward a Ph.D. degree acquire a knowledge of a second European language other than English 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 page 143.

Requirements for the Program. (1) A reading knowledge of two major Western languages other than English. The student is expected to take the examination in one of the two languages at the beginning of his first quarter in residence; the examination of the second not later than at the beginning of his fourth quarter. The choice of languages must be approved by the adviser. (2) The candidate for the degree may concentrate either in language or in literature, or, in the case of the Ancient Near Eastern field, in a combination of both with Near Eastern archaeology. In each case, upon entrance to the program he is expected to have fulfilled the requirements of the M.A. in his field. (A) 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 his-

torical background of at least two of them. (B) In the case of a candidate specializing in literature, competence in two languages is required; his second language should be a literary language taken from the cultural area related to his first language; e.g. a Hebraist can choose Aramaic, Akkadian, Arabic, or Yiddish; an Arabist can choose Persian or Turkish, and so on. The candidate 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. (C) A candidate interested in the Ancient Near Eastern Civilizations will be required to emphasize in his preparation the philological and linguistic aspects of the languages of his choice, and to be familiar with the literature, history and archaeology of the major areas of the Ancient Near East. His fields of examination will be two languages, with emphasis on one of them, and the history and archaeology of one related area.

The student is advised to take his M.A. degree prior to his Ph.D. degree.

Ancient Near East

Upper Division Courses

120A-120B-120C. Elementary Ancient Egyptian.

(Formerly numbered Ancient Egyptian 101A-101B-101C.) Lecture, three hours; laboratory, two hours. Prerequisite: consent of the instructor. Grammar and texts. Mr. Callender

*121A-121B-121C. Intermediate Ancient Egyptian.

(Formerly numbered Ancient Egyptian 102A-102B-102C.) Three hours. Prerequisite: courses 120A-120B-120C. Readings in Ancient Egyptian literature. Mr. Callender

\$122A-122B. Late Egyptian.

Three hours. Prerequisite: courses 121A-121B-121C and consent of the instructor. An introduction to late Egyptian grammar and reading of both hieroglyphic and hieratic texts. The quarters this course is offered vary from year to year. Check with department. Mr. Callender

\$123A-123B. Coptic.

Three hours. Prerequisite: consent of the instructor. An introduction to Coptic grammar and reading of Coptic texts. The quarters this course is offered vary from year to year. Check with department. Mr. Callender

150A-150B. Survey of Ancient Near Eastern Literatures in English.

(Formerly numbered Near Eastern Languages 150A-150B.) Lecture, three hours. Knowledge of original languages not required. Courses 150A and 150B may be taken independently for credit. 150A: Mesopotamia and Hittites; 150B: Egypt and Syria-Palestine. Mr. Buccellati, Mr. Callender

160A-160B. Introduction to Near Eastern

Archaeology.

(Formerly numbered Semitics 160A-160B.) Lecture, three hours. Terminology, geography, principles, strategy of research, bibliography and a general survey of Near Eastern archaeology. Mr. Frierman

161A-161B-161C. Archaeology of Mesopotamia.

(Formerly numbered Semitics 161A-161B-161C.) Prerequisite: consent of the instructor. Survey of the main archaeological periods in Mesopotamia with special emphasis on late prehistoric and early historical periods and with reference to neighboring cultural areas. Mr. Delougas

199. Special Studies in the Ancient Near East.

(½ to 2 courses)

(Formerly numbered Ancient Egyptian 199.) Prerequisite: consent of the instructor. The Staff

Graduate Courses

250. Seminar in Ancient Mesopotamia.

(Formerly numbered Semitics 270.) Prerequisite: consent of the instructor. Selected topics on the political, social and intellectual history of ancient Mesopotamia. May be repeated for credit. Mr. Buccellati

260. Seminar in Ancient Near Eastern Archaeology.

(Formerly numbered Semitics 250.) Lecture, two hours. Prerequisite: consent of the instructor. May be repeated for credit. Mr. Delougas

261. Practical Field Archaeology. (½ to 2 courses)

Two hours. Prerequisite: consent of the instructor. Participating in archaeological excavations or other archaeological research in the Near East under supervision of the staff. May be repeated for credit. The Staff

Individual Study and Research

596. Directed Individual Studies. (½ to 2 courses)

The Staff

597. Examination Preparation. (½ to 2 courses)

The Staff

599. Dissertation Research and Preparation.

(½ to 2 courses)

The Staff

Related Courses in Other Departments

Art 101A-101B-101C. Egyptian Art and Archaeology.

210. Egyptian Art.

History 117. History of Ancient Egypt.

* Not to be given, 1969-1970.

§ Given in alternate years, to be given, 1969-1970.

Arabic**Lower Division Courses****‡1A-1B-1C. Elementary Arabic.**

Sections meet seven hours weekly. Basic structure.
The Staff

Upper Division Courses**‡102A-102B-102C. Intermediate Arabic.**

Lecture, four hours; laboratory, two hours; Arabic lecture, one hour. Prerequisite: courses 1A-1B-1C or consent of the instructor. Readings in both Classical and Modern Arabic. Composition, conversation and a weekly lecture in Arabic.
The Staff

‡102K. Intensive Intermediate Arabic. (2 courses)

Prerequisites: courses 1A-1B-1C or consent of the instructor. Offered in the summer quarter only. Readings in both classical and modern Arabic, composition, conversation.
The Staff

‡103A-103B-103C. Advanced Arabic.

Lecture, four hours; laboratory, two hours; Arabic lecture, one hour. Prerequisite: courses 102A-102B-102C or consent of the instructor. Review of grammar, continued reading of literary works. Composition, conversation and a weekly lecture in Arabic.
Mr. Eliash

‡111A-111B-111C. Spoken Egyptian Arabic.

Three hours. Prerequisite: consent of the instructor. Introduction to the contemporary Arabic dialect of Egypt. Phonology, morphology and syntax will be presented with emphasis on oral practice.
Mr. Haddad

‡113A-113B-113C. Spoken Iraqi Arabic.

Three hours. Prerequisite: consent of the instructor. Introduction to the contemporary Arabic dialect of Iraq. Phonology, morphology and syntax will be presented with emphasis on oral practice.
The Staff

‡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, poetry.
The Staff

‡132A-132B-132C. Philosophical Texts in Classical Arabic.

Lecture, three hours. Prerequisite: courses 102A-102B-102C or consent of the instructor. A study of excerpts from the major work of medieval Arab philosophy.
The Staff

‡140A-140B-140C. Modern Arabic Texts.

Lecture, three hours. Prerequisite: courses 102A-102B-102C or consent of the instructor. Readings and interpretation of modern Arabic texts: newspaper articles, modern fiction, poetry, folklore.
Mr. Haddad

150A-150B. Survey of Arabic Literature in English.

Lecture, three hours. Knowledge of Arabic is not required. Courses 150A and 150B may be taken independently for credit.
The Staff

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

Lecture, three hours. Prerequisite: consent of the instructor. A survey of the basic structural features

of literary Arabic with emphasis on the verbal system.
The Staff

199. Special Studies in Arabic. (½ to 2 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. May be repeated for credit.
Mr. Perlmann

230A-230B-230C. Arabic Poetry.

Lecture, two hours. Readings in Arabic poetry from various periods.
The Staff

***240A-240B-240C. Arab Historians.**

Lecture, two hours. Readings from the works of the most outstanding Arab historians of the classical period of Islam.
Mr. Perlmann

250A-250B-250C. Seminar in Arabic Literature.

Two hours.
The Staff

Individual Study and Research**596. Directed Individual Study. (½ to 2 courses)**

The Staff

597. Examination Preparation. (½ to 2 courses)

The Staff

599. Dissertation Research and Preparation.

(½ to 2 courses)

The Staff

Related Courses in Another Department

History 134A-134B. Near and Middle East from 600 A.D.

267A-267B. Seminar in Near Eastern History.

Armenian**Upper Division Courses****‡101A-101B-101C. Elementary Modern Armenian.**

Three hours. Armenian grammar, conversation and exercises.
Mr. Sanjian

‡102A-102B-102C. Intermediate Modern Armenian.

Three hours. Prerequisite: courses 101A-101B-101C or the equivalent. Reading of selected texts, composition and conversation.
Mr. Sanjian

‡103A-103B-103C. Advanced Modern Armenian.

Three hours. Prerequisite: courses 102A-102B-102C or the equivalent.
Mr. Sanjian

130A-130B-130C. Elementary Classical Armenian.

Three hours. Grammar of the Classical Armenian language and reading of selected texts.
Mr. Sanjian

131A-131B-131C. Intermediate Classical Armenian.

Three hours. Prerequisite: courses 130A-130B-130C or the equivalent. Reading of selected texts.
Mr. Sanjian

* Not to be given, 1969-1970.

‡ Native speakers of the language will not normally be eligible for this course.

132A-132B-132C. Advanced Classical Armenian.

Three hours. Prerequisite: courses 131A-131B-131C or the 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. (½ to 2 courses)

Prerequisite: Consent of the instructor.

Graduate Course**280. Seminar in Armenian Historiography.**

Two hours. Prerequisite: courses 131A-131B-131C or the equivalent. Mr. Sanjian

Related Courses in Other Departments**History 131A-131B. Armenian History.**

207. Armenian Intellectual History.

Indo-European Studies 150. Introduction to Indo-European Linguistics.**Berber****Upper Division Courses****†101A-101B-101C. Elementary Berber.**

(Formerly numbered 105A-105B.) Lecture, three hours; laboratory, two hours. Development of oral proficiency and analysis of basic grammatical structure. Mr. Penchoen

†102A-102B-102C. Advanced Berber.

(Formerly numbered 106A-106B.) Prerequisite: courses 101A-101B-101C or consent of the instructor. Advanced study of Berber. Regional and stylistic variants in folk literature. Mr. Penchoen

†120A-120B-120C. Introduction to Berber Literature.

Three hours. Prerequisites: courses 102A-102B-102C or consent of the instructor. The development of Berber literary forms: systematic analysis of texts and a study of Berber writing systems. Mr. Penchoen

199. Special Studies in Berber Languages.

(½ to 2 courses)

Prerequisite: consent of the instructor. Study based on the requirements of the individual student. Mr. Penchoen

Graduate Course**201. Berber Structure.**

(Formerly numbered 220A-220B and same as Linguistics 225M.) Three hours. Prerequisite: consent of the instructor. Analysis of phonology, morphology, and syntax of the major Berber languages and introduction to Berber dialectology. Mr. Penchoen

† Native speakers of the language will not normally be eligible for this course.

Related Courses in Other Departments**History 133A-133B. History of North Africa from the Muslim Conquest.****Caucasian Languages****†111A-111B-111C. Elementary Georgian.**

Three hours. Prerequisite: consent of the instructor. Script, grammar, simple reading in this main Caucasian language.

199. Special Studies in Caucasian Languages. (½ to 2 courses)

Prerequisite: consent of the instructor. The Staff

Hebrew**Lower Division Courses****†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 advised to take courses 10A-10B-10C. Students with credit for 10A will not receive credit for Hebrew 1A. Students with credit for 10B will not receive credit for 1B or 1C. The Staff

†10A-10B-10C. Accelerated Elementary Hebrew.

Prerequisite: consent of the instructor. Structural principles of grammar. Open to students who wish to cover the equivalent of two years college Hebrew in one academic year; recommended for students who have previously studied the rudiments of Hebrew. Students with credit for Hebrew 1A will not receive credit for 10A. Students with credit for 1B and/or 1C will not receive credit for 10B. The Staff

Upper Division Courses**†102A-102B-102C. Intermediate Hebrew.**

Five hours. Prerequisite: courses 1A-1B-1C or the equivalent. Amplification of grammar; reading of vocalized texts from modern, Biblical, and Medieval/Rabbinic literature. The Staff

†102K. Intensive Intermediate Hebrew. (3 courses)

Prerequisites: courses 1A-1B-1C or the equivalent. Offered in the summer quarter only. Amplification of grammar; reading of vocalized texts from modern, Biblical and Medieval/Rabbinic literature. Mr. Davidson

†103A-103B-103C. Advanced Hebrew.

Five hours. Prerequisite: courses 102A-102B-102C or the equivalent. Reading of unvocalized texts, primarily modern literature. The Staff

†103K. Intensive Advanced Hebrew. (2 courses)

Prerequisites: courses 102A-102B-102C or equivalent. Offered in the summer quarter only. Reading of unvocalized texts, primarily modern literature. The Staff

†120A-120F. Biblical Texts.

Three hours. Prerequisite: courses 102A-102B-102C or the equivalent. Translations and analysis of Old Testament texts with special attention given to texts of primary literary and historical importance. Courses 120A, 120B, 120C, 120D, 120E, and 120F may be taken independently for credit. The Staff

130A-130D. Medieval Hebrew Texts.

Lecture, three hours. Prerequisites: courses 103A-103B-103C or consent of the instructor. Readings in medieval Hebrew prose and poetry with special attention to literature of the "Golden Age." Courses 130A, 130B, 130C, and 130D may be taken independently for credit. Mr. Davidson

135A-135B. Advanced Medieval Texts.

Three hours. Prerequisite: two courses from 130A-130B-130C-130D or the equivalent. Readings in genres such as medieval Hebrew Bible commentaries, the *Musar* literature, and philosophy. Each course will be offered in alternate springs. 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, Alterman, Amichai, Greenberg, Shlonsky. The Staff

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 1800; 150B: From 1800 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. Each course will be offered in alternate spring quarters. The Staff

***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. (½ to 2 courses)

Prerequisite: consent of the instructor. The Staff

Graduate Courses**210A-210B. History of the Hebrew Language.**

Prerequisite: courses 103A-103B-103C or consent of the instructor. The development of the Hebrew language in its various stages: Biblical, Mishnaic, Medieval, Modern, and Israeli; differences in vocabulary, morphology, syntax, and the influence of other languages; problems of language expansion in Israeli Hebrew. The Staff

220A-220B-220C. Studies in the Text of the Hebrew Bible.

Three hours. A critical study of the Hebrew text in relation to the major versions; philological, comparative, literary, and historical study of various Biblical books. The Staff

230A-230B-230C. Seminar in Medieval Hebrew Literature.

Three hours. Mr. Davidson

S241A-241B-241C. Studies in Modern Hebrew Prose Fiction.

Studies in specific problems and trends in Hebrew prose fiction of the last two centuries. Mr. Band

†242A-242B-242C. Studies in Modern Hebrew Poetry.

Studies in specific problems and trends in Hebrew poetry of the last two centuries. Mr. Band

Individual Study and Research**596. Directed Individual Study. (½ to 2 courses)**

The Staff

597. Examination Preparation. (½ to 2 courses)

The Staff

599. Dissertation Research and Preparation. (½ to 2 courses)

The Staff

Related Courses in Other Departments

English 201. The Functions of Literary Criticism.

History 138A-138B. Jewish History.

Islamic**Individual Study and Research****596. Directed Individual Study. (½ to 2 courses)**

The Staff

597. Examination Preparation. (½ to 2 courses)

The Staff

598. Thesis Research and Preparation. (½ to 2 courses)

The Staff

599. Dissertation Research and Preparation. (½ to 2 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****199. Special Studies in Near Eastern Languages. (½ to 2 courses)**

Prerequisite: consent of the instructor. The Staff

Graduate Courses**200. 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

* Not to be given, 1969-1970.

† Given in alternate years, not to be given, 1969-1970.

‡ Given in alternate years, to be given, 1969-1970.

Eastern Languages and Literatures. An introduction to the bibliography of all the Near Eastern Languages: morphology, lexicography, and literature. May be repeated for credit. 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. (½ to 2 courses)

The Staff

597. Examination Preparation. (½ to 2 courses)

599. Dissertation Research and Preparation. (½ to 2 courses)

The Staff

Persian

Upper Division Courses

†101A-101B-101C. Elementary Persian.

Lecture, four hours; laboratory, two hours.

Mr. Banani

102A-102B-102C. Advanced Persian.

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. (½ to 2 courses)

Prerequisite: consent of the instructor. The Staff

Graduate Courses

220A-220B. Classical Persian Texts.

Three 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. (½ to 2 courses)

The Staff

597. Examination Preparation. (½ to 2 courses)

The Staff

Related Courses in Other Departments

History 211A-211B-211C. Islamic Iran.

* Not to be given, 1969-1970.

† Native speakers of the language will not normally be eligible for this course.

‡ Given in alternate years, not to be given, 1969-1970.

§ Given in alternate years, to be given, 1969-1970.

Indo-European Studies 160. Elementary Sanskrit.

161. Intermediate Sanskrit.

162. Advanced Sanskrit.

210. Indo-European Linguistics: Advanced Course.

230A-230B. Old Iranian.

231A-231B. Middle Iranian.

260A-260B. Seminar in Indo-European Mythology.

280A-280B. Seminar in Indo-European Linguistics.

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

Graduate Courses

201A-201B-201C. Old Ethiopic.

Lecture, two hours. Grammar of Old Ethiopic and reading of texts. Mr. Leslau

202A-202B-202C. Readings in Old Ethiopic Literature.

Lecture, two hours. Prerequisite: Semitics 201A-201B-201C. Mr. Leslau

209A-209B-209C. Comparative Study of the Ethiopian Languages.

Two hours. Prerequisite: consent of the instructor. Comparative study of the various Semitic Ethiopic languages: Geez, Tigrinya, Tigre, Amharic, Harari, Gurage, and Gafat. Mr. Leslau

210A-210B. Ancient Aramaic.

Two hours. Prerequisite: Hebrew 103A-103B-103C or the equivalent. Study of the grammar and vocabulary of Ancient Aramaic and reading of the surviving inscriptions and texts. The Staff

†215A-215B-215C. Syriac.

Two hours. Morphology and syntax of the Syriac

language; readings in the Syriac translation of the Bible and Syriac literature. The Staff

†220A-220B-220C. Ugaritic.

Two hours. Prerequisite: Hebrew 103A-103B-103C or the equivalent. Study of the Ugaritic language and literature. The Staff

240. Seminar in Akkadian Language and Literature.

Two hours. Prerequisite: consent of the instructor. May be repeated for credit. Mr. Buccellati

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. (½ to 2 courses)

The Staff

597. Examination Preparation. (½ to 2 courses)

The Staff

599. Dissertation Research and Preparation.

(½ to 2 courses)

The Staff

Related Courses in Other Departments

Art 104. Art of the Ancient Near East.

History 200A-200B. History of the Ancient East.

Turkic Languages

Upper Division Courses

*101A-101B. Elementary Turkish.

Lecture, three hours; laboratory and drill, two hours. Grammar, reading, conversation and elementary composition drills. Mr. Tietze

*102A-102B. Intermediato Turkish.

Lecture, three hours; laboratory and drill, two hours. Prerequisite: courses 101A-101B or the equivalent. Continuing study of grammar, readings, conversation and composition drills. Mr. Tietze

*103A-103B. Advanced Turkish.

(Formerly 102A-102B-102C.) Lecture, three hours; laboratory and drill, two hours. Prerequisite: courses 102A-102B or equivalent. Reading in modern literature and social science texts; conversation and composition. Mr. Tietze

110A-110B-110C. Old and Middle Turkic.

Three hours. Prerequisite: courses 101A-101B 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 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.

Three hours. Prerequisite: courses 101A-101B or consent of the instructor. Grammar, reading of literary and folkloristic texts. Mr. Eckmann

113A-113B-113C. Kirghiz.

Three hours. Prerequisite: courses 101A-101B or consent of the instructor. Grammar, reading of literary and folkloristic texts. Mr. Eckmann

190A-190F. Survey of the Turkic Languages.

(Formerly numbered 190A-190B-190C.) Prerequisites: courses 101A-101B or consent of the instructor. 190A-190B-190C: Comparative Turkic grammar classification structure, comparative phonology, morphology, and syntax. 190D-190E-190F: Turkic historical grammar, old literary languages. Developments in phonology, morphology, and syntax from the 8th to the 20th centuries.

199. Special Studies in Turkic Languages.

(½ to 2 courses)

Prerequisite: consent of the instructor. The Staff

Graduate Courses

210A-210B-210C. Ottoman.

Two hours. Prerequisite: courses 103A-103B or consent of the instructor. Readings of literary and historical texts. Mr. Tietze

211. Ottoman Diplomats.

Prerequisites: courses 210A-210B-210C or the equivalent. Organization and contents of the Ottoman archives; reading and discussion of documents and registers. Introduction to the use of Ottoman archive materials as a source for historical research. Mr. Shaw

Individual Study and Research

596. Directed Individual Study. (½ to 2 courses)

The Staff

597. Examination Preparation. (½ to 2 courses)

The Staff

599. Dissertation Research and Preparation.

(½ to 2 courses)

The Staff

Related Courses in Another Department

History 139A-139B-139C. History of the Turks.

201A. History of the Eurasian Nomadic Empires.

Urdu

Upper Division Courses

*101A-101B-101C. Elementary Urdu.

Three hours. Prerequisite: consent of the instructor. Elements of Urdu, the language of Pakistan.

199. Special Studies in Urdu. (½ to 2 courses)

Prerequisite: consent of the instructor.

Related Courses in Another Department

South Asian Languages 171A-171B-171C. Hindi.

† Given in alternate years, not to be given, 1969-1970.

* Not to be given, 1969-1970.

† Native speakers of the language will not normally be eligible for this course.

■ NEUROSCIENCE

An interdisciplinary program of graduate training leading to the Ph.D. in Neuroscience is offered, utilizing facilities, resources, and activities of the Brain Research Institute and administered by an interdepartmental degree committee.

Applicants must satisfy minimum requirements for admission to the Graduate Division (page 28). The program is designed particularly for students from the health and life sciences, but applications are encouraged from prospective trainees from the physical sciences and engineering as well.

All students will be given instruction de-

signed to provide basic knowledge of the anatomy, physiology, and chemistry of neural function. Thereafter, the student may pursue an educational experience through any of eight subdisciplines: neuroanatomy, neurochemistry, neurophysiology, behavior, neurocybernetics and communications, neuroendocrinology, neuropharmacology, neuroimmunology.

Prospective applicants may inquire concerning the availability of this curriculum by consulting J. D. French, 73-364 Brain Research Institute, Center for the Health Sciences.

■ NURSING

(Department Office, 12-139C Center for the Health Sciences)

- Dorothy E. Johnson, R.N., M.P.H., *Professor of Pediatric Nursing.*
 Lulu Wolf Hassenplug, R.N., M.P.H., Sc.D., *Emeritus Professor of Nursing.*
 Imogene D. Cahill, R.N., M.N., M.A., Ed.D., *Associate Professor of Nursing.*
 Harriet C. Moidel, R.N., M.A., *Associate Professor of Medical-Surgical Nursing.*
 Agnes A. O'Leary, R.N., M.P.H., *Associate Professor of Public Health Nursing and Lecturer in Public Health Nursing (Vice-Chairman of the Department).*
 Jeanine Auger, R.N., M.S., Ph.D., *Assistant Professor of Nursing.*
 Karen B. Bell, R.N., M.S., *Assistant Professor of Psychiatric Nursing.*
 Marie F. Branch, R.N., M.S., *Assistant Professor of Nursing.*
 Bonnie Bullough, R.N., M.S., M.A., Ph.D., *Assistant Professor of Nursing.*
 Beatrice M. Dambacher, R.N., M.S., N.Sc.D., *Assistant Professor of Psychiatric Nursing.*
 Edythe J. Ellison, R.N., M.S.N., *Assistant Professor of Nursing.*
 M. Margo McCaffery, R.N., M.S., *Assistant Professor of Pediatric Nursing.*
 Noreen T. Meinhart, R.N., M.S., *Assistant Professor of Nursing.*
 Afaf I. Meleis, R.N., M.S., Ph.D., *Assistant Professor of Nursing.*
 Grace A. Millington, R.N., M.A., *Assistant Professor of Nursing.*
 Phyllis A. Putnam, R.N., Ph.D., *Assistant Professor of Nursing.*
 Donna L. Vredevoe, Ph.D., *Assistant Professor of Nursing.*
 Grace L. Wiest, R.N., M.P.H., Ph.D., *Assistant Professor in Residence in Nursing.*
 _____, *Assistant Professor of Nursing.*
 _____, *Assistant Professor of Nursing.*
 Kristine Gebbie, R.N., M.N., *Instructor of Nursing.*
 Corrine Loing, R.N., M.N., *Instructor of Nursing.*
 Marjorie Muecke, R.N., M.A., *Instructor of Nursing.*
 Eleanor Saltzer, R.N., M.N., *Instructor of Nursing.*
 Madlyn Lee Schmidt, R.N., M.N., *Instructor of Nursing.*
 Leonide Tanner, R.N., M.S., *Instructor of Nursing.*
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- Clara Arndt, R.N., M.S., *Lecturer in Nursing Service Administration.*
 Pamela Brink, R.N., M.S., *Acting Assistant Professor of Nursing.*
 Charles K. Ferguson, Ed.D., *Lecturer in Nursing.*
 Elizabeth Hartigan, R.N., M.S., *Lecturer in Nursing.*

Jeva-Jurate Kades, R.N., M.S., *Lecturer in Nursing.*
 Betty McDonald, R.N., M.S., *Lecturer in Nursing.*
 Betty Neuman, R.N., M.S., *Lecturer in Psychiatric Nursing.*
 Roberta S. O'Grady, R.N., M.A., *Lecturer in Nursing.*
 Joan P. Riehl, R.N., M.S., *Lecturer in Nursing.*
 G. Marjorie Squaires, R.N., M.A., *Lecturer in Nursing.*
 Muriel Uprichard, Ph.D., *Lecturer in Nursing and Associate Research Psychologist.*
 Mary A. Wallace, R.N., M.S., *Lecturer in Nursing.*
 Joan Wilcox, R.N., M.S., *Lecturer in Nursing.*



Rachel A. Ayers, R.N., M.S., *Assistant Clinical Professor of Nursing Service Administration.*
 Jamella M. Bell, R.N., M.S., *Assistant Clinical Professor of Nursing Service Administration.*
 Cynthia A. Dauch, R.N., Ed.D., *Assistant Clinical Professor of Public Health Nursing.*
 Evelyn M. Hamil, R.N., M.N., *Assistant Clinical Professor of Nursing Service Administration.*
 Barbara W. Madden, R.N., M.S., *Assistant Clinical Professor of Medical-Surgical Nursing.*
 Julia Ilene Toten, R.N., M.P.H., *Assistant Clinical Professor of Public Health Nursing.*
 Dorothy Wheeler, R.N., M.A., *Assistant Clinical Professor of Nursing Service Administration.*
 Katherine M. Bryan, R.N., B.S., *Clinical Instructor in Public Health Nursing.*
 Edith M. Cole, R.N., B.S., *Clinical Instructor in Psychiatric Nursing.*
 Dorothy J. Hicks, R.N., B.S., *Clinical Instructor in Medical-Surgical Nursing.*
 Eleanor E. Hicks, R.N., B.S., *Clinical Instructor in Psychiatric Nursing.*
 Mary Louise Jarvis, R.N., *Clinical Instructor in Public Health Nursing.*
 Ina B. Knight, R.N., M.S., *Clinical Instructor in Public Health Nursing.*
 Jerry G. Peers, R.N., B.S., *Clinical Instructor in Surgical Nursing.*
 Helen L. Salmon, R.N., B.S., *Clinical Instructor in Public Health Nursing and Lecturer in Public Health.*
 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 84 of this catalog or the equivalent.

The Major

At least 23 courses of required upper division nursing courses and elective courses designed to prepare university women for professional nursing responsibilities in the care of the patient and his family.

REGISTERED NURSES

Preparation for the Major

Same as baccalaureate program.

The Major

A minimum of 23 courses of coordinated upper division nursing and elective courses planned on the basis of professional need.

Upper Division Courses

101A-101B. Pathophysiological Basis for Nursing Measures.

Lecture, two hours; laboratory, six hours. Prerequisites: Medical Science 101A and enrollment in School of Nursing. Study of the theory underlying and practice in the nurses' participation in the medical management of patients. Discussion and laboratory are focused on pathophysiological basis for medical management and nursing care of patients. Laboratory includes practice in selected nursing

measures and in evaluation of patients' response to treatment.
The Staff

102A-102B-102C. The Development of Modern Nursing. (½ course each)

Lecture, two hours. Prerequisites: junior standing and acceptance by the School of Nursing for the baccalaureate program in nursing. Study of the evolution of nursing. Content focuses on its historical base with a consideration of the interpersonal and moral and legal ramifications of the formal and informal components of the social systems in which nursing is practiced today.

Mrs. Moidel, Miss Uprichard

104A-104B. Nursing Sciences.

Lecture, two hours; laboratory, eight hours. Prerequisite: accepted by School of Nursing for baccalaureate program in nursing. 104A and 104B can be taken in either sequence. A synthesis and ordering of knowledge about biopsychosocial man through study of integrated behavioral systems as they operate through the life cycle and within the usual fluctuations of the environment.

Mrs. Kades, Miss O'Grady

105. Behavior in Illness.

Lecture, two hours; laboratory, eight hours. Prerequisite: courses 104A-104B. Study of the nature of illness and wellness, the adaptive responses and the behavioral expectations associated with the experience of illness, and the conditions under which these expectations become operative.

Mrs. Kades, Miss O'Grady

110A-110B-110C. Clinical Nursing.

(1½ courses each)

Lecture, two hours; laboratory, 16 hours. Prerequisites: courses 101A-101B, 104A-104B, 105, Medical Science 101A-101B, and Psychology 112 or its equivalent. Study of theories and their application in the nursing care of adults and children, including consideration of family and community health. Laboratory problems and practice in hospital and community settings.

Mrs. Bell, Mrs. McCaffery and Staff

*155. Changing Perspectives in the Nursing Profession.

Lecture, four hours. Prerequisite: senior standing. A critical examination of the current situation in nursing and the changing perspectives in the health fields. Discussion is directed toward helping the student develop a philosophy and focus for leadership consistent with today's world.

175. Nursing Care of Children in Schools.

(1½ courses)

Lecture, two hours; laboratory, 12 to 16 hours. Prerequisites: consent of the instructor. Study of the theory involved in the planning, organization, implementation and evaluation of nursing services in public schools. Laboratory problems and practices in public school systems.

Mrs. Branch

185. Study of the Nursing Profession.

Lecture, four hours. Prerequisite: concurrent with course 195. A study of the institutional, associational and societal aspects of professional nursing practice with emphasis on the rights and obligations

* Not to be given, 1969-1970.

of professional status within nursing, between professions and in relation to the community.

Miss Cahill

190. The Interpersonal Process in Nursing.

Lecture, two to four hours. Prerequisites: consent of the instructor. Study of theoretical and practical problems in human relationships. Focus on the nature of two person nurse-patient interaction and the implications for improved communication and its effect on nursing care.

Miss Dambacher

*191. Group Process and Interaction in Nursing.

Lecture, three hours; small group experience, one and one-half hours. Prerequisites: consent of the instructor. Study of the structure of small groups in which nurses function, i.e., institutional, professional, community, etc. Consideration of task and maintenance functions as phenomena in group life. Analysis of cognitive, methodological, emotional and goal systems, power, role, communications and norms in groups pertinent to nursing.

192. Health Care Organizations as Small Societies.

Lecture and discussion, four hours. Prerequisites: consent of the instructor. A study of the large scale interaction systems within which nursing is practiced. Content is focused on the role and function of nursing at the interprofessional and professional-societal levels of analysis.

Miss Cahill

195. Nursing Care Practices and Staffing Patterns. (2 courses)

Lecture, three hours; laboratory to be arranged. Prerequisites: courses 101A-101B, 104A-104B-104C, 102A-102B-102C. Analysis and synthesis of systems of administering nursing care programs including evaluation and prediction of success. Participation in administering nursing services.

Mrs. Auger and Staff

196. Health Care Problems of Minority Group Members.

Prerequisite: Sociology 1A or 101. Description and discussion of the special health care problems which members of minority groups face. These problems may be related to socio-economic status as well as ethnic background and subcultural differences.

Mrs. Bullough

198. Special Courses in Nursing. (1 to 2 courses)

Lecture, two to four hours; laboratory none to eight hours. Prerequisites: admission to School of Nursing and consent of the instructor. Not offered for students who have credit for courses 105, 110A-110B-110C, or who are eligible for 200 nursing level courses. Study of modern concepts, recent advances and specific problems in the field. Nursing laboratory in hospitals and community agencies may be required in certain sections.

Miss Muecke

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.

Mrs. Auger, Miss Muecke

Graduate Courses

203. Theoretical Framework of Nursing Practice.

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, Miss Vredevoe

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 Cahill

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.

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. Pathophysiological Changes and Patient Behavior.

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.

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 Upchurch

401. Nursing Assessment and Intervention.

Prerequisite: course 203 or concurrent. Instruction and experience in the systematic assessment of patients for the identification of nursing problems. Discussion and evaluation of major modes of interventive practice.
Mrs. Moidel

410. Selected Problems in Nursing Care.

Prerequisite: course 401 or consent of instructor. May be repeated by enrollment in a different section.

Section 1. Problems in Environmental Management.
Mrs. McCaffery

Section 2. Management of Developmental Problems.
Miss Cahill, Miss Putnam

Section 3. Problems in Patient Motivation.

Miss Dambacher

Section 4. Nursing Problems Related to Medical Pathology.
Mrs. Auger

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 Upchurch

***432. Current Concepts in Community College Nursing Programs.**

(Formerly numbered 332.) Prerequisite: course 430A. A study of theoretical and practical problems in associate degree programs in nursing. Individual and group study and field work.

434. Nursing Administration.

(Formerly numbered 252A-252B and 254.) Prerequisites: courses 401, 410, 420, 425. A study of administrative theories and their relationships to effective administration in nursing service and nursing education. Critical analysis of the role of the administrator.
Miss Arndt

***435. Internship in Nursing School Administration. (2 courses)**

(Formerly numbered 454.) Prerequisite: post-masters and course 434. The internship in Nursing School Administration is organized to provide experience in administering either a junior college or a baccalaureate program in nursing. May be repeated for credit.

436. Internship in Nursing Service Administration. (2 courses)

Prerequisites: post-masters and course 434. Directed learning in nursing service organizations with critical appraisal of the applicability of administrative theories. May be repeated for credit. Miss Arndt

470. Clinical Nursing Specialization. (2 courses)

Prerequisites: courses 401, 410 and 420. The refinement and extension of professional knowledge and skills in a clinical field of the student's choice. May be repeated for credit. Mrs. Moidel and the Staff

475. Supervision of Nursing Services.

(1 to 2 courses)

Prerequisites: course 434. Critical appraisal of

* Not to be given, 1969-1970.

supervisory theory and process. Guided experience in supervision in hospitals or health agencies.

Miss Arndt and Miss O'Leary

476A. Community Mental Health.

Prerequisites: courses 401, 410, 420 and 470. Theories of the consultation process concomitant with direct nursing consultation activities with caregiving individuals, groups and administrative personnel in community mental settings.

Mrs. Gebbie, Mrs. Neuman, Mrs. Wiest

476B. Community Mental Health.

Prerequisites: courses 401, 410, 420 and 470. Community Mental Health theory and conceptual frameworks applied to experiences within community mental health settings. Emphasis upon the application of theory in community mental health programs through observation, participation, and intervention in areas of prevention, organization and planning.

Mrs. Gebbie, Mrs. Neuman, Mrs. Wiest

Individual Study and Research

596. Directed Individual Studies for Graduate Students. (1 to 2 courses)

(Formerly numbered 297.) Opportunity for graduate students in nursing to pursue special research interests. One quarter course (4 units) may be applied toward departmental minimum one time only.

The Staff

597. Individual Study for Master's Comprehensive Examination. (1 to 2 courses)

One quarter course only may be applied toward departmental minimum requirement for the Master of Nursing.

The Staff

598. Research for Thesis. (1 to 2 courses)

(Formerly numbered 299.) Prerequisite: one quarter in research; thesis approved. One quarter course (4 units) may be applied toward departmental minimum one time only.

The Staff

ORIENTAL LANGUAGES

(Department Office, 399 Social Welfare Building)

Fr. Heinrich Busch, Ph.D., *Professor of Oriental Languages in Residence.*

Fr. Eugen Feifel, Ph.D., *Professor of Oriental Languages in Residence.*

Kan Lao, B.A., Academician, *Professor of Oriental Languages.*

Richard C. Rudolph, Ph.D., *Professor of Oriental Languages.*

Fr. Gerhard Schreiber, Ph.D., *Professor of Oriental Languages in Residence.*

Chi-Chen Wang, B.A., *Professor of Oriental Languages in Residence.*

Ensho Ashikaga, M.Litt., Giko, *Associate Professor of Oriental Languages (Chairman of the Department).*

* Ben Befu, Ph.D., *Assistant Professor of Oriental Languages.*

Alicia O. Matsunaga, Ph.D., *Assistant Professor of Oriental Languages.*

_____, *Assistant Professor of Oriental Languages.*



Y. C. Chu, M.A., *Lecturer in Chinese.*

Che-Hwei Lin, B.A., M.S. in L.S., *Lecturer in Japanese.*

Man-hing Mok, M.A., M.S., *Lecturer in Chinese.*

Kuo-yi Pao (Ünenseñen), M.A., M.S., *Lecturer in Oriental Languages.*

George Takahashi, M.A., *Lecturer in Japanese.*

Shirleen S. Wong, M.A., *Acting Assistant 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.

* In residence winter quarter only, 1969-1970.

† In residence spring quarter only, 1969-1970.

Preparation for the Major

For the major in Chinese, courses 1A-1B-1C, 9A-9B-9C, 13A-13B, and 40A; also History 9B and 9C. For the major in Japanese, courses 1A-1B-1C, 9A-9B-9C, and 40B; also History 9B and 9C. Recommended for both majors: Anthropology 5A and 5C.

The Major

Required for the major in Chinese: eight upper division quarter courses chosen from 101A, 101B, 101C, 113A, 113B, 121A, 121B,

139, 163A and 163B; in addition, courses 140B, 195, 199, Art 114B and Political Science 159.

Required for the major in Japanese: eight upper division quarter courses chosen from 109A, 109B, 109C, 119A, 119B, 129A, 129B, 139, 179A and 179B; in addition, courses 140A, 196, 199, Art 114C and Political Science 160.

In the event Art 114B or 114C is not offered, substitutions may be made as follows: course 170A, 170B or 170C for 114B, course 172C for 114C.

Recommended for Chinese majors: course 13C.

Recommended for both majors. Anthropology 110, Geography 186. A reading knowledge of French and/or German should be acquired by those planning to go on to graduate work.

Requirements for Admission to Graduate Study

A candidate for admission to graduate study in Oriental languages must meet, in addition to the general University requirements, the minimum requirements for an undergraduate major. Although students whose undergraduate preparation was not in the field of Oriental languages will be accepted, such students will be required to meet the departmental standards in linguistic competence and course requirements prior to undertaking advanced work.

Requirements for the M.A. Degree

1. For general requirements, see page 139.
2. Demonstrate a reading knowledge of French or German by passing the examination administered by the Graduate Division. The requirement must be met by the end of the second quarter of graduate study.
3. Complete at least five graduate courses and the requisite number of upper division courses within the department to make a total of nine courses.
4. Submit a brief research paper showing the results of an original investigation of an appropriate problem.
5. Pass a series of comprehensive examinations in the culture, history and literature of either China or Japan. Under certain circumstances, the department will accept a thesis in lieu of the comprehensive examinations.

Requirements for the Ph.D. Degree

1. For general requirements, see page 143.
2. Requirements for the Master's degree in the department or its equivalent must be

met prior to admission to the program. Students majoring in Chinese will be further required to have completed six courses in Classical Chinese and those majoring in Japanese to have completed four courses in Classical Japanese prior to admission. In addition, students are required to have completed at least two courses in an Oriental language other than Chinese or Japanese (Mongolian, Sanskrit, Tibetan, or Vietnamese).

3. Demonstrate a reading knowledge of French and German (whichever was not offered for the M.A. degree) by passing the examination administered by the Graduate Division. This requirement must be met prior to advancement to candidacy.

4. Present a minor chosen from the following five fields: Buddhism, Chinese Archaeology, Linguistics, Chinese Language and Literature, and Japanese Language and Literature.

5. Complete a minimum of five graduate courses in the department beyond the M.A. degree.

6. Students specializing in Chinese archaeology will, in addition, be required to have completed courses 170A-170B-170C, 198, and Anthropology 130A-130B (Origins of Old World Civilization) or Indo-European Studies 132 (European Archaeology: The Bronze Age). Recommended courses: Anthropology 133A (Ancient Civilizations of Western Middle America—Nauhatal Sphere), 133B (Ancient Civilizations of Eastern Middle America—Maya Sphere).

Students specializing in Buddhism will be required to have completed courses 172A-172B-172C, 164A-164B, 139, Indo-European Studies 160 and 161 (Sanskrit).

For those majoring in Chinese or Japanese studies the departmental guidance committee will arrange a suitable program.

7. Complete preliminary written qualifying examinations and oral qualifying examinations in two of the fields listed in item 4 above (one of which must be Chinese or Japanese literature and language) and in the area of Far Eastern history and culture.

8. Present a dissertation embodying the results of independent investigation.

9. Pass a final oral examination with major emphasis upon the defense of the dissertation.

Lower Division Courses

1A-1B-1C. Elementary Modern Chinese.

Lecture, five hours. Not open to students with previous training. An introduction to the standard or "National Language" (Kuo Yü of China).

Mr. Chu in charge

9A-9B-9C. Elementary Modern Japanese.

Lecture, five hours. Not open to students with previous training. Mr. Takahashi in charge

13A-13B-13C. Classical Chinese.

Lecture, three hours; reading or discussion, one hour. Prerequisite: course 1A or consent of the instructor. Introduction to the development of Chinese writing and the classical language in which the bulk of Chinese literature is written. Mr. Fao

40A-40B. History of Far Eastern Civilization.

Lecture, three hours; reading or discussion, one hour. (A) A survey of the development of the outstanding aspects of Chinese culture from prehistoric to modern times. No knowledge of Chinese required. (B) A survey of the development of Japanese culture and its relationship to the Asiatic mainland. No knowledge of Japanese required.

Mrs. Matsunaga, Mr. Fao

Upper Division Courses**101A-101B-101C. Intermediate Chinese.**

Lecture, three hours; laboratory, one hour. A continuation of 1A-1B-1C. Mr. Chu, Miss Wong

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

119C. Advanced Modern Japanese.

Prerequisite: course 109C or consent of the instructor. Not open to native speakers of Japanese. Advanced modern Japanese with emphasis on the spoken language for majoring students. The Staff

121A-121B. Advanced Chinese.

Lecture, three hours; laboratory, one hour. A continuation of 101A-101B-101C, with practice in newspaper style. Mr. Chu

121C. Advanced Chinese.

Prerequisite: course 101C or consent of the instructor. Not open to native speakers of Chinese. Advanced modern Chinese with emphasis on the spoken language for majoring students. The Staff

123. Readings in Modern Chinese.

Prerequisite: course 121A-121B or consent of the instructor. Mr. Chu

129A-129B. Classical Japanese and Kambun.

Lecture, three hours. Prerequisite: course 119B. (A) Introduction to Classical Japanese. (B) Introduction to Kambun. Mr. Befu

139. Introduction to Buddhist Texts.

Lecture, three hours. Prerequisite: course 13C, 121A or 119A. 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, Miss Wong

143A-143B. Readings in Modern Japanese.

Prerequisite: courses 119A-119B or equivalent. Advanced readings in modern works in social science and literature. Mrs. Matsunaga, Mr. Takahashi

144A-144B-144C. Vietnamese.

Lecture, three hours; reading or discussion, one hour.

152A-152B. Far Eastern Poetry and Fiction.

Lecture, three hours; reading or discussion, one hour. (A) Prerequisite: a reading knowledge of Chinese. (B) Prerequisite: a reading knowledge of Japanese. Mr. Lao, Mrs. Matsunaga

154A-154B. Mongolian.

Lecture, three hours; laboratory, one hour. Mr. Fao

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 catalogues. Types of Chinese archaeological literature and early field work up to 1900.

170B-170C. Major work since the beginning of scientific archaeology in China; survey of palaeolithic, neolithic and bronze ages; results of archaeological discovery under both Nationalist and Communist regimes. Mr. Rudolph

172A-172B-172C. The Influence of Buddhism on Far Eastern Cultures and European Thought.

Lecture, three hours; reading or discussion, one hour. No language requirement. The historical development of Buddhism in China, Tibet, and Japan and its influence on the culture, society, and institutions of these areas to Europe. Mr. Ashikaga

174. Readings in Mongolian.

Mr. Fao

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.

177. Reading in Tibetan.

Prerequisites: courses 164A-164B. Mr. Ashikaga

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

195. Chinese Bibliography.

Prerequisite: reading knowledge of Chinese and consent of the instructor. Mrs. Mok

196. Japanese Bibliography.

Prerequisite: reading knowledge of Japanese and consent of the instructor. Mr. Lin

198. Chinese Paleography.

Lecture, three hours; reading or discussion, one hour. Prerequisite: an advanced reading knowledge of classical Chinese and consent of the instructor. The decipherment and interpretation of ancient texts on bone, bronze, stone, and wood. Mr. Lao

199. Special Studies in Oriental Languages.

(½ to 1 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. Mr. Lao

213A-213B. Chinese Buddhist Texts. Fr. Busch

223. History of Japanese Language. The Staff

229A-229B. Japanese Buddhist Texts. Mrs. Matsunaga

242A-242B. Japanese Classics. Mr. Befu

252A-252B. Seminar in Japanese Literature. Mr. Befu

253A-253B. Seminar in Buddhist Studies. Mr. Ashikaga

262. Seminar in Sinoological Literature. Fr. Feifel

270A-270B. Problems in Chinese Archaeology. Mr. Rudolph

275. Seminar in Chinese Cultural History. Fr. Schreiber

285. Problems in Buddhist Culture. Mr. Ashikaga

295. Bibliography and Methods of Research. Fr. Schreiber

Individual Study and Research

All of these courses will be graded Satisfactory/Unsatisfactory. A student may enroll in 596 and 598 two times and in 597 and 599 three times, but only one of these may apply toward the minimum course requirement.

596. Directed Individual Studies. (1 to 2 courses) The Staff

597. Preparation for Comprehensive or Qualifying Examinations. The Staff

598. Master's Level Research. The Staff

599. Doctoral Research. The Staff

■ PATHOLOGY

(Department Office, 13-267 Center for the Health Sciences)

W. Jann Brown, M.D., *Professor of Pathology.*

William H. Carnes, 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 (Vice-Chairman of the Department).*

Pasquale A. Cancilla, M.D., *Associate Professor of Pathology.*

Walter F. Coulson, M.D., *Associate Professor of Pathology.*

M. Anthony Verity, M.D., *Associate Professor of Pathology.*

Robert Y. Foos, M.D., *Assistant Professor of Pathology.*

Ruth Gussen, M.D., *Assistant Professor of Pathology.*

Gen Niwayama, M.D., *Assistant Professor of Pathology.*

Lydia Osvaldo-Decima, M.D., *Assistant Professor of Pathology.*

Donald E. Paglia, M.D., *Assistant Professor of Pathology.*

Joseph Raymond, M.D., *Assistant Professor of Pathology and Head of Clinical Laboratories.*

George S. Smith, M.D., *Assistant Professor of Pathology.*

Thomas M. Stanley, M.D., *Assistant Professor of Pathology.*

Jerry Waisman, M.D., *Assistant Professor of Pathology.*



Charles L. Yuile, M.D., *Visiting Professor of Pathology.*

Graduate study programs in the department are offered to a limited number of medical students between the second and third or between the third and fourth years. For further information consult the chairman of the Department. The following course is open to qualified nonmedical graduate students in so far as facilities permit.

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, discussions, and individual study of a student loan collection of microscopic slide preparations of fresh specimens from recent autopsies, supplemented by fixed museum specimens, Kodachrome photomicrographs, and projection of microslides. The course of study includes general pathology and the special pathology of organ systems, emphasizing the correlation of abnormal anatomy with deranged physiology and chemistry. Laboratory exercises illustrative of major phenomena of disease are performed by students under staff supervision. The topic for the term paper should be selected in consultation with the instructor. The Staff

231B. Pathological Anatomy and Physiology.

Continuation of course 231A.

■ **PHARMACOLOGY**

(Department Office, 23-267 Center for the Health Sciences).

John A. Bevan, B.Sc., M.B., B.S., *Professor of Pharmacology.*

Robert George, Ph.D., *Professor of Pharmacology.*

Donald J. Jenden, B.Sc., M.B., B.S., *Professor of Pharmacology and Biomathematics (Chairman of the Department).*

Remot B. Taylor, M.A., M.D., *Professor of Pharmacology.*

Wallace D. Winters, M.D., Ph.D., *Professor of Pharmacology in Residence.*

Peter Lomax, M.D., *Associate Professor of Pharmacology.*

J. Heward Thompson, M.B., B.Ch., B.A.O., *Associate Professor of Pharmacology.*

M. D. Fairchild, Ph.D., *Assistant Professor of Pharmacology in Residence.*

Ronald Okun, M.D. *Assistant Professor of Pharmacology in Residence.*



J. H. Beckerman, M.S., *Lecturer in 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

(Statistical Principles in Pharmacology); 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 minimum requirements in addition to those for the master's degree in pharmacology and toxicology are: Pharmacology 236 (Neuropharmacology); two quarters of physical chemistry; a course in calculus; such additional subjects as his guidance committee may designate.

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. Jenden in charge

231. Introduction to Pharmacology. (½ course)

Prerequisite: consent of the instructor. Lectures,

discussions and assigned reading on the scope of pharmacology and its relation to other sciences.

Mr. Jenden

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. Statistical Principles in Pharmacology. (½ course)

The theory and practice of the application of statistical methods to the design of experiments and the analysis of data in pharmacology, toxicology and therapeutics.

Mr. Jenden in charge

234. Experiments in Bioassay and Modes of Drug Action. (½ course)

A detailed laboratory course on the bioassay of pharmacological agents and the experimental techniques involved in the elucidation of their modes of action.

The Staff

235. Systemic Mammalian Pharmacology and Toxicology. (2 courses)

Prerequisite: mammalian physiology. A comprehensive lecture course in systemic general mammalian pharmacology including the classification, description and mode of action of pharmacological agents.

Mr. Jenden 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.

Mr. George, Mr. Winters

251A-251B-251C. Seminar in Pharmacology. (½ course each)

Mr. George

252. Seminar in Chemical Pharmacology. (½ course)

Prerequisite: consent of the instructor. Oral reports and discussions of topics of current interest in the application of chemical concepts and techniques to pharmacology.

Mr. Jenden

261. Introduction to Clinical Pharmacology.

Prerequisite: consent of the instructor. Lectures, case presentations and discussions designed to acquaint graduate students with the special problems and effects encountered in clinical use of drugs, including absorption, metabolism and excretion, drug interactions and interference with clinical laboratory analysis.

Mr. Okun, Mr. Thompson

Individual Study and Research

596. Directed Individual Research in Pharmacology. (1 to 3 courses)

The Staff

599. Research for and Preparation of the Doctoral Dissertation. (1 to 3 courses)

The Staff

■ PHILOSOPHY

(Department Office, 321 Social Welfare Building)

- Alonzo Church, Ph.D., *Professor of Philosophy and Mathematics in Residence.*
 Donald Kalish, Ph.D., *Professor of Philosophy.*
 Richard Montague, 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, Ph.D., *Professor of Philosophy.*
 Arnold Kaufman, Ph.D., *Professor of Philosophy.*
 Rudolf Carnap, Ph.D., *Emeritus Professor of Philosophy.*
 Hugh Miller, Ph.D., *Emeritus Professor of Philosophy.*
 Ernest A. Moody, Ph.D., *Emeritus Professor of Philosophy.*
 Montgomery Furth, Ph.D., *Associate Professor of Philosophy.*
 David Kaplan, Ph.D., *Associate Professor of Philosophy.*
 John S. Earman, Ph.D., *Assistant Professor of Philosophy.*
 Thomas E. Hill, Jr., Ph.D., *Assistant Professor of Philosophy.*
 David K. Lewis, Ph.D., *Assistant Professor of Philosophy.*
 John R. Perry, Ph.D., *Assistant Professor of Philosophy.*
 Warren S. Quinn, Ph.D., *Assistant Professor of Philosophy.*
 C. Wade Savage, Ph.D., *Assistant Professor of Philosophy.*
 Martin Tweedale, Ph.D., *Assistant Professor of Philosophy.*
 ———, *Assistant Professor of Philosophy.*
 ———, *Assistant Professor of Philosophy.*

- Georges-Chehata Anawati, Docteur-es-Lettres, *Visiting Professor of Philosophy.*
 John Bennett, B.A., *Acting Assistant Professor of Philosophy.*
 Fazlur Rahman, D.Phil., *Visiting Professor of Philosophy.*
 Sandra L. Peterson, B.Phil., *Acting Assistant Professor of Philosophy.*
 ———, *Visiting 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 any three of the following four groups, and one course (4 units) in the remaining group.

Group I. 101, 102, 103, 104, 105, 106, 107, 108, 110, 111.

Group II. 125, 126A–126B–126C, 127A–127B, 128, 129, 133, 134, 135.

Group III. 150A–150B, 151, 152, 155, 156, 157, 160, 161, 164.

Group IV. 175, 176, 178, 180, 184, 186, 188, 190, 192, 194.

For a student who enrolled as a major before the fall term of 1966, the major is as follows: (A) either (i) 36 quarter units (1 semester unit equals 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.

Students intending to do graduate work in Philosophy should consult with the graduate adviser as well as with the undergraduate adviser.

Admission to Graduate Status

Students interested in admission to graduate study should write to the Graduate Adviser, Department of Philosophy for documents describing the graduate program.

An undergraduate major in Philosophy is not required, although some undergraduate preparation is expected.

Graduate Courses and Seminars

During the period between admission to graduate standing and advancement to candidacy a graduate student is normally required in each academic year of attendance to take at least two courses (8 units) in philosophy numbered in the 200 series.

Requirements for the Master's Degree

General Requirements. See page 139.

Foreign Language. A reading knowledge of one of the following languages: Greek, Latin, French, or German. On petition to the Department, another language relevant to the candidate's field of specialization may be chosen.

Course Requirement. At least nine courses (36 units) numbered over 100 (excluding 199), five courses (20 units) 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

The Comprehensive Examination Plan for the master's degree requires passage of the written Qualifying Examinations for the doctorate in Philosophy or passage of the written Master's Comprehensive Examina-

tions. The latter cover the four fields examined for the doctorate. For full details consult the *Plan for the Written Master's Comprehensive Examinations in Philosophy*.

Requirements for the Candidate in Philosophy Degree

The Candidate in Philosophy Degree (C. Phil.) is awarded upon a Ph.D. candidate's formal advancement to candidacy. A student is advanced to candidacy for the Doctorate when he has passed an examination in one foreign language, passed the written doctoral examinations, submitted and had approved by the Department a dissertation proposal, and passed the oral qualifying examination. The Candidate in Philosophy is not a terminal degree. The Department will not recommend a student for advancement to candidacy and at the same time disqualify him for continued registration and further study or research on his dissertation. If a student withdraws from the University after advancement to candidacy and at award of the C. Phil., then the Department will readmit him upon application, provided the period of absence has not exceeded seven years. Any student, of course, may himself decide not to proceed beyond the C. Phil. Four quarters of academic residence three of which (normally the last three) must be spent in continuous residence at UCLA are required for the C. Phil.

Requirements for the Doctor's Degree

General Requirements. See page 143.

Foreign Language. A reading knowledge of two of the following languages: Greek, Latin, French, or German. On petition to the Department, one of these may be replaced by another language relevant to the candidate's field of specialization.

Course Requirement. Three advanced courses (12 units) outside philosophy taken prior to advancement to candidacy. The choice of these courses will be determined in consultation with the Graduate Adviser.

Qualifying Examinations. Qualifying examinations for advancement to candidacy consisting of a written examination in each of the following fields: (1) history of philosophy, (2) logic, (3) ethics and value theory, and (4) metaphysics and epistemology. These examinations, administered by the Department, may be taken in two groups, the student choosing which two examinations are taken as the first group. For full details, con-

sult the *Plan for the Written Qualifying Examinations for the Doctorate in Philosophy*, available in the Philosophy Department office. The examinations are normally scheduled for third and fourth weeks of the fall quarter and for the second and third weeks before instruction ends in the spring quarter. (None will be given in the winter quarter.) In addition to the written examinations, an oral qualifying examination, administered by the doctoral committee appointed by the Dean of the Graduate Division, is required in the general field of Philosophy in which the student's proposed research falls, as well as such fields outside of Philosophy in which competence is required for successful execution of the dissertation project.

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. Bennett, Mr. Quinn, Mr. Yost

7. Introduction to Philosophy.

(Formerly numbered 6B.) Course 6 is not a prerequisite. Lectures, three hours; discussion section, one hour. Selected topics from the following: metaphysics, theory of knowledge, philosophy of science, and philosophy of religion. Mr. 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, Miss Peterson, Mr. Tweedale

21. Modern Philosophical Classics.

(Formerly numbered 20B.) Course 20 is not a prerequisite. Lectures, three hours; discussion section, one hour. Selected topics from the following: the Renaissance and the rise of modern science; rationalism in Descartes, Spinoza, Leibniz; empiricism in Locke, Berkeley, Hume; philosophies of Kant and his successors; recent movements. Mr. Perry

31. Logic, First Course.

Lectures, three hours; discussion section, one hour. Recommended for students who plan to pursue more

advanced studies in logic. The elements of symbolic logic, sentential and quantificational; forms of reasoning and structure of language.

Mr. Church, Mr. Kaplan, Mr. Lewis

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. Earman, Mr. Lewis, Mr. Montague

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, 150A, 150B, 155, 160, 164, 175, 176, 178, 180.

One course (4 units) in philosophy or consent of the instructor required: courses 101, 102, 103, 104, 105, 106, 107, 108, 110, 111, 126A, 126B, 126C, 128, 133, 134, 135, 161.

Two courses (8 units) in philosophy or consent of the instructor required: courses 127A, 127B, 129, 151, 152, 156, 157, 184, 186, 188, 190, 192, 194.

GROUP I

101. Greek Philosophy: Plato and Predecessors.

(Formerly numbered 152.) Prerequisites: one course (4 units) in philosophy or consent of the instructor. A study of the pre-Socratic philosophers in relation to selected works of Plato. Miss Peterson

102. Greek Philosophy: Aristotle and Later Greek Philosophy.

(Formerly numbered 153.) Prerequisite: one course in philosophy or consent of the instructor. A study of the philosophical contributions of Aristotle, the Stoics, Epicureans, Sceptics, and late Platonists, based on the reading and discussion of major works of Aristotle and of selected sources from later Greek authors. Mr. Furth

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. Tweedale

104. Late Medieval and Renaissance Philosophy.

(Formerly numbered 158.) Prerequisite: one course in philosophy or consent of the instructor. Duns Scotus, Ockham, and the *via moderna* of the fourteenth century; Renaissance skepticism and humanism; and the philosophical background of the scientific revolution. Selected texts of late scholastic and Renaissance philosophers. Mr. Tweedale

105. Continental Rationalism.

(Formerly numbered 162.) Prerequisite: one course in philosophy or consent of the instructor. The philosophies of Descartes, Spinoza, and Leibniz. Mr. Furth

106. British Empiricism.

(Formerly numbered 163.) Prerequisite: one course in philosophy or consent of the instructor. The philosophies of Locke, Berkeley, and Hume. Mr. Perry

107. Kant and Idealism.

(Formerly numbered 166.) Prerequisite: one course in philosophy or consent of instructor. A study of Kant as the basis for later German idealism. Mr. Hill

108. Nineteenth Century Philosophy.

Prerequisite: one course in philosophy or consent of the instructor. Selected topics in nineteenth century thought. Mr. Kaufman

110. Islamic Philosophy.

Prerequisite: one course (4 units) 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

111. Topics in Islamic Philosophy.

Prerequisite: consent of the instructor; course 110 recommended. Advanced study of selected issues in Islamic philosophy. Mr. Rahman

GROUP II

125. Introduction to Modern Logic.

(Formerly numbered 102.) 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, model logic. Mr. Lewis

126A. Philosophy of Science.

Prerequisite: course 32 or course 125. An analysis of explanation, confirmation, and theory in the sciences. Mr. Lewis

126B. Philosophy of Science.

Prerequisite: course 126A or consent of the instructor. Certain philosophical problems regarding the content of the sciences. Mr. Earman

126C. Philosophy of Science: Social Sciences.

Prerequisite: course 126A or 126B or consent of

the instructor. A discussion of topics in the philosophy of social science; e.g., the methods of the social sciences in relation to the physical sciences; value—bias in social inquiry; concept formation; theory construction; explanation and predication; the nature of social laws. Mr. Kaufman

127A-127B. Philosophy of Language.

(Formerly numbered 187B.) Prerequisite: course 31 and either course 32 or course 125; or consent of the instructor. With the consent of the instructor, course 127B may be taken without course 127A. Semiotic: syntax, semantics, pragmatics. The semantical concept of truth, sense and denotation, synonymy and analyticity, modalities and tenses, indexical terms, semantical paradoxes. Indirect discourse, subjunctive conditionals. Mr. Montague

128. Philosophy of Mathematics.

(Formerly numbered 191.) 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

129. Philosophy of Psychology.

Prerequisites: one 4-unit course in Psychology and one 4-unit course in Philosophy. Selected philosophical issues arising from psychological theories of thinking, learning, motivation, perception and measurement. The meaning and verification of such theories. The difference between philosophy and psychology. Mr. Savage

133. Logic, Third Course.

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.) Prerequisite: course 133 (which with the consent of the instructor may be taken concurrently), or upper division standing in mathematics and consent of the instructor. Introduction to axiomatic set theory: sets, natural numbers, relations, functions, cardinality, infinity. Mr. Kalish, Mr. Montague

135. Introduction to Metamathematics.

(Formerly numbered 184B.) Prerequisite: course 134 or consent of the instructor. Models, satisfaction, truth, definability; logical truth and logical consequence; consistency and completeness. Mr. Church, Mr. Kaplan

GROUP III

150A-150B. Society and Morals.

Course 150A is not prerequisite to 150B. A critical study of principles and arguments advanced in discussion of current moral issues. Possible topics: Black Power, Vietnam War, civil disobedience, sexual morality, punishment versus therapy. Guest lecturers may be employed and discussion sections will be held. Mr. Hill, Mr. Kaufman

151. History of Ethics.

(Formerly numbered 104.) Prerequisite: two courses in philosophy or consent of the instructor. Selected classics in the history of ethics. Mr. Hill

152. Ethical Theory.

(Formerly numbered 188.) Prerequisite: two courses in philosophy or consent of the instructor. Fundamental concepts and theories of morals.

Mr. Quinn

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. Bennett, Mr. Hill

157. Legal Philosophy.

(Formerly numbered 192.) Prerequisite: two courses in philosophy or consent of the instructor. Selected problems in the field of legal philosophy.

Mr. Morris, Mr. Wasserstrom

160. Philosophy of Art.

(Formerly numbered 136.) The aesthetic experience; form and expression; the functions of art; bases of art criticism.

Mr. Bennett

161. Aesthetic Theory.

(Formerly numbered 189.) Prerequisite: one course in philosophy or consent of the instructor. Theories of art; theories of aesthetic value; philosophical problems of art criticism.

Mr. Quinn

164. Philosophy in Literature.

(Formerly numbered 146A-146B.) The study of philosophical ideas expressed in literature.

Mr. Morris

GROUP IV**175. Philosophy of Religion.**

(Formerly numbered 112.) The nature and existence of God; death and immortality; religious obligation and the question of free will; the systematic nature of theology and its relation to the philosophical enterprise.

Mr. Savage

176. Existentialism and Phenomenology.

(Formerly numbered 123.) A general introduction to basic concepts and methods.

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.

184. Metaphysics.

(Formerly numbered 111.) 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. Perry

186. Theory of Knowledge.

(Formerly numbered 181.) Prerequisite: two courses in philosophy. Philosophical problems concerning knowledge and belief. Possible topics: per-

ception, certainty, memory, the analytic-synthetic distinction, self-knowledge, etc.

Mr. Yost

188. Philosophy of Perception.

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.) 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.) 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. Lewis, Miss Petersen

194. Contemporary Philosophy.

(Formerly numbered 170A-170B.) Prerequisite: two lower division courses in philosophy or one upper division course in philosophy or one course in logic or consent of the instructor. Analysis of the views of several recent philosophers.

Mr. Savage

199. Special Studies. (½ to 2 courses)

Prerequisite: consent of the instructor.

The Staff, Mr. Kaplan in charge

Graduate Courses**201. Plato.**

A study of the later dialogues.

Miss Peterson

202. Aristotle.

Prerequisite: undergraduate preparation in the history of Greek philosophy. Analysis of major problems in Aristotle's philosophy based on the reading, exposition and critical discussion of relevant texts in English translation.

Mr. Furth

203. Hobbes.

Prerequisite: consent of the instructor. Hobbes' political philosophy, especially the Leviathan, with attention to its relevance to contemporary political philosophy.

Mr. Bennett

204. Hume.

Prerequisite: consent of the instructor.

Mr. Savage

206. Kant.

(Formerly numbered 215.) Prerequisite: consent of the instructor. A study of one of the three Critiques and supplementary works.

Mr. Savage

209. Medieval Arabic Philosophers.

Prerequisite: consent of the instructor.

Mr. Rahman

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.

221A-221B-221C. Set Theory.

(Formerly numbered 231A-231B and same as Mathematics 221A-221B-221C.) Prerequisite: Mathematics 112A or Philosophy 134 or consent of the instructor. Students may not receive credit for both Mathematics 221A-221B-221C and Philosophy 221A-221B-221C. Sets, relations, functions. Partial and total orderings; well-orderings. Ordinal and cardinal arithmetic, finiteness and infinity, the continuum hypothesis, inaccessible numbers. Formalization of set theory. Zermelo-Fraenkel Theory, von Neumann-Gödel Theory. Constructability. Results on relative consistency and independence. Mr. Chang

222. Gödel Theory.

(Formerly numbered 232B.) 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. Mr. Church

223. Model Theory.

(Formerly numbered 232A.) Prerequisite: course 135 or Mathematics 112A-112B. Mr. Montague

224. Philosophy of Physics.

Prerequisite: consent of the instructor. Selected philosophical topics related to physical theory, depending on interests and background of the participants. Might include: space and time; observation in quantum mechanics; foundations of statistical mechanics. Mr. Earman

225. Probability and Inductive Logic.

(Formerly numbered 223.) Prerequisite: course 134 or Mathematics 112A-112B or consent of the instructor. Recommended: course 133 or course 128 or a course in calculus. Mr. Lewis

226. Topics in Mathematical Logic.

(Formerly numbered 224.) Prerequisite: consent of the instructor. Content will vary from quarter to quarter. Mr. Church

236. Topics in Political Philosophy.

Prerequisites: course 150, 155, or 156; or any two courses in philosophy; or consent of the instructor. An examination of one or more topics in political philosophy: e.g., justice, democracy, human rights, political obligation, alienation. Mr. Kaufman

250C. Seminar: Topics in Linguistic Theory.

(Same as Linguistics 250C.) Prerequisite: consent of the instructor. The metatheory of language description and the history of linguistic theory. Mr. Givon, Mr. Tweedale

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. Tweedale

251C. Seminar: History of Modern Philosophy.

Prerequisite: consent of the instructor. Selected problems and philosophers. Mr. Furth

260. Seminar: Mathematical Philosophy.

(Formerly numbered 272 and 273.) Prerequisite: consent of the instructor. Mr. Kaplan

261. Seminar: Logic.

(Formerly numbered 271.) Prerequisite: consent of the instructor. Mr. Church

262A-262B. Seminar: Recursive Functions.

Prerequisite: consent of the instructor. Mr. Montague

270. Seminar: History of Ethics.

(Formerly numbered 204.) Prerequisite: consent of the instructor. Selected topics. Mr. Hill

271. Seminar: Ethical Theory.

(Formerly numbered 205.) Prerequisite: consent of the instructor. Selected topics. Content will vary from quarter to quarter. Mr. Hill

272. Seminar: Political Theory.

Prerequisite: consent of the instructor. Mr. Kaufman

274. Seminar: Free Will and Morality.

Prerequisite: consent of the instructor.

275. Seminar: Responsibility in Law and Morals.

(Formerly numbered 257.) Prerequisite: consent of the instructor. Mr. Morris, Mr. Wasserstrom

276A. Legal Philosophy: The Nature of Law.

Prerequisite: consent of the instructor. 276A is not a prerequisite to 276B. An inquiry into selected theories concerning the nature of law. Mr. Morris, Mr. Wasserstrom

276B. Legal Philosophy: The Nature of Justice.

Prerequisite: consent of the instructor. An inquiry into selected topics relating to justice and the law. Mr. Morris, Mr. Wasserstrom

277. Seminar: Aesthetic Theory.

(Formerly numbered 258.) Prerequisite: consent of the instructor. Selected topics. Mr. Quinn

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. Savage

283. Seminar: Theory of Knowledge.

(Formerly numbered 252.) Prerequisite: consent of the instructor. Mr. Earman

284. Seminar: Philosophy of Perception.

Prerequisite: consent of the instructor. Mr. Yost

285. Seminar: Problems in Philosophical Psychology.

Prerequisite: consent of the instructor. Mr. Savage

287. Seminar: Philosophy of Language.

(Formerly numbered 270A-270B.) Prerequisite: consent of the instructor. Mr. Kaplan

288. Seminar: Wittgenstein.

Prerequisite: consent of the instructor. Mr. Perry

Individual Study and Research

The courses in the 500 series do not apply toward the course requirement for the master's degree.

596A-596B. Directed Individual Studies.**(½ to 2 courses)**

Any properly qualified graduate student who wishes to pursue a problem through reading or advanced study may do so if his proposed project is acceptable to a member of the staff. May be repeated for credit. Course 596A offered only on a

graded basis; 596B only on a satisfactory/unsatisfactory basis. The Staff, Mr. Kaplan in charge

597. Preparation for Master's Comprehensive or Doctoral Qualifying Examinations.
(½ to 2 courses)

Independent study in preparation for examination may be repeated for credit. Graded only on a satisfactory/unsatisfactory basis.

Mr. Kaplan in charge

598A-598B. Research for Master's Thesis.**(½ to 2 courses)**

Prerequisite: passage of the oral qualifying examinations for the master's degree. May be repeated for credit. Course 598A offered only on a graded basis; 598B only on a satisfactory/unsatisfactory basis. The Staff, Mr. Kaplan in charge

599A-599B. Research for Doctoral Dissertation.**(½ to 2 courses)**

Prerequisite: advancement to candidacy for the doctoral degree. May be repeated for credit. Course 599A offered only on a graded basis; 599B only on a satisfactory/unsatisfactory basis.

The Staff, Mr. Kaplan in charge

PHYSICAL EDUCATION

(Department Office, 206 Men's Gymnasium, 124 Women's Gymnasium)

Camille Brown, Ed.D., *Professor of Physical Education.*Valerie V. Hunt, Ed.D., *Professor of Physical Education.*Ben W. Miller, Ph.D., *Professor of Physical Education.*Norman P. Miller, Ed.D., *Professor of Physical Education.*Laurence E. Morehouse, Ph.D., *Professor of Physical Education.*Raymond A. Snyder, Ed.D., *Professor of Physical Education.*Rosalind Cassidy, Ed.D., *Emeritus Professor of Physical Education.*Carl H. Young, Ed.D., *Emeritus Professor of Physical Education.*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 (Vice-Chairman of the Department).*Marjorie E. Latchaw, Ph.D., *Associate Professor of Physical Education.*Wayne W. Massey, Ph.D., *Associate Professor of Physical Education.*V. Reggie Edgerton, Ph.D., *Assistant Professor of Physical Education.*John W. Loy, Ph.D., *Assistant Professor of Physical Education.*Ethel T. Bell, Ed.D., *Supervisor of Physical Education.*Norman D. Duncan, M.A., *Supervisor of Physical Education (Facility Manager).*Briggs M. Hunt, B.E., *Supervisor of Physical Education.*Joan L. Martin, M.S., *Supervisor of Physical Education.*Nanette T. McIntyre, M.S., *Associate Supervisor of Physical Education.*William F. Pillich, M.S., *Supervisory of Physical Education (Director, Activity Programs).*

Sterling S. Winans, M.S., *Lecturer in Physical Education.*

Edith I. Hyde, M.A., *Emeritus Supervisor of Physical Education.*

Orsie M. Thomson, M.A., *Emeritus Supervisor of Physical Education.*

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. A departmental adviser in Women's Gym 124 must be consulted concerning course 2, proficiency-skills courses.

Preparation for the Major

Courses 2, 10A, 10B; and one of the following groups of related and allied field courses.

Plan I. Allied Field, Physiology: Chemistry 1A, 1B, 1C; Biology 1A, 1B, 1C. Recommended electives: Chemistry 4A, 4B, 4C; 6A, 6B, 6C; Mathematics through Calculus; Physical Education 15A, 15B; Psychology 10, 12; Sociology 1; Philosophy 6 or 7.

Plan II. Allied Field, Psychology: Psychology 10, 12; Physical Education 15A, 15B; Sociology 1; Philosophy 6 or 7.

Plan III. Allied Field, Sociology: Sociology 1, 18, 19; Anthropology 5A, 5B; Physical Education 15A, 15B; 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, 118, 119, 122, 136*, 193, 199. One of the following groups of allied field courses.

Plan I. Allied Field, Physiology: a choice of four (4) physiological upper division courses in zoology approved by the departmental adviser.

Plan II. Allied Field, Psychology: Psychology 141 and six (6) upper division courses from the following areas: learning and learning disorders, physiological psychology, perception, personality and abnormal psychology, developmental psychology, social psychology, psychological measurement and evaluation. All six courses may be completed in two or three areas provided there are at least two (2) courses in each area selected.

Plan III. Allied Field, Sociology: four (4) upper division courses selected with the approval of the major adviser as follows: Two must be selected from Core Area I (Theory and Method), and two must be selected from either Core Area II (Social Structure and Change) or Core Area V (Social Psychology).

Upon completion of the bachelor's degree the student of physical education has several options. He may (1) with attention to requirements for the teaching major in the selection of undergraduate electives, complete the fifth year to meet California State Teaching 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 85.

Requirements for the Standard Teaching Credential

For information concerning the teaching major consult the UCLA ANNOUNCEMENT OF THE GRADUATE SCHOOL OF EDUCATION or confer with a departmental adviser.

Teaching Minors. (Elementary, Secondary, Junior College.) Eight (8) courses are required for the teaching minors as follows: Physical Education 2, 10A-10B, 111A-111B, 120; one course selected from 113 or 119 or a dance elective; 121 or 370. Courses re-

* Special section for Physical Education and Sociology major and minor students.

† Major and minor students may take physical education courses, beyond requirements on a pass/fail basis.

quired for the teaching minor may not be taken on a pass/fail basis.

Admission to Graduate Status

Students seeking admission to graduate status in the Department of Physical Education will be expected to meet the general requirements of the Graduate Division for admission, as described on page 28. Questions should be directed to the Chairman, Committee of Graduate Studies, Department of Physical Education.

Requirements for the Master's Degree

The degree of Master of Science is awarded with concentrations in physical education or recreation. Study under the Thesis Plan or the Comprehensive Examination Plan (see page 142) 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 Graduate School of Education in this regard. For admission and program requirements see pages 110 and 145. In addition consult the UCLA ANNOUNCEMENT OF THE GRADUATE SCHOOL OF EDUCATION. Specific information regarding the degree should be obtained by correspondence or in conferences, well in advance of beginning course work, with the Dean of the Graduate School of Education and the Chairman of the Committee on Graduate Studies, Department of Physical Education.

Lower Division Courses

1. Physical Education Activities (Men and Women). (½ course)

Four units (one full course) of Physical Education 1 may be counted toward the bachelor's degree. Graduate students may enroll on a Satisfactory/Unsatisfactory basis. Classes meet for ninety minutes of instruction per week, scheduled in two or three meetings, depending on the nature of the activity. Program content is designated by section each semester in the printed SCHEDULE OF CLASSES. Expert instruction is available on beginning, intermediate and advanced levels in such activities as: aquatics (swimming, water safety instruction, senior lifesaving), badminton, basketball, body conditioning, dance (social, tap, square), field sports, exercise and figure control, fencing, golf, self-defense (men and women), skiing, wrestling. Mr. Pillich in charge

2A-2Z. Fundamentals of Human Performance (Men and Women). (¼ course each)

Lecture, one hour; laboratory, two one-half hour sessions. Open to Physical Education major and minor students only. The principles of conditioning and improvement of human performance. 2A, Badminton; 2B, Basketball (M); 2C, Basketball (W); 2D, Dance (Folk-social); 2E, Modern Dance; 2F, Field Sports (M); 2G, Field Sports (W); 2H, Football (M); 2J, Golf; 2K, Gymnastics; 2L, Scuba; 2M, Softball (W); 2N, Swimming; 2P, Tennis; 2R, Track and Field; 2S, Volleyball; 2T, Wrestling (M). Unless otherwise specified, all sections are coeducational.
Miss Martin in charge

10A-10B. Introduction to Kinesiology.

(Formerly numbered 4A-4D and 10.) Lecture, three hours; laboratory, two hours. Required of all physical education majors and teaching minors in physical education. Basic concepts in the study of human movement.
Miss Brown in charge

† 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.

15A. Introduction to Human Anatomy.

Prerequisites: Biology 2; Physical Science 1 and 2; or consent of the instructor. An introduction to human anatomy. Mr. Edgerton

15B. Introduction to Human Physiology.

Prerequisites: Biology 2; Physical Science 1 and 2; or consent of the instructor. An introduction to human physiology. Mr. Edgerton

43. Recreation and Rehabilitation.

Lecture and laboratory, five hours. Examination of recreation and play in the rehabilitation of the handicapped. Mrs. Arnold, Mr. Winans

Upper Division Courses**110A-110B. General Kinesiology.**

Lecture, three hours; laboratory, two hours. Prerequisite: courses 10A-10B; Biology 1A-1B-1C or 2A and Physical Education 15A-15B; Physical Sciences 1 and 2 or Chemistry 1A-1B-1C; Sociology 18 or Psychology 141 (may be taken concurrently with 110A). Relationship between man's movement and his structure, function and behavior.

Mr. Egstrom, Mr. Gardner

111A-111B. Elements of Kinesiology.

Lecture, four hours. Not open to Physical Education major students. 111A must be completed prior to enrollment in 111B. A study of the biological and physical principles of movement and the effects of movement upon the structure and function of the human body. Miss V. Hunt

112. Analysis of Expressive Movement.

Lecture, three hours; laboratory, two hours. Prerequisite: courses 110A-110B or 111A-111B. Interpretation of the expressive aspects of human movement. Miss Hunt

113. Assessment of Human Movement Skill.

Lecture, three hours; laboratory, two hours. Prerequisite: courses 110A-110B or 111A-111B. Analysis and evaluation of movement skills under varying environmental conditions. Mr. Egstrom

***114. Kinesiotherapy.**

Lecture, three hours; laboratory, two hours. Prerequisite: courses 110A-110B. The role of exercise in the improvement of movement in physically handicapped individuals. Mr. Gardner in charge

116. 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. Edgerton

119. Movement Strategy in Team Play.

(Formerly numbered 162A-162I.) Prerequisite: advanced knowledge in team sports, specifically football, basketball, soccer and baseball and consent of the instructor. The study of defensive and offensive strategy in selected team sports.

Mr. Duncan, Miss Martin

120. Human Movement Development.

Prerequisite: upper division standing. Movement development throughout life with emphasis upon individual and societal determinants.

Mr. Keogh, Mr. Cratty

* Not to be given, 1969-1970.

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.

Miss Latchaw

122. Perceptual-Motor Education.

Lecture, three hours; laboratory, two hours. Prerequisite: courses 110A-110B; course 120 recommended. Movement problems of the minimally-neurologically handicapped with emphasis on the clumsy-child syndrome.

Mr. Cratty

136. Sports in American Life.

Prerequisite: junior standing and consent of the instructor. The national and international roles and interrelationships of American sports emphasizing social-cultural variables, changing patterns, current trends, problems and issues. (A special section is open only to Physical Education and Sociology major and minor students—see Schedule of Classes.)

Mrs. Bell, Mr. Loy, Mr. Snyder

139A-139B. Leisure and Recreation in Contemporary Society.

(Formerly numbered 139 and 140.) Prerequisite: consent of the instructor. A consideration of the historical development, philosophical concepts and social forces influencing leisure and recreation in American life.

Mr. Arnold, Mr. Winans

148. History of Physical Education in the United States.

Prerequisite: upper division standing. Challenge, continuity, and change underlying human movement programs.

Mr. B. Miller

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. (½ or 1 course)

Prerequisite: senior standing and consent of the instructor. A student may count this course only once to satisfy his major in Physical Education. He may take it a second time to meet University Graduation requirements.

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. Mr. Loy

220. Exercise Physiology.

(Formerly numbered 267.) Response of organs and systems to exercise, and physiological mechanisms underlying elements of human performance. Mr. Gardner, 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. Edgerton, Mr. Morehouse

235. Evaluation Procedures.

Analysis of kinesiological data. Mr. Massey

240A-240B. History of Human Movement Programs.

240A. U. S. History; 240B. World History. Historical development of physical education from the national and international perspectives. Mr. B. Miller

241. Comparative Physical Education and Sports.

(Formerly numbered 280G.) Mr. B. Miller

275. Research in Human Movement.

Application of research designs to problems in human movement. The Staff

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. Edgerton

280B. Electromyographic Assessment of Human Action. Miss Hunt

280C. Studies of Children with Movement Problems. Mr. Keogh

280D. Underwater Kinesiology. Mr. Egstrom

280E. Kinesthesia and Gross Action Patterns. Mr. Cratty

280F. Leisure and Recreation Modifiers. Mrs. Arnold

Professional Courses**370. Teaching of Physical Education.**

Lecture, two hours; laboratory, five hours. Prerequisite: upper division standing, assurance that activity proficiencies have been satisfied and consent of the instructor. May be taken concurrently with Education 130. 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

402. Administration of Physical Education.

(Formerly numbered 256.) Principles and policies applied to the unique organizational problems of physical education. Mr. Snyder

Individual Study and Research**596A-596ZZ. Directed Individual Study or Research. (½ to 2 courses)**

To be arranged with the member of the faculty who will direct the study or research. May not be used to fulfill any course requirements for the master's degree. The member of the faculty directing the study or research will be identified by a two-letter code as follows: S. E. Arnold, 596SE; C. Brown, 596CB; B. J. Cratty, 596BC; V. R. Edgerton, 596VE; G. H. Egstrom, 596GE; G. W. Gardner, 596GC; D. T. Handy, 596DH; V. V. Hunt, 596VH; J. F. Keogh, 596JK; M. Latchaw, 596ML; L. W. Loy, 596JL; W. W. Massey, 596WM; B. W. Miller, 596BM; N. P. Miller, 596NM; L. E. Morehouse, 596LM; R. A. Snyder, 596RS. Graded on a satisfactory/unsatisfactory basis. The Staff

597. Preparation of Master's Comprehensive Examination. (½ to 2 courses)

Prerequisite: consent of the Department of Physical Education Adviser. Course 597 may not be used to fulfill any of the course requirements for the master's degree. Graded on a satisfactory/unsatisfactory basis.

The Physical Education Graduate Adviser

598A-598ZZ. Research for and Preparation of the Master's Thesis. (½ to 4 courses)

Each member of the faculty supervises research of master's students and holds research group meetings, seminars, and discussions with students that take his master's research course which is identified by the same two-letter code used to identify the 596 course. Course 598 may not be used to fulfill any of the course requirements for the master's degree. Graded on a satisfactory/unsatisfactory basis. The Staff

■ PHYSICAL SCIENCES**1. Physics.**

Lecture and demonstration, three hours; quiz and discussion, one hour. Prerequisite: two years of high school mathematics which are acceptable as mathematics for admission to UCLA. This course is a part of a one-year sequence which satisfies the College of Letters and Science E requirement in the physical

sciences for nonphysical science majors. Course 1 is to be followed by Course 2. An introductory survey course in classical and modern physics. This portion of the College of Letters and Science E requirement may be satisfied by examination. Students must arrange in advance through the Physics Department Undergraduate Affairs Office (Knudsen

Hall 3-145R) to take the final examination in a regular section of the course. Entering students may arrange to take the examination any time after they have received official notification of admission.

Mr. Kaplan and Staff

2. Chemistry.

Lecture and quiz, four hours. Prerequisite: course 1. This course is designed to meet part of the College of Letters and Science requirements for non-science majors and similar requirements in other colleges. The course deals with the concept of the submicroscopic world of chemistry, and ranges from protons to proteins in subject matter. This course is not open to students who have received credit for Chemistry 1A. This portion of the College of Letters and Science E requirement may be satisfied by examination. To obtain exemption continuing students may arrange in advance to take the final examination in any section of Physical Sciences 2. Entering students may take a special exemption examination given each September. Information regarding the arrangements for taking either examination must be obtained in advance through the office of the Chemistry. Undergraduate Adviser (Chemistry 1037).

Mr. Hardwick, Mr. Kaesz, 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 geologic processes; historical aspects of geology.

The Staff

3M. Meteorology.

Lecture, three hours; laboratory, two hours. Prerequisite: courses 1 and 2 or equivalent. Introduction to the phenomena and processes which occur in atmospheric environment.

The Staff

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.*

Nina Byers, Ph.D., *Professor of Physics.*

Robert J. Finkelstein, Ph.D., *Professor of Physics.*

A. Theodore Forrester, Ph.D., *Professor of Physics and Engineering.*

Burton Fried, Ph.D., *Professor of Physics.*

Christian Fronsdal, 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 (Vice-Chairman of the Department).*

David S. Saxon, Ph.D., *Professor of Physics.*

Peter Schlein, Ph.D., *Professor of Physics.*

Donald H. Stork, Ph.D., *Professor of Physics.*

Harold K. Ticho, Ph.D., *Professor of Physics (Chairman of the Department.)*

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.*

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

Vern O. Knudsen, Ph.D., LL.D., *Emeritus Professor of Physics.*
 Ernest S. Abers, Ph.D., *Associate Professor of Physics.*
 Marvin Chester, Ph.D., *Associate Professor of Physics.*
 W. Gilbert Clark, Ph.D., *Associate Professor of Physics.*
 Darrell J. Drickey, Ph.D., *Associate Professor of Physics.*
 Roy P. Haddock, Ph.D., *Associate Professor of Physics.*
 Charles Kennel, Ph.D., *Associate Professor of Physics.*
 Richard E. Norton, Ph.D., *Associate Professor of Physics.*
 Philip A. Pincus, Ph.D., *Associate Professor of Physics.*
 William E. Slater, Ph.D., *Associate Professor of Physics.*
 Alfred Wong, Ph.D., *Associate Professor of Physics.*
 Eugene Wong, Ph.D., *Associate Professor of Physics.*
 Louis Balazs, Ph.D., *Assistant Professor of Physics.*
 Charles D. Buchanan, Ph.D., *Assistant Professor of Physics in Residence.*
 John Cornwall, Ph.D., *Assistant Professor of Physics.*
 Brian Jones, Ph.D., *Assistant Professor of Physics.*
 Walter Kündig, Ph.D., *Assistant Professor of Physics.*
 Moises Levy, Ph.D., *Assistant Professor of Physics.*
 Chuan-Sheng Liu, Ph.D., *Assistant Professor of Physics in Residence.*
 Neil Manson, Ph.D., *Assistant Professor of Physics in Residence.*
 Bernard Nefkens, Ph.D., *Assistant Professor of Physics.*
 Guy Paić, Ph.D., *Assistant Professor of Physics in Residence.*
 Jean-Luc Perrenoud, Ph.D., *Assistant Professor of Physics in Residence.*
 David Rudnick, Ph.D., *Assistant Professor of Physics in Residence.*
 Paul F. Shepard, Ph.D., *Assistant Professor of Physics in Residence.*
 Jules W. Sunier, Ph.D., *Assistant Professor of Physics.*
 Don Villarejo, Ph.D., *Assistant Professor of Physics.*
 Roscoe White, Ph.D., *Assistant Professor of Physics in Residence.*
 Charles A. Whitten, Ph.D., *Assistant Professor of Physics.*
 Chun-Wa Wong, Ph.D., *Assistant Professor of Physics.*
 Michael Woolf, Ph.D., *Assistant Professor of Physics.*
 John C. Young, Ph.D., *Assistant Professor of Physics in Residence.*



Edward Teller, Ph.D., Sc.D., *Professor of Physics at Large.*

Preparation for the Major in Physics

Required: Physics 7A†-7B-7C-7D (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 ap-

† See explanation of lower division courses on page 413.

‡ A mimeographed brochure giving more detailed information than is contained in this bulletin is obtainable from the Office of Undergraduate Affairs, Department of Physics.

proved by an adviser. A C average is required in the above courses. A reading knowledge of Russian, German, or French is recommended. This major leads to the Bachelor of Science degree.

Students preparing for graduate school should take additional courses in physics and mathematics. Physics 113, 122, 124, 126, and 140 are recommended.

Transition to the Quarter System for Students Who Entered Before Fall, 1966. Students must satisfy the requirements stated above. In applying semester courses toward these requirements, students who have credit for the following semester courses will be deemed to have satisfied the corresponding quarter courses indicated in parentheses: Chemistry 1A (1A); Chemistry 1A-1B (1A-1B-1C); Mathematics 11A (11A), 11B (11B-

11C), 12A (12A), 12B (12B-12C); Physics 1A (7A), 1B (7C), 1C (7B), 1D (7D), 105 (105A-105B), 108B (108), 110A (110A), 110B (110B), 112 (112A), 113 (113), 114 (114), 115, (115A-115B), 122 (122), 124A (124), 126 (126), 131 (131), 140 (140). The equivalences listed above are for the purpose of determining which quarter courses a student must take to meet the B.S. degree requirements in Physics. A student who has completed any two of the laboratory courses Physics 108C, 113C, 114C, 116C, 124C, will be deemed to have satisfied the laboratory requirement of the Physics 180 series. A student who has completed one of the former semester laboratory courses will be required to take two laboratory courses from the 180 series.

Requirements for the Standard Secondary Credential

For the requirements, consult the UCLA ANNOUNCEMENT OF THE GRADUATE SCHOOL OF EDUCATION.

Requirements for the Degree of Master of 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 pass any four of the five fundamental courses: 231A, 220A, 210A, 215A, and 221A. The remaining three courses may be satisfied by upper division or graduate courses, not necessarily in physics, which are acceptable to the Physics Department. No more than two of the three courses may be chosen from Physics 596 or seminar courses. Physics 597 and Physics 598 are not acceptable courses for the M.S. degree.

Comprehensive Examination. A passing grade on a written comprehensive examination is required. It is required that it be taken during the first year by UCLA graduates in physics or not later than the fourth quarter of residence by other students. This examination is given twice a year in the Fall and Spring Quarters.

Although this Department operates under the "comprehensive examination plan," rather than the "thesis plan," arrangements generally can be made for a student to write a master's thesis, provided he has a particularly interesting research problem, and

provided some professor is willing to undertake the guidance of his work. In this case the student must petition the Departmental Committee of Graduate Advisers for permission to pursue the "thesis plan." The comprehensive examination requirement is waived if the petition is approved.

Scholarship Requirements. A B average is required in physics as well as an overall B average in all courses taken in graduate status.

Transition to the Quarter System for Students Who Entered Before Fall 1966. Students who have completed five semester lecture courses by June 30, 1966, will be required to complete a total of eight courses for the M.S. degree instead of nine. Other students will be required to complete nine courses.

The Master of Arts in Teaching (M.A.T.) Degree

This degree leads to qualification for teaching credentials at the junior college, secondary school or elementary school level. For details, consult the Department of Physics.

Requirements for the Degree of Doctor of Philosophy

For the general requirements see pages 143-145. 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 7A-7B-7C-7D form a sequence of courses in general physics for majors in physics. All or part of the sequence is also

§ A brochure giving additional information of interest to graduate students in physics is obtainable from the Office of Graduate Affairs, Department of Physics.

required or recommended as first choice for major students in: astronomy, chemistry, engineering, geology, mathematics, meteorology, zoology, and certain interdepartmental fields of concentration. Physics 7A-7B-7C-7D are the courses formerly numbered 1A-1C-1B-1D respectively (note reversal of order).

The Department desires to take into account prior preparation in physics. Students who feel their background would permit acceleration may take 7A, 7B, 7C, or 7D 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 7A-7B-7C-7D 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 410.

2A. General Physics: Mechanics of Solids and Fluids.

Lecture and demonstration, four hours; laboratory, two hours. Prerequisite: three years of high school mathematics including trigonometry, or two years of high school mathematics and one one-term college course in mathematics with trigonometry included in the group of courses; or the equivalent courses. Physics 2A is not open for credit to students who have credit for Physics 7A or the equivalent.

2B. General Physics: Heat, Sound, and Light.

Lecture and demonstration, four hours; laboratory, two hours. Prerequisite: course 2A or 7A or equivalent.

2C. General Physics: Electricity and Magnetism, Atomic and Nuclear Physics.

Lecture and demonstration, four hours; laboratory, two hours. Prerequisite: course 2B or 7C or equivalent.

†7A. General Physics: Mechanics of Solids.

(Formerly numbered 1A.) Lecture and demonstration, four hours; discussion, one hour. Prerequisite:

high school physics or chemistry, preferably both; Mathematics 11A completed and 11B concurrent with Physics 7A; or equivalent courses.

†7B. General Physics: Electricity and Magnetism.

(Formerly numbered 1C.) Lecture and demonstration, three hours; laboratory, two hours; discussion, one hour. Prerequisite: course 7A; Mathematics 11B completed and 11C concurrent with Physics 7B; or equivalent courses.

7C. General Physics: Mechanics of Fluids, Heat and Sound.

(Formerly numbered 1B.) Lecture and demonstration, three hours; laboratory, two hours; discussion, one hour. Prerequisite: course 7A; Mathematics 11C completed and 12A concurrent with Physics 7C; or equivalent courses.

†7D. General Physics: Light and Modern Physics.

(Formerly numbered 1D.) Lecture and demonstration, three hours; laboratory, two hours; discussion, one hour. Prerequisite: courses 7A and 7B; Mathematics 12A completed and 12B concurrent with Physics 7D; or equivalent courses.

Upper Division Classes

Prerequisite for all upper division courses: Physics 7A-7B-7C-7D; Mathematics 11A-11B-11C, 12A-12B, and (except for Physics 105A and 116) 12C; or consent of the instructor. Students must complete one quarter of upper division physics before enrolling in the 180 laboratory series.

105A. Analytic Mechanics.

Newtonian, Lagrangian, Hamiltonian, and relativistic mechanics. One, two and many particle systems, gravitational potentials, linear and nonlinear oscillations.

105B. Analytic Mechanics.

Prerequisite: course 105A. Central force motion, two-particle collisions, non-inertial reference frames, rigid bodies, coupled oscillators, normal modes of oscillation, and mechanics of continuous media.

108. Physical Optics.

Prerequisite: courses 110B and 131. Interference, diffraction, dispersion, molecular scattering, absorption of radiation. Anisotropic media; crystal optics, optical activity, Faraday and Kerr effects. Non-linear optics. Theory of spectral line width. Coherence and partial coherence.

110A. Electricity and Magnetism.

Prerequisite: course 131. Electrostatics, magnetostatics and direct current circuit theory.

110B. Electricity and Magnetism.

Prerequisite: course 110A. Faraday's law and Maxwell's equations. Alternating current theory. Propagation of electromagnetic radiation. Fresnel's

† Life science majors required to take Physics 7A, 7B, and 7D may use Mathematics 3A, 3B, and 3C as prerequisites as follows: Mathematics 3A completed and 3B concurrent with Physics 7A; Mathematics 3B completed and 3C concurrent with Physics 7B; Mathematics 3C completed for Physics 7D.

laws, wave guides. Multipole radiation and radiation from an accelerated charge. The special theory of relativity.

112A. Thermodynamics.

Fundamentals of thermodynamics including the first, second, and third laws. The statistical mechanical point of view and its relation to thermodynamics. Some simple applications of the foregoing.

112B. Thermodynamics.

Applications of thermodynamics and statistical mechanics to particular systems.

113. Atomic Structure.

Prerequisites: courses 131 and 115B. The theory of atomic structure. Interaction of radiation with matter.

114. Mechanics of Wave Motion and Sound.

Vibrating systems and wave propagation in gases, liquids and solids including elements of hydrodynamics and elasticity. Applications in ultrasonics, low temperature physics, solid state physics, architectural acoustics.

115A. Elementary Quantum Mechanics.

Prerequisites: courses 105B and 131 (may be taken concurrently). The classical background, basic ideas and methods of quantum mechanics.

115B. Elementary Quantum Mechanics.

Prerequisite: course 115A. Development of the methods and concepts of quantum mechanics.

115C. Elementary Quantum Mechanics.

Prerequisite: course 115B. The elements of group representation theory and their application to the quantum mechanics of atoms, molecules and solids.

116. Electronics.

Three hours of lecture and three hours of laboratory. Alternating current circuits, vacuum tube characteristics and parameters, transistor characteristics and parameters, amplifiers, oscillators, non-linear tube and transistor circuits.

121. Modern Physics.

Not open for credit to physics majors. The atomic nature of matter and atomic composition. The propagation of electromagnetic waves and their interaction with matter. Special relativity. Atomic spectra and electron distribution. Basic concepts of wave mechanics.

122. Plasma Physics.

Prerequisite: course 110A. Atomic processes and particle motions; equilibrium and shielding; fluid and kinetic descriptions; transport properties; m waves and instabilities; electromagnetic interaction. Production, confinement, heating and diagnostics. Application to fusion and space.

124. Nuclear Physics.

Prerequisite: course 115A. Nuclear charge, mass, radius, spin, and moments; nuclear models; nuclear forces; alpha, beta, and gamma emission.

126. Elementary Particle Physics.

Prerequisite: course 115B. Experimental determination of the properties of elementary particle states. Relativistic kinematics and phase space; angular momentum and isotopic spin formalism;

elastic and inelastic scattering; invariance principles and conservation laws; strong, electromagnetic, and weak interactions. Survey of important experiments.

131. Mathematical Methods of Physics.

Review of vector calculus; differential equations of physics; techniques of solution. Fourier series, special functions, statistics, probability and error theory.

140. Introduction to Solid State Physics.

Prerequisite: course 115B or equivalent. Introduction to the basic theoretical concepts of solid state physics with applications. Crystal symmetry; cohesive energy; diffraction of electron, neutron, and electromagnetic waves in a lattice; the reciprocal lattice; phonons and their interactions; free electron theory of metals; energy bands.

‡180A. Nuclear Physics Laboratory. (½ course)

‡180B. Physical Optics and Spectroscopy Laboratory. (½ course)

‡180C. Solid State Physics Laboratory. (½ course)

‡180D. Acoustics Laboratory. (½ course)

‡180E. Plasma Physics Laboratory. (½ course)

‡180F. Elementary Particle Physics Laboratory. (½ course)

198. Special Courses in Physics.

(½ to 1½ courses)

199. Special Studies in Physics. (½ to 1 course)

May be repeated, but not more than three courses may be applied toward the bachelor's degree.

Graduate Courses

210A. Electromagnetic Theory.

Boundary value problems in electrostatics and magnetostatics. Multipole expansions; dielectrics and macroscopic media. Maxwell's equations and conservation laws. Wave guides and resonators; simple radiating systems.

210B. Electromagnetic Theory.

The electromagnetic potentials and the Hertz vectors. Cylindrical waves. Spherical waves. The Debye potentials. Multipole radiation. Classical relativistic electrodynamics. Radiation from moving charges.

*213A. Advanced Atomic Structure.

Group representation theory. Angular momentum and coupling schemes. Interaction of radiation with matter.

*213B. Advanced Atomic Structure.

The n - j symbols, continuous groups, fractional parentage coefficients, n electron systems.

‡ Enrollment is limited and controlled. For details consult the Office of Undergraduate Affairs.

* Not to be given, 1969-1970.

***213C. Molecular Structure.**

Application of group theory to vibrational and electronic states of molecules. Molecular orbital theory. Raman effect. Angular momentum and coupling in molecules.

214A. Advanced Acoustics.

Propagation of waves in elastic and fluid media. Reflection, refraction, diffraction, and scattering of waves in fluids. Attenuation mechanisms in fluids.

214B. Advanced Acoustics.

Propagation in nonhomogeneous fluids and in moving fluids. Radiation pressure, acoustic streaming, and attenuation in large amplitude sound fields. Propagation of sound in liquid helium. Mechanisms resulting in attenuation for elastic waves in solids.

215A. Thermodynamics.

Thermodynamics and statistical mechanics with applications.

215B. Nonequilibrium Statistical Mechanics.

Probability theory, Markov processes, equations of change, BBGKY hierarchy and its consequences, Boltzmann equation, Chapman-Enskog method, transport coefficients, fluctuation-dissipation theorems, density matrix, H-theorems.

215C. Quantum Statistical Mechanics and the Many Body Problem.

Classical methods for interacting systems; quantum field theory techniques in statistical mechanics; Greens-function approach; the Coulomb gas; the imperfect Bose gas; electron-phonon interaction; superconductivity; phase transitions; theory of Fermi liquid.

220A. Foundations of Classical and Quantum Mechanics.

An integrated presentation of the foundations of classical and quantum mechanics.

***220B. Mechanics of Continuous Media.**

Stress-strain relations. Dynamic elasticity. Hydrodynamic equations for compressible viscous fluids. Elastodynamic wave motion. Fluid flow past boundaries. Hydrodynamic wave motion. Turbulence. Stability.

221A. Quantum Mechanics.

Foundation of quantum mechanics with applications. Perturbation theory. Theory of scattering.

221B. Quantum Mechanics.

Formal theory of scattering. Introduction to relativistic quantum mechanics.

222A-222B-222C. Plasma Physics.

Properties of a Coulomb gas, with and without a magnetic field: equilibrium, oscillations, instabilities, fluctuations, collective phenomena, transport properties, and radiation. Description via single-particle orbit theory, magnetohydrodynamics, and kinetic equations of various types.

224. Introduction to the Strong Interaction.

Evidence concerning the strong interaction, particularly as exemplified in nucleon-nucleon and pion-nucleon systems. Isospin, the scattering matrix, the

density matrix and polarization, the properties of pions, the one pion exchange potential, phase shift analysis.

225A. Advanced Nuclear Physics.

An advanced course in the structure of complex nuclei, nuclear models, and nuclear reactions. Normally preceded by course 224.

225B. Advanced Nuclear Physics.

Nuclear beta decay, neutrino experiments, parity violation, conserved vector current theory, interaction between nucleons and the electromagnetic field.

226A. Elementary Particle Physics.

Prerequisite: courses 221B and 224. Relativistic kinematics and phase space calculations; S-matrix theory, cross-section and decay-rate calculations; C,P,T invariance; survey of elementary particles, determination of quantum numbers, higher symmetries; inelastic scattering and K-matrix theory; low energy scattering experiments, peripheral model; nonleptonic decays.

226B. Elementary Particle Physics.

Review of Feynman rules, nucleon form factors; gamma decay; universal Fermi interaction, nucleon and muon decay, muon capture, nonconservation of parity; survey of nonleptonic and leptonic decays of baryons and mesons, the KK system; conserved vector current theory, SU(3) and weak interactions; high energy scattering.

230A-230B-230C. Relativistic Quantum Theory.

Quantum electrodynamics, general quantum field theory, S-matrix theory.

231A. Methods of Mathematical Physics.

(Same as Mathematics 266A.) Students may not receive credit for both Physics 231A and Mathematics 266A. Linear operators, review of functions of a complex variable, integral transforms, partial differential equations.

231B. Methods of Mathematical Physics.

(Same as Mathematics 266B.) Students may not receive credit for both Physics 231B and Mathematics 266B. Ordinary differential equations, partial differential equations, and integral equations. Calculus of variations.

231C. Methods of Mathematical Physics.

(Same as Mathematics 266C.) Students may not receive credit for both Physics 231C and Mathematics 266C. Perturbation theory. Singular integral equations. Numerical methods.

232. Relativity.

The special and general theories with applications to elementary particles and astrophysics.

240A. Solid State Physics.

Prerequisite: course 140. Phenomena of solid state physics. Semiconductors, magnetism and magnetic resonance, the Mossbauer effect, superconductivity.

240B. Solid State Physics.

Prerequisite: course 140. Phenomena of solid state physics. Dielectric properties of solids, transport processes, optical phenomena in insulators, ferroelectricity, point defects, dislocations.

* Not to be given, 1969-1970.

241A. Solid State Theory.

Prerequisites: courses 215A, 221A and 140. Energy bands in solids, elementary excitations and their interactions.

241B. Solid State Theory.

Prerequisite: course 241A. Transport theory, superconductivity.

241C. Solid State Theory.

Prerequisite: course 241B. Collective effects in magnetism, introduction to many body effects in solids.

242A–242B–242C. Advanced Solid State Theory.

Prerequisites: courses 241A–241B–241C (may be taken concurrently). Presented in alternate years only. Many body effects in solids.

260. Seminar-Problems in Plasma Physics.**261. Seminar in Special Problems in Theoretical Physics.****262. Seminar in Physics of the Solid State.****264. Seminar in Advanced Physical Acoustics.****266. Seminar in Propagation of Waves in Fluids.****266. Seminar in Spectroscopy.****269A. Seminar in Nuclear Physics.****269B. Seminar in Elementary Particle Physics.****281. Experimental Techniques in Nuclear Physics.**

A laboratory course with some lectures on the theory of the techniques currently in use and on the statistical treatment of data. An effort is made to

develop a critical research attitude on the part of the student.

***284. Advanced Laboratory in Acoustics and Cryogenics.**

Selected advanced experiments in acoustics and cryogenics designed to train the student in the techniques and instrumentation used in acoustic research and low temperature physics.

Professional Course in Method

370. The Teaching of Physics.

Prerequisite: consent of the instructor. A study of the physics laboratory experiments and demonstrations available today for the secondary school physics courses.

See also Physical Sciences, page 410.

Individual Study and Research

596. Directed Individual Studies. (½ to 2 courses)**597. Preparation for Master's Comprehensive Examinations and Doctoral Qualifying Examinations.****598. Master's Thesis Research and Writing.****599. Doctoral Research and Writing. (2 to 3 courses)**

Courses in Related Fields

A number of courses of interest to physicists are also listed under Astronomy, Geophysics, Meteorology, and Planetary and Space Science in particular: Astronomy 117A–117B–117C; Geophysics 241; Meteorology 223A–223B–223C, 225C, 228A–228B, 229, 242, 243, and 244; Planetary and Space Science 101, 225A–225B, 260A–260B, and 265.

■ PHYSIOLOGY

(Department Office, 53-247 Center for the Health Sciences)

W. Ross Adey, M.D., *Professor of Anatomy and Physiology.*

Nicholas S. Assali, M.D., *Professor of Obstetrics and Gynecology and Physiology.*

Allan J. Brady, Ph.D., *Professor of Physiology in Residence.*

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

Jared M. Diamond, Ph.D., *Professor of Physiology.*

John Field, Ph.D., *Professor of Physiology and Medical History.*

Morton I. Grossman, M.D., Ph.D., *Professor of Physiology and Medicine.*

Susumu Hagiwara, M.D., Ph.D., *Professor of Physiology.*

Victor E. Hall, M.D., *Emeritus Professor of Physiology.*

Allan Hemingway, Ph.D., *Emeritus 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).*

* Not to be given, 1969–1970.

- William D. Odell, M.D., Ph.D., *Professor of Medicine and Physiology in Residence.*
 Daniel H. Simmons, M.D., Ph.D., *Professor of Medicine and Physiology.*
 Ralph R. Sonnenschein, M.D., Ph.D., *Professor of Physiology (Vice-Chairman of the Department).*
 Claude F. Baxter, Ph.D., *Associate Professor of Physiology in Residence.*
 Jennifer S. Buchwald, Ph.D., *Associate Professor of Physiology in Residence.*
 Glenn A. Langer, M.D., *Associate Professor of Physiology and Medicine (Vice-Chairman of the Department).*
 Gordon Ross, M.D., *Associate Professor of Physiology and Medicine.*
 Donald O. Walter, Ph.D., *Associate Professor of Physiology in Residence.*
 Bernice M. Wenzel, Ph.D., *Associate Professor of Physiology.*
 Fred N. White, Ph.D., *Associate Professor of Physiology.*
 Peter Amacher, Ph.D., *Assistant Professor of Medical History and Physiology in Residence.*
 Henry L. Batsel, Ph.D., *Assistant Professor of Physiology in Residence.*
 Robert F. Eisenberg, Ph.D., *Assistant Professor of Physiology.*
 Dennis Hafemann, Ph.D., *Assistant Professor of Physiology in Residence.*
 Douglas Junge, Ph.D., *Assistant Professor of Oral Biology and Physiology.*
 Louis C. Lax, M.D., Ph.D., *Assistant Professor of Surgery and Physiology in Residence.*
 Allen C. Norton, Ph.D., *Assistant Professor of Physiology in Residence.*
 Eduardo Rubinstein, M.D., Ph.D., *Assistant Professor of Physiology in Residence.*
 Maurice B. Serman, Ph.D., *Assistant Professor of Anatomy and Physiology in Residence.*
 John M. Tormey, M.D., *Assistant Professor of Physiology.*
 Ernest M. Wright, Ph.D., *Assistant Professor of Physiology.*



- Leonard R. Johnson, Ph.D., *Instructor in Physiology in Residence.*
 Michael K. Reedy, M.D., *Acting Associate Professor of Physiology in Residence.*
 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 admission requirements set by the Graduate Division and have received the bachelor's degree in a biological or physical science or in the premedical curriculum. Candidates must also submit to the Department the scores achieved on the Graduate Record Examination (both the Aptitude Test and the Advanced Test). In general, at the time of admission, students must have completed courses in mathematics through calculus (equivalent to Mathematics 3A, B, C) and physical chemistry (equivalent to Chemistry 110A and 110B). Generally, ideal course preparation for graduate study in the Department should also include 12 quarter units of physics, 16 quarter units of chemistry (including quantitative analysis and organic chemistry), and 16 quarter units of biology or zoology (including comparative vertebrate anatomy). In certain cases, at the

discretion of the Department, students lacking some of this preparation but with a strong background in areas pertinent to physiology may be admitted to graduate status, provided that essential deficiencies are removed by appropriate courses within a specified time after admission.

Students may also be admitted upon the recommendation and sponsorship of staff members, subject to admission committee approval.

Master of Science Degree

Students entering graduate study in the Department of Physiology will normally be expected to pursue the Ph.D. degree. Exceptional cases may be considered for the Master of Science Degree. In those cases, candidates for the M.S. degree must meet the general requirements set by the Graduate Division for this degree (page 139). 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 will be tailored to suit the special situation of the candidate.

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 (page 143).

Departmental 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. For routes (a) and (b), the requirements ordinarily are: (1) Physiology 200 (Introduction); (2) Physiology 101 (Neuromuscular, Cardiovascular and Respiratory Physiology); (3) Physiology 102 (Renal, Gastrointestinal and Metabolic Physiology); (4) Physiology 221, 222, 223 (Graduate Commentary); (5) Biological Chemistry 101A, 101B, and 101C or Chemistry 153 (Biochemistry); (6) Anatomy 101 (Microscopic Anatomy) or Zoology 111 (Functional Ultrastructure of Cells); (7) a course in statistical methods. For students in neurophysiology (c) the course of study is similar except that Physiology 200, 221 and 222 (which require physical chemistry as a prerequisite) are optional if the student's emphasis in neurophysiology is not cellular. In the latter case, additional course requirements will depend on the area of study and will be recommended by the student's adviser.

Following the completion of all essential course work students will take the departmental written and oral examinations. When these are successfully completed, students may advance to candidacy by successful completion of the University qualifying examination administered by the student's graduate committee.

Foreign Language Requirement. No foreign languages are required for the completion of the Ph.D. or M.S. degree. The time usually ascribed to language studies will be devoted to a more detailed preparation in physical sciences and mathematics.

Student's Responsibilities. Prospective candidates for the doctor's degree are responsible for completion of all technical requirements for this degree. Careful study should be made

of the requirements set by the Graduate Division (see page 143-145).

Upper Division Courses

100. Elements of Human Physiology. (1½ courses)

Prerequisite: enrollment in School of Dentistry or consent of the instructor. Required course for first-year dental students. Lectures, laboratories, and demonstration-discussions concerning functional activities of the living body in terms of both cellular and systemic functions. Examples will be presented, where possible, on the basis of information relevant to oral function.
Mr. Ross and Staff

101. Neuromuscular, Cardiovascular and Respiratory Physiology. (1¾ courses)

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. Lectures, laboratory and conferences. An analysis of excitation and excitation transfer in muscle and nerve, the contractility of muscle and the heart, the cardiovascular system, and the physiology of respiration.
Mr. Sonnenschein and Staff

102. Renal, Gastrointestinal and Metabolic Physiology. (1¼ courses)

Prerequisites: same as for course 101. Primarily for first year medical students but open to other students with consent of the instructor, Lectures, laboratory and conferences. A continuation of course 101, dealing with the digestion of substances, and the distribution of water, electrolytes and metabolites by the renal and gastrointestinal systems, and the special physiology of certain organs.
Mr. Sonnenschein and Staff

103. Basic Neurology.

Prerequisites: same as for course 101. A survey of the structure and function of the receptors, peripheral and central nervous system. Must be taken concurrently with Anatomy 103. Enrollment limited to medical students.
Mrs. Buchwald

199. Special Studies. (¼ to 2 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 General 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. Wright

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

202. Permeability of Biological Membranes.
(½ course)

Prerequisite: physical chemistry. Topics include: the physical basis of discrimination among similar ions; the physical basis of discrimination among non-electrolytes; ion and non-electrolyte permeation mechanisms. Mr. Diamond

204. Cardiovascular Physiology. (½ course)

Prerequisite: course 101 and consent of the instructor. Advanced consideration of special topics in the physiology of the circulatory system. Mr. Sonnenschein, Mr. White

207A. Neurophysiology.

Prerequisite: course 103 or its equivalent. The electrical activity of nervous tissue and its relation to the basic organization of sensory, motor, integrative, and regulatory systems of the brain. The Staff

207B. Neurophysiology.

Prerequisite: consent of the instructor. Seminar and laboratory course designed to acquaint the student with behavioral techniques and concepts relevant to research problems encountered in modern neurophysiology, and to consider means of integrating them with neurophysiological methods. Miss Weazel

208. Theoretical Physiology. (½ course)

Prerequisite: consent of the instructor. A series of seminar-discussions concerning various theoretical and philosophical problems facing physiologists. The Staff

209A. Mathematical Modeling of Physiological Systems.

Prerequisite: consent of the instructor. Mathematical analysis and modeling of physiological systems, with emphasis on applications of linear systems theory to problems in cardiovascular, respiratory, and cellular physiology. Mr. Walter

209B. Mathematical Modeling of Physiological Systems. (¾ course)

Prerequisite: consent of the instructor. Mathematical analysis of neuronal systems, with emphasis on stochastic models of nervous activity. Mr. Walter

210. Advanced Endocrinology. (½ course)

Prerequisites: courses 101, 102; Biological Chemistry 101A-101B-101C. A consideration of recent advances in endocrinology. Biosynthesis, secretion, transport, action, metabolism and excretion of each of the hormones. Major emphasis on basic concepts of endocrine physiology with lesser emphasis on pathophysiology. Mr. Odell

212. Critical Topics in Physiology. (¼ to 1 course)

Prerequisite: consent of the instructor. Advanced treatment of critical topics in physiology by staff and guest lecturers for graduate and postdoctoral students in the biomedical sciences. The Staff

221. Graduate Commentary on Physiology of the Cardiovascular System and of Contraction and Excitation. (½ course)

Prerequisites: same as for course 101. For grad-

uate students. An advanced supplementation of the topics being presented in course 101.

Mr. Mommaerts and Staff

222. Graduate Commentary on Digestive, Renal, and Metabolic Physiology. (½ course)

Prerequisite: course 101. For graduate students. An advanced supplementation of the topics being presented in course 102. Mr. Mommaerts and Staff

223. Graduate Commentary on the Physiology of the Nervous System. (½ course)

Prerequisites: same as for course 101. For graduate students. An advanced supplementation of the topics being presented in basic neurology. Mr. Mommaerts and Staff

231. Principles of Animal Experimentation.
(½ course)

Prerequisite: consent of the instructor. Principles and concepts of animal experimentation. Emphasis on selecting and utilizing the animal as a biological instrument, comparative and unique physiological characteristics, and the identification of variables which affect experimental data. Mr. Rich

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. Cardiopulmonary 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. The Staff

255. Seminar in the History of Physiology.
(½ course)

Prerequisites: courses 101, 102, 103 (or Anatomy 206). The consideration in detail of several selected topics in the history of physiology. Each student will present one or more topics to the seminar. Mr. Amacher

Individual Study and Research**586. Directed Individual Study or Research.**

(½ to 2 courses)

Prerequisite: consent of the instructor. The Staff

597. Preparation for the Master's Comprehensive Examination or the Doctoral Qualifying Examination. (½ to 2 courses)

Prerequisite: consent of the instructor. The Staff

598. Thesis Research for Master's Candidates.
(½ to 2 courses)

Prerequisite: consent of the instructor. The Staff

599. Dissertation Research for Ph.D. Candidates.
(½ to 2 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.*
- William M. Kaula, M.S., *Professor of Geophysics (Vice-Chairman of the Department).*
- Leon Knopoff, Ph.D., *Professor of Geophysics and Physics.*
- Willem V. R. Malkus, Ph.D., *Professor of Mathematics and Geophysics.*
- Clarence E. Palmer, D.Sc., *Professor of Geophysics.*
- George W. Wetherill, Ph.D., *Professor of Geophysics and and Geology (Chairman of Department).*
- Paul J. Coleman, Jr., Ph.D., *Associate Professor of Planetary Physics.*
- W. David Cummings, Ph.D., *Assistant Professor of Planetary Physics.*
- Alan C. Newell, Ph.D., *Assistant Professor of Mathematics and Planetary Physics.*
- Gerald Schubert, Ph.D., *Assistant Professor of Planetary Physics.*



Thomas A. Farley, Ph.D., *Lecturer in Planetary Physics.*



Lawrence H. Aller, Ph.D., *Professor of Astronomy.*

- David T. Griggs, M.A., *Professor of Geophysics.*
- George C. Kennedy, Ph.D., *Professor of Geochemistry and Geology.*
- Willard F. Libby, Ph.D., *Professor of Chemistry.*

Admission to Graduate Status

Students entering the Department should have bachelor's or master's degrees in physics, mathematics, or astronomy, or in a few cases, degrees in geophysics, chemistry, engineering, geology or meteorology with a strong emphasis on appropriate courses in physics and mathematics.

Program of Study

The program of study is designed to provide students with a firm background in physics and mathematics, together with basic knowledge in one or more areas of planetary and space science. Initially, it is expected that the four principal areas of study will be physics of planetary interiors, including magnetic and gravitational fields; geophysical fluid dynamics, including nonlinear wave phenomena and turbulence; physics of the upper atmosphere, including ionospheric physics and the physics of the radiation belts; and physics of the interplanetary medium, including the solar wind and magnetic fields. The program for the individual student will be developed through consultation with the graduate adviser.

- Member of the Institute of Geophysics and Planetary Physics.

Requirements for the Degree of Master of Science

For general University requirements see pages 139-143.

Prescribed Courses. The University requires nine courses for the M.S. Degree. The Department requires a minimum of five courses in the 200 series, no less than half of which are in the student's field of specialization. The remaining courses must include Planetary and Space Science 200A-200B-200C and may include additional 100 series courses approved by the student's graduate adviser.

Examination or Theses. The candidate must either (1) write a thesis to be approved by a committee of at least three faculty members; or (2) pass a written comprehensive examination offered at the end of each quarter. The examination must be taken not later than the eighth 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 143-145.

Each student seeking candidacy for a Ph.D. degree will be required to meet the following departmental requirements. (1) Final examinations in at least three of the four fundamental physics courses: Physics 210A, Physics 215A, Planetary and Space Science 201 (or Physics 220A), Planetary and Space Science 202. It is also recommended that first-year graduate students take the fundamental course in planetary and space physics, 200A-200B-200C. (2) The comprehensive written examination of the Department of Planetary and Space Science. (3) Upon completion of (2) and one foreign language, the student may arrange for a preliminary oral examination, which will be mainly on the major field of specialization.

Each student seeking a Ph.D. degree is required to fulfill the following University requirements: (1) the foreign language requirement as follows: a minimum score of 500 in the Educational Testing Service examination in one of either Russian or German, or completion of course 5, or five quarters of study, or its equivalent in one of either Russian or German with a minimum grade of B in each course; those students whose native tongue is not English will also be expected to meet this requirement; (2) a qualifying oral examination; (3) a dissertation on a subject chosen by the candidate with the approval of his doctoral committee; (4) a final oral examination conducted by the doctoral committee.

Upper Division Courses

101. Introduction to Planetary and Space Physics.

Prerequisites: Physics 7A-7B-7C-7D and Mathematics 11A-11B-11C, or their equivalents. A survey of geophysics, the physics of the planets, their atmospheres, and the interplanetary medium, with emphasis on topics of current research interest. The course is designed primarily for students majoring in a physical science or mathematics. The Staff

199. Special Studies in Planetary and Space Physics. (½ to 1 course)

Prerequisites: any two of Physics 105A, Physics 110A, Physics 112A, Physics 131, or their equivalents. Directed individual study for upper division students majoring in a physical science or mathematics. The Staff

Graduate Courses

200A. Fundamentals of Planetary and Space Physics 1: Solids: Planetary Interiors.

The earth's interior: geology, gravity, seismology, heat flow; planetary magnetism; dynamics of the solar system; optical, thermal, and radio observations of planetary surfaces; meteorites and their chemistry; origin and evolution of the terrestrial planets. Mr. Kaula

200B. Fundamentals of Planetary and Space

Physics 2: Fluids: Oceans and Atmospheres.

Origin, evolution, and structure of oceans and atmospheres. Mr. Palmer

200C. Fundamentals of Planetary and Space

Physics 3: Plasmas: Aeronomy and the Interplanetary Medium.

Solar surface features, heating and expansion of corona, solar wind, plasma and magnetic fields, interaction of the solar wind with the earth, magnetospheric phenomena. Mr. Cummings

201. Classical Mechanics.

Kinematics, variational principles and Lagrange's equations, rigid body equations, Hamilton equations of motion, canonical transformations, Hamilton-Jacobi Theory, small oscillations, perturbation theory. Mr. Knopoff

202. Physics of Continuous Media 1.

Continuum derivation of conservation principles: Navier-Stokes stress formulation and Fourier heat conduction, approximations to the equations (dimensionless parameters). Microscopic derivation of conservation principles: Boltzmann's equation, moment equations, Chapman-Enskog expansion technique, low temperature approximation, Chew, Goldberger, and Low approximation Mr. Schubert

210. Stability Theory.

Studies in laminar fluid dynamics: characteristic value problems of shear flow and thermal convection; variational estimation techniques; finite-amplitude theories of post-instability flow and finite-amplitude instabilities; gyroscopic constraints due to rotation and magnetic fields; boundary layer theory. Mr. Malkus

214. Physics of Continuous Media 2.

Prerequisite: course 202. Theory of waves (linear and nonlinear), compressible flows, shocks, bores, flows in conducting and rotation fluids applied to geophysical and astrophysical situations. Mr. Newell

218. Statistical Hydrodynamics.

(Same as Geophysics 241.) An introduction to the nonlinear fluid processes of planetary physics: aperiodic motion and statistical stability; similarity theory; upper bounds for the turbulent transport of heat and momentum; mean field equations; quantitative theories of turbulent flow; the problem of statistical closure. Mr. Malkus

220A. Planetary and Orbital Dynamics 1.

Theory of rotating fluids; external gravitational fields of a planet; analysis of gravity anomalies; effects of the gravitational field on a close satellite orbit and determination of the field from orbital perturbations. Mr. Kaula

220B. Planetary and Orbital Dynamics 2.

Gravitational, mechanical and thermal aspects of planetary interiors; dynamics of the earth-moon system; variations in rotation, tidal friction; dynamics of the solar system: energy dissipating effects, spin-orbit couplings. Mr. Kaula

222. Introduction to Seismology.

Types of seismic waves; travel-time seismology; epicenter location; amplitude variations; seismograph theory; explosion seismology; seismicity; focal conditions; surface wave analysis; microseisms and tsunamis. Mr. Knopoff

224A. Theoretical Seismology.

(Same as Engineering 258C.) Prerequisite: consent of the instructor. Elastic wave equations and elementary solutions; wave motions in elastic half-spaces; reflection and refraction of elastic waves; surface waves; vibration of rods and plates.

Mr. Knopoff, Mr. Mal

224B. Theoretical Seismology.

(Same as Engineering 258D.) Prerequisite: course 224A. Elastic waves in layered media; Green's functions for various geometries; scattering and diffraction of elastic waves; attenuation; inversion problems.

Mr. Knopoff, Mr. Mal

225A. Physics and Chemistry of Planetary**Interiors 1.**

Chemical constituents of earth inferred from geochemistry, sun, and meteorites; pressure, temperature, and other physical properties of the interior inferred from seismic, geomagnetic, geothermal, and radiogenic data; effects of pressure and temperature on crustal structure, melting, mechanical properties, thermal and electrical conductivities, etc.

Mr. Knopoff, Mr. Wetherill

225B. Physics and Chemistry of Planetary**Interiors 2.**

Physical properties of iron and silicates at very high pressures; Thomas-Fermi theory; the earth's core; astronomical data pertaining to planetary interiors; construction of models of the earth's interior, and of the moon and inner planets; equations of state of hydrogen and helium; models of major planet interiors.

Mr. Knopoff, Mr. Wetherill

228A. Magnetic Fields of the Earth and Planets 1.

Observations of the earth's magnetic field: spherical harmonic analysis, time-varying quantities; analysis of the field in terms of components of internal and external origins; macroscopic equations governing the behavior of a conducting fluid.

Mr. Coleman, Mr. Cummings

228B. Magnetic Fields of the Earth and Planets 2.

Magnetohydrostatic equilibria; thermal generation of planetary magnetic fields; dynamo mechanisms; possible sources of energy, including precessional torques; consideration of fields on other planets and the sun.

Mr. Coleman, Mr. Cummings

240. Dynamics of the Upper Atmosphere.

Composition and structure of the upper atmosphere; steady motion; the co-rotation of the atmosphere and earth; waves in an isothermal atmosphere without and with rotation; effects of electric and magnetic fields; propagation of energy from lower to upper atmosphere; irregular and totally driven motions.

260A-260B-260C. Particles and Fields in Space.

(Formerly numbered 260A-260B and 262A-262B.) An advanced course covering our current knowledge of particles and fields in space. Sources, acceleration mechanisms, energy spectra, orbit theory, particle trapping, dynamics of the Van Allen belts, interactions with the solar wind, etc.

Mr. Cummings, Mr. Holzer, Mr. Schubert

265. Experimental Techniques in Space Physics.

Design criteria and environmental requirements for spacecraft experiments; photomultipliers and

semiconductor diodes for charged particle detection; fluxgates, search coils, and resonance devices for magnetic field measurements; plasma probes; micro-meteorite detectors; special laboratory techniques for checkout and calibration of space experiments; use of necessary general-purpose instrumentation.

Mr. Farley

282. Seminar in Hydromagnetics.

Topics from the continuum theory; Alfvén waves in bounded regions; the dynamo problem; the role of the magnetic field as an inhibitor and instigator of fluid instability; theories of the solar magnetic fields; theories of geomagnetism.

Mr. Malkus

285. Seminar on the Origin of the Solar System.

(Same as Astronomy 285.) Dynamical problems of the solar system; chemical evidences from geochemistry, meteorites, and the solar atmosphere; nucleosynthesis; formation of the solar nebula; solar contraction; hydromagnetic processes in the nebulae, condensation of the planets; origin of satellite systems.

The Staff

287A-287B-287C. Seminar in Seismology.

Mr. Knopoff

Individual Study and Research

Courses in the 500 series may be applied in place of 200-level courses toward the requirements for the master's degree *except* for the minimum number required in a field of specialization. Courses 596 and 599 have no limit on the number of times they may be repeated; course 597 may be taken only once. Letter grades will be given in 596; courses 597 and 599 will be taken on a satisfactory/unsatisfactory basis.

596. Research in Planetary and Space Science.

($\frac{1}{2}$ to $1\frac{1}{2}$ courses)

Directed individual study or research in: experimental and theoretical work on magnetic fields, energetic particles and plasmas in space (Mr. Holzer, Mr. Coleman, Mr. Farley, Mr. Cummings); hydrodynamics and hydromagnetism (Mr. Malkus, Mr. Schubert); orbital dynamics and planetary mechanics (Mr. Kaula); seismology and the earth's interior (Mr. Knopoff); geochronology and meteorites (Mr. Wetherill); climatology (Mr. Palmer).

597. Preparation in Planetary and Space Science for the Comprehensive Examination for the Master's Degree or the Qualifying Examination for the Ph.D. ($\frac{1}{2}$ to 1 course)

Review of introductory course 101 in preparation for the written comprehensive examination for the master's degree, or study and research in the area selected for a possible dissertation topic prior to the Ph.D. qualifying examination.

The Staff

599. Research for and Preparation of the Doctoral Dissertation in Planetary and Space Physics.

($\frac{1}{2}$ to 3 courses)

Research for and preparation of the doctoral dissertation in planetary and space physics. The Staff

Related Courses in Other Departments

Providing Fundamental Techniques

Engineering 260A–260B. Celestial Mechanics.

Physics 210A–210B. Electromagnetic Theory.

215A. Thermodynamics.

220A. Foundations of Classical and Quantum Mechanics.

220B. Mechanics of Continuous Media.

221A–221B. Quantum Mechanics.

222A–222B–222C. Plasma Physics.

231A–231B–231C. Methods of Mathematical Physics.

Pertaining to the Natural Environment

Astronomy 201A–201B–201C. Astrophysics of the Solar System.

Geology 150. Problems in Earth History.

Geophysics 131. Geochemistry.

■ PLANT SCIENCE

See Department of Botanical Sciences.

■ POLITICAL SCIENCE

(Department Office, 4289 Bunche Hall)

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.*Winston W. Crouch, Ph.D., *Professor of Political Science.*Ernest A. Engelbert, M.P.A., Ph.D., *Professor of Political Science.*J. A. C. Grant, Ph.D., *Professor of Political Science.*Malcolm H. Kerr, Ph.D., *Professor of Political Science (Chairman of the Department).*Richard P. Longaker, Ph.D., *Professor of Political Science.*Dwayne Marvick, Ph.D., *Professor of Political Science.*†Robert G. Neumann, Ph.D., *Professor of Political Science.*Charles R. Nixon, Ph.D., *Professor of Political Science.*†Foster H. Sherwood, Ph.D., LL.D., *Professor of Political Science.*†H. Arthur Steiner, Ph.D., *Professor of Political Science.*Hans H. Baerwald, Ph.D., *Associate Professor of Political Science.*David G. Farrelly, Ph.D., *Associate Professor of Political Science.*Robert C. Fried, Ph.D., *Associate Professor of Political Science.*William P. Gerberding, Ph.D., *Associate Professor of Political Science.*Andrzej Korbonski, Ph.D., *Associate Professor of Political Science.*David C. Rapoport, Ph.D., *Associate Professor of Political Science.*John C. Ries, Ph.D., *Associate Professor of Political Science.*Harry M. Scoble, Ph.D., *Associate Professor of Political Science.*David O. Sears, Ph.D., *Associate Professor of Political Science and Psychology.*David A. Wilson, Ph.D., *Associate Professor of Political Science.*Charles E. Young, Ph.D., *Associate Professor of Political Science.*Ciro Zoppo, Ph.D., *Associate Professor of Political Science.*Richard E. Ashcraft, Ph.D., *Assistant Professor of Political Science.*L. Blair Campbell, Ph.D., *Assistant Professor of Political Science.*Louis J. Cantori, Ph.D., *Assistant Professor of Political Science.*Robert S. Gerstein, Ph.D., *Assistant Professor of Political Science.*Edward Gonzalez, Ph.D., *Assistant Professor of Political Science.*James F. Guyot, Ph.D., *Assistant Professor of Political Science.*Douglas S. Hobbs, Ph.D., *Assistant Professor of Political Science.*Michael F. Lofchie, Ph.D., *Assistant Professor of Political Science.*

† Absent on leave, 1969–70.

Richard M. Merelman, Ph.D., *Assistant Professor of Political Science.*
 Simon H. Serfaty, Ph.D., *Assistant Professor of Political Science.*
 John R. Sisson, 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.*
 David O. Wilkinson, Ph.D., *Assistant Professor of Political Science.*
 E. Victor Wolfenstein, Ph.D., *Assistant Professor of Political Science.*
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 ———, *Assistant Professor of Political Science.*



Richard D. Baum, M.A., *Acting Assistant Professor of Political Science.*
 Rupert Emerson, Ph.D., *Visiting Professor of Political Science.*
 Leonard Freedman, Ph.D., *Lecturer in Political Science.*
 Carl P. Hensler, B.S.M.E., *Acting Assistant Professor of Political Science.*
 Marvin Hoffenberg, M.A., *Lecturer in Political Science.*
 Anthony D. Martin, M.A., *Acting Assistant Professor of Political Science.*
 Karen J. Orren, M.A., *Acting Assistant Professor of Political Science.*

Preparation for the Major Course 1.

The Major

Nine upper division political science courses (for a total of 36 units) numbered from 110 to 199, and four upper division courses in one or more of the following social sciences: Anthropology, Business Administration (only 150, 180, 190), Economics, Geography, History, Psychology (except 115, 116, 117), Sociology. All of these classes (a minimum of 13) must be taken for grades (not pass-fail).

Upper division courses are organized into six groups, each including "core" courses designed to expose the student to material of fundamental importance. All students majoring in the Department must take (1) Political Science 110, Early Modern Political Theory, (2) a core course in either Group II (International Relations) or Group IV (Comparative Government), (3) a core course in each of two additional groups (II, III, IV, V, VI), and (4) in any one of the four groups, as a major field of interest, two additional courses. Courses 197, 198, and 199 are not applicable to fulfillment of group distribution requirements. In Group II (International Relations) only one of the defense studies courses, 138A, B, C, may be counted

toward group distribution requirements.

Group distribution requirements will thus account for six courses: one core course in each of four fields, plus two other courses in one of those fields. The remaining units needed to reach the required total of nine courses (36 units) may be chosen at large from the offerings of the Department. The core courses are as follows: Group I (Political Theory), course 110; Group II (International Relations), courses 120, 121; Group III (Politics), courses 141, 145; Group IV (Comparative Government), course 150; Group V (Public Law), courses 170, 171; Group VI (Public Administration and Local Government), courses 180, 181.

Core courses are not prerequisites for other courses in the group, but students majoring in the Department will ordinarily give priority to completing core course requirements during their junior year. Core courses are open to sophomores as well as upper division students, and students expecting to major in political science are encouraged to take one core course during the sophomore year.

The Honors Program. Students wishing to qualify for graduation with honors (see catalog description of "Honors with the Bachelor's Degree" under section entitled "College of Letters and Science") should en-

roll in one honors proseminar, listed as Political Science 197, in two quarters of their senior year. In addition, the student must meet the grade-point average requirements prescribed by the College of Letters and Science. Third-quarter juniors may apply for enrollment if unusual scheduling problems so warrant. At least four (16 units) upper division courses in political science, and a 3.0 overall grade-point average, are required for enrollment.

Several proseminars will be offered each quarter. Each proseminar will be devoted to a selected theme suitable for individual research and group discussion, not necessarily confined to any one of the six departmental fields. The name of the instructor and the subject of each proseminar will be announced in the preceding quarter. Application for enrollment must be made at the Department office before the last day of instruction of the preceding quarter.

Related Curricula. For the curricula in international relations and public service, see pages 75 and 79 of this bulletin.

For those students of politics who wish to acquire for future professional use a background in modern quantitative methods of data generation, handling and analysis, an information sheet is available in the undergraduate adviser's office.

Admission to Graduate Status

Students wishing to enroll in graduate studies in the Department of Political Science should be aware of the two parts involved in their application: One, UCLA Graduate Division requirements, and two, Departmental requirements.

Graduate Division. See pages 28-31 of this catalog or the UCLA announcement of the Graduate Division.

Department of Political Science. The Department ordinarily requires a minimum grade point average of 3.0; two letters of recommendation; and test scores from the Graduate Record Examination (the Aptitude Test and the Advanced Government Test); (The Law School Aptitude Test may be used in place of the G.R.E.). These letters and test scores should be sent to the Department of Political Science, Graduate Adviser.

The Aptitude Test and the Advanced Government Test of the Graduate Record Examination are given four times a year in various locations in the United States and foreign countries. Applications may be secured by applying to the Educational Testing Service,

1947 Center Street, Berkeley, California 94704, (for those living in the West) and to Educational Testing Service, 20 Nassau Street, Princeton, New Jersey 08540 (for those living in the East).

An undergraduate major in Political Science is desirable but not mandatory.

Graduate Fields of Study

Six fields of study are offered to graduate students in the Political Science Department: *Political Theory; International Relations; Politics; Comparative Government; Public Law; Public Administration and Local Government.*

Normally candidates for the M.A. degree are given a written examination at the end of their first three quarters in residence in one field, chosen from the six basic fields listed above. Candidates for the Ph.D. degree are examined in three fields, two of which must be within the six fields offered by the Department.

Ph.D. candidates may take one of their three fields outside the Department with the approval of the Department. It should be noted that outside fields are not permitted for the M.A. degree program.

In addition to a series of introductory courses on problems of political inquiry (courses 203A-203C), the Department offers three types of graduate courses in each of six fields of study.

1. The 210 series of general courses.
2. The 220 through 240 series of specialized substantive courses.
3. The 250 through 270 series of seminars. Seminars will ordinarily be taken by advanced graduate students.

In addition, the Department offers the 401 course, Internship in Public Service, for M.P.A. candidates, and the 590 series of individual study and research courses. The 590 courses are designed primarily for graduate students on a limited basis.

The M.A. Program

The Department normally operates under the Comprehensive Examination Plan (a one-field examination and overall evaluation), although the Thesis Plan may be followed in rare cases with the approval of the Department.

One foreign language (or a research-tool substitute program) and nine quarter courses taken while the student is in graduate status are required for M.A. degree. A student will take a minimum of five (5) graduate courses, distributed among three (3) fields of study

offered in the Department of Political Science. The remaining four courses may be chosen by the student at his discretion, in or out of the Political Science Department. Lower division courses, however, do not count toward meeting this requirement. The 500 series courses will not normally meet this five course requirement. Exceptions will be considered on petition to the Graduate Studies Committee. During the first three quarters in residence a candidate must normally complete a minimum of seven courses.

The language requirement must be met within the first five quarters in residence, or further graduate work will not be permitted until the requirement is satisfied. All prospective graduate students are strongly urged to prepare for examination before beginning the first quarter of graduate work.

For the master's degree, all students will be required *either* to pass one foreign language reading examination (at the "standard" level of performance, passing the E.T.S. examination with a score of 500 or above) or to fulfill the requirements for a research tool substitute program, such program to be approved in each case by a member of the faculty and the Department's Graduate Studies Committee. Languages must be approved by the Department's Graduate Studies Committee.

Foreign language requirements fulfilled at other institutions by students entering with a master's degree may or may not be accepted. Such cases will be acted upon by the Graduate Studies Committee.

Foreign students for whom English was the language of instruction in secondary school may not offer English as a foreign language. Such students may offer their native language as a foreign language if (1) they demonstrate by examination a fluency in their native language and (2) the Graduate Committee accepts the language as one in which academic research is likely to be pursued by these students.

Full-time Program. Students are encouraged to carry a full time program which consists of three full courses per quarter.

Graduate Work at Other Campuses of the University of California. Work completed while in graduate standing on other campuses of the University of California may be used to satisfy part of the total course requirement; up to four courses may be transferred toward the nine courses required for the M.A. Two graduate courses completed at another

U.C. campus may be used toward the requirement of five graduate courses.

Graduate Work Completed Elsewhere. With the approval of the Department and the Graduate Division, credit for a maximum of two quarter courses completed at another institution (other than a U.C. campus) can be applied toward the nine course requisite for the M.A.

Extension courses are not accepted by the Department for graduate work.

The M.A. comprehensive examinations (written and oral) are given twice a year: near the end of the fall quarter, and near the end of the spring quarter. Candidates for the M.A. degree are examined at the end of the first three quarters of residence. Exceptions to this rule will be granted only in extraordinary cases. Students who fail to take the examination at the appointed time will be subject to termination as candidates for a degree in this Department. The written examination is in one of the six fields. The M.A. oral examination will be taken emphasizing three fields of political science chosen by the candidate. For the purpose of the oral examination only, courses 203A-203B may be substituted for one of the three fields. The oral examination is conducted by a panel of faculty members and is held approximately two weeks after the written examination. The Oral Committee makes an overall evaluation of the student's capabilities and qualifications, based on the written examination, the oral examination, grades, and confidential faculty reports. The Oral Committee then recommends one of the following: (1) That the student receive the M.A. degree and be encouraged to proceed toward the Ph.D. (when all departmental and University requirements are met). (2) That the student receive the M.A. degree (when all departmental and University requirements are met) and that his status as a graduate student in the Department be thereafter terminated. (3) That the student not be awarded the M.A. degree and that his status as a graduate student in the Department be terminated. *Candidates are allowed to take the M.A. examinations one time only.*

The Ph.D. Program

An M.A. in Political Science or the equivalent is a prerequisite. A student entering with an M.A. from another university must pass the M.A. written and oral screening examinations during his first year in residence, before he can be considered a Ph.D. candidate in the Department.

Foreign Language. As one condition for advancement to candidacy for the doctorate, graduate students will—in addition to fulfilling the requirements for the M.A. degree—fulfill one of the following three requirements; (1) Pass a reading examination at the “standard” level of performance in a second foreign language (a score of 500 or above on the E.T.S. examination). (2) Pass an examination in the same foreign language offered for the master’s degree at an “advanced” level of performance suitable for field research. This level and the manner of examination will be determined for each language by the Department of Political Science. Ordinarily passing at an “advanced” level consists of passing the E.T.S. examination with a score of 650, and demonstrating oral proficiency at a level equivalent to Foreign Service 3. (3) Fulfill the requirements for a research-tool substitute program, such program to be approved in each case by the Graduate Committee. This option may not be selected at both the master’s and Ph.D. levels.

Each graduate student will be required to get the approval of his doctoral adviser regarding his choice among these three requirements.

Course Requirements. A student will take a minimum of fourteen (14) courses, including three (3) seminars, prior to taking the Ph.D. preliminary examinations. The nine courses taken in the M.A. program will be included in this total. A minimum of nine courses must be taken within the Department of Political Science. Of the fourteen required courses, a total of no more than five courses may be taken in the 500 series and at the undergraduate level. No more than two 500 series courses may be taken with the same Political Science professor. Students may not fulfill their required courses with lower division courses. A student admitted to the Department with graduate work completed elsewhere may petition the Graduate Committee for permission to apply course credits to the Departmental requirements. A student must take a minimum of three courses (including two graduate courses) in a field other than his three preliminary examination fields. If one of the preliminary examination fields is taken outside the Department of Political Science, the three courses must be taken in a field within the Department of Political Science.

Preliminary Examinations. Within one to three years after the M.A. field or screening examinations, a student going on for the

Ph.D. will be required to take preliminary written examinations in three fields, two of which must be within the Department, and an oral examination. These are administered by the Department twice a year, in the fall and spring, and all three are taken within a two week period.

Upon satisfactory completion of his written examinations as well as course work, the student will be authorized to proceed to the oral examination by decision of an *ad hoc* committee composed of (a) the student’s adviser, (b) the chairmen of the committees administering the three written field examinations taken by the student, and (c) the Graduate Adviser.

In case of unsatisfactory performance, the *ad hoc* committee may direct the student to retake one or more field examinations, or declare his graduate work in the Department terminated.

If a student fails one or more Ph.D. preliminary examinations, and is allowed to retake them the next time they are given, he must pass all examinations he takes for the second time or further graduate work in the Department will not be permitted.

Third Field. For one field, a student may request a substitution of a field outside the Department. The student together with his adviser and the instructor under whom he wishes to do his work outside the Department will draft a written proposal for the third field. The proposal must state the substantive material to be covered, the course program, and why the outside field is being proposed. A minimum of three courses, including two graduate courses, must be taken in the chosen field. In exceptional cases, the outside field may include some course work within the Department of Political Science, provided that it is distinct from course work offered for examination in other departmental fields. The proposal must be signed by the student’s adviser and the outside instructor, submitted three quarters in advance of the time the student expects to take the preliminary examinations, and approved by the Graduate Studies Committee.

Doctoral Committee. Immediately upon the successful completion of the written preliminary examinations, the Department will request the appointment of a Doctoral Committee by the Graduate Council.

The Doctoral Committee will hold an oral examination as soon as feasible to determine whether or not the student should be advanced to candidacy.

Upon being advanced to candidacy, the student will submit to his Doctoral Committee for its approval a research design for the dissertation. The Doctoral Committee will approve and forward copies of the research design to the Department for its information.

Pre-Arrival Information

(See pages 51 and 139-145 of this catalog or the announcement of the Graduate Division.

Master of Public Administration

The program leading to the degree of Master of Public Administration is organized both for those who have earned a bachelor's degree and wish to prepare for a career in governmental administration, and for more advanced public servants who wish to supplement knowledge already obtained and increase their level of competence in theoretical and practical aspects of public administration. The program is administered by the Department of Political Science but is in essence an interdisciplinary program which offers an opportunity for the student to do work in departmental and nondepartmental fields related to public administration. The student may also work out program options in the field of administration illustrated by the options listed under (3) below. Specific inquiries regarding this program should be addressed to: Director, Master of Public Administration Program, Department of Political Science.

Students who complete the Master of Public Administration Program and who wish to enter the Ph.D. Program in Political Science must apply to the Graduate Division for a change of major. The applications will be reviewed by the Graduate Studies Committee of the Department. Candidates who are accepted for Ph.D. work in Political Science will have their M.P.A. comprehensive examinations accepted in lieu of the Departmental M.A. screening examination. (See above.)

General Requirements. See page 139 of this bulletin.

Admission to the Program. (a) The student shall have received the degree of Bachelor of Arts with undergraduate preparation and/or work 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. In addition to these requirements, candidates must complete an approved internship in accordance with the internship requirement described below.

Program. Programs for each candidate will be prepared in consultation with the Program Director. Candidates must demonstrate competence in three fields: (1) administrative theory and processes; (2) political environment and institutions; and (3) a program specialty.

1. Administrative Theory and Processes. (Competence in all categories required.) Administrative theory; governmental organization and relations; staff and management processes; legislative and legal controls.

2. Political Environment and Institutions. (One option to be chosen.) State and local government; national government; international and comparative government.

3. Program Options. (One option to be chosen; listing is illustrative, not all inclusive.) Defense; business regulation; economic development; education; employment and labor; finance and budgeting; foreign policy administration; housing and redevelopment; information and communication systems; natural resources; personnel; planning; public health; public relations; public welfare; science and technology; and transportation.

Comprehensive Examinations. Written examinations are conducted in each of the three fields of study. An oral examination follows successful completion of the written examinations.

Internship. Each candidate is required to complete an approved internship by working in a public agency or a government-related private organization before receiving the degree. In some instances, similar experience gained before entering the program may be substituted. In either case, an analytical report must be written and accepted. In the quarter when the report is to be completed, the candidate must be enrolled in course 401.

Lower Division Courses

1. Introduction to American Government.

Lecture, three hours; discussion, one hour. An introduction to the principles and problems of

government with particular emphasis on national government in the United States. This course fulfills the requirement of American History and Institutions, and is required of all students majoring in political science. The Staff

2. World Politics.

Lecture, three hours; discussion, one hour. There are no prerequisites for this course. An introduction to recent and contemporary international relations and the foreign policies, policy-making institutions, and politics of selected foreign states. This course does not count toward requirements for the major. The Staff

3A-3B. Introduction to Political Analysis.

3A. Reading and Analysis of Contemporary Problems.

Background reading, writing and discussion in some one selected major contemporary problem (including, e.g., racial, urban, poverty, educational, and international problems). Mr. Wilkinson

3B. Research and Field Study in Contemporary Problems.

An introduction to political science research. Directed research, including library and/or field research, in a major contemporary problem. Mr. Wilkinson

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.

Lecture, three hours; discussion, one hour. Core Course. An exposition and critical analysis of the major political philosophers and schools from Hobbes to Bentham. The Staff

111. Ancient and Medieval Political Theory.

An exposition and critical analysis of the major political philosophers and schools from Plato to Machiavelli.

Mr. Campbell, Mr. Rapoport, Mr. Wolfenstein

112. Nature of the State.

A systematic analysis of modern concepts and problems of political association. The Staff

113. Late Modern and Contemporary Political Theory.

An exposition and critical analysis of the major political philosophers and schools from Hegel to the present. The Staff

114. American Political Thought.

A survey of the development of American ideas concerning political authority from Cotton and Williams to the present. Mr. Smith

115. Theories of Political Change.

Prerequisite: course 110 or consent of the instructor. A critical examination of theories of political change, the relation of political change to changes in economic and social systems, and the relevance of such theories for the experience of both western and nonwestern societies. Mr. Lofchie, Mr. Nixon

117. Jurisprudence.

This course may be counted in either Group I or Group V. Development of law and legal systems; consideration of fundamental legal concepts; contributions and influence of modern schools of legal philosophy in relation to law and government. Mr. Gerstein, Mr. Sherwood

119. Special Studies in Political Theory.

Prerequisites: course 110 and one additional course in Group I, and any special requirements. Permission of the instructor is required for enrollment. Members of the faculty will take up for intensive examination one or more special problems appropriate to political theory. Sections will be offered on a regular basis with topics announced in the preceding quarter. The Staff

GROUP II. INTERNATIONAL RELATIONS

120. Foreign Relations of the United States.

Lecture, three hours; discussion, one hour. Core Course. A survey of the factors and forces entering into the formation and implementation of American foreign policy, with special emphasis on contemporary problems. Mr. Brodie, Mr. Gerberding

121. International Relations.

Lecture, three hours; discussion, one hour. Core Course. An introduction to the politics, theory, and institutions of international relations with emphasis on contemporary practice. Mr. Cattell, Mr. Spiegel, Mr. Wilkinson

123. International Organization and Administration.

A general survey of the institutions, political and administrative, of international organization, with emphasis on the United Nations. The Staff

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. The Staff

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. Korbonaki

129. Regional International Politics.

A comparative examination of regional international politics with reference to social, economic, and political patterns and regional organizations. Mr. Cantori, Mr. Spiegel

130. New States in World Politics.

An analysis of the foreign policies and the role in world politics of new states. Mr. Wilson

131. Latin American International Relations.

The major problems of Latin-American international relations and organization in recent decades. Mr. Gonzalez

132. International Relations of the Middle East.

A study of the relations among the countries of the Middle East with special reference to the policies of the Great Powers. Mr. Kerr

135. International Relations of East Asia.

The relations of the countries of the East Asian seaboard, especially China, with their neighbors and the other powers, with emphasis on contemporary interests and policies of the United States vis-à-vis China. Mr. Baum, 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.**138A. Defense Strategy and Policies.**

The problems of defense strategy in an age of nuclear weapons and missiles; appropriate objectives of military policy, the role of strategic retaliatory forces, limited war, civil defense, maintaining coalitions and related problems. Mr. Brodie

138B. The Conduct of Modern War.

A study of World War II and the Korean War with special emphasis on problems of coalitions of nations in planning and operations. The Staff

138C. Military Policy and Organization.

This course may be counted in either Group II or Group VI. A study of the institutional and policy framework in the national military field. Mr. Ries

139. Special Studies in International Relations.

Prerequisites: course 120 or 121 and one additional course in Group II, and any special requirements. Permission of the instructor is required for enrollment. Members of the faculty will take up for intensive examination one or more special problems appropriate to international relations. Sections will be offered on a regular basis with topics announced in the preceding quarter. The Staff

GROUP III. POLITICS**141. Public Opinion and Propaganda.**

Lecture, three hours; discussion, one hour. Core Course. A study of the nature and the means of formation of public opinion. Public opinion as a factor in popular government and as a control device in the modern state, with special reference to current conditions in American democracy. Mr. Marvick, Mr. Merelman, Mr. Scoble

142. The Politics of Interest Groups.

A systematic investigation of the role of political interest groups in the governmental process, with attention directed to the internal organization, leadership, and politics of such groups; to the goals and functions of various types of groups, and to the strategy and tactics of influence. Mr. Scoble

143. Legislative Politics.

A study of those factors which affect the character of the legislative process and the capacity of representative institutions to govern in contemporary society. Mr. Gerberding, Mr. Snowiss

144. The American Presidency.

A study of the nature and problems of presidential

leadership, emphasizing the impact of the bureaucracy, congress, public opinion, interest groups, and the party system upon the presidency and national policy-making. Mr. Longaker, Mr. Snowiss

145. Political Parties.

Lecture, three hours; discussion, one hour. Core Course. Organization functions, and practices of political parties primarily in the United States, with attention to campaign functions, membership problems, political finance, and policy-formation practices. The Staff

146. Political Behavior Analysis.

The use of quantitative methods in the study of political behavior, especially in relation to voting patterns, political participation, and techniques of political action. Mr. Hensler, Mr. Marvick, Mr. Scoble

149. Special Studies in Politics.

Prerequisites: course 141 or 145 and one additional course in Group III, and any special requirements. Permission of the instructor is required for enrollment. Members of the faculty will take up for intensive examination one or more special problems appropriate to politics. Sections will be offered on a regular basis with topics announced in the preceding quarter. The Staff

GROUP IV. COMPARATIVE GOVERNMENT**150. Introduction to Comparative Government and Politics.**

Lecture, three hours; discussion, one hour. Core Course. The structure and dynamics of the principal types of political systems of the world. Contemporary states will be studied for purposes of illustration. The Staff

152. British Government.

The government and politics of the United Kingdom; the British constitution, parliament, parties and elections, foreign policies, administrative problems, and local governments. Mr. Neumann

153. Governments of Western Europe.

The constitutional and political structure and development of France and other states of continental Western Europe, with particular attention to contemporary problems. Mr. Fried, Mr. Neumann

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

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. Baum, Mr. Steiner

160. Japanese Government and Politics.

The structure and operation of the contemporary Japanese political system, with special attention to domestic political forces and problems. Mr. Baerwald

161. Government and Politics in Southeast Asia.

The institutional structures and political processes of states in Southeast Asia (Burma, Thailand, Malaya, Laos, Cambodia, Vietnam, Indonesia, the Philippines) attending principally to problems of institutional transformations and political stabilization.

Mr. Guyot, Mr. Wilson

162. Government and Politics in South Asia.

The political experiences and institutions of the Indian subcontinent since 1947, with particular attention to the Republic of India, but also with reference to Pakistan and Ceylon.

Mr. Steiner

164. Government and Politics in the Middle East.

A comparative study of government in the Arab States, Turkey, Israel and Iran.

Mr. Kerr

165. Government and Politics in North Africa.

A comparative study of the government and politics of the North African states, including the relationship between political development, political organization and social structure.

Mr. Cantori

166. Government and Politics in Tropical Africa.

The governments of the independent states and dependent territories of Africa south of the Sahara and north of the Union of South Africa, with special reference to comparative colonial policies, nationalism and the problems of nation building.

Mr. Lofchie

168A. Government and Politics in Latin America.

A comparative study of governmental and political development, organization and practices in the states of Middle America.

Mr. Gonzalez

168B. Government and Politics in Latin America.

A comparative study of governmental and political development, organization and practices in the states of South America.

Mr. Gonzalez

169. Special Studies in Comparative Government.

Prerequisites: course 150 and one additional course in Group IV, and any special requirements. Permission of the instructor is required for enrollment. Members of the faculty will take up for intensive examination one or more special problems appropriate to comparative government. Sections will be offered on a regular basis with topics announced in the preceding quarter.

The Staff

See also Courses 188A, 188B.

GROUP V. PUBLIC LAW**170. The Anglo-American Legal System.**

Lecture, four hours; discussion, one hour. Core Course. Evolution of the English common law courts

and their legal system, with special emphasis on the contributions made by canon law, the law merchant and equity; the theory of *stare decisis* as illustrated by the evolution of modern rules of negligence.

Mr. Grant

171. The Supreme Court.

Lecture, four hours; discussion, one hour. Core Course. The history, procedures, and role of the Supreme Court in its legal-constitutional and political aspects. Emphasis will be given to the current and recent activities of the Court. Decisions of the Court, historical and current commentaries, and judicial biography will be utilized.

Mr. Farrelly, Mr. Hobbs, Mr. Longaker

172A. American Constitutional Law.

Constitutional questions concerning the separation of powers, federalism, and the relationship between government and property.

Mr. Gerstein, Mr. Hobbs

172B. American Constitutional Law.

The protection of civil and political rights and liberties under the Constitution.

Mr. Gerstein, Mr. Hobbs

173. Government and Business.

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, Miss Orren

174. Government and Labor.

This course may be counted in either Group V or VI. The labor force and the nature of the trade union; regulation of labor relations; programs to encourage full employment and to mitigate unemployment; protective labor legislation.

Mr. Bernstein

179. Special Studies in Public Law.

Prerequisites: course 170 or 171 and one additional course in Group V, and any special requirements. Permission of the instructor is required for enrollment. Members of the faculty will take up for intensive examination one or more special problems appropriate to public law. Sections will be offered on a regular basis with topics announced in the preceding quarter.

The Staff

See also Courses 117, 124, and 187.

GROUP VI. PUBLIC ADMINISTRATION AND LOCAL GOVERNMENT**180. State and Local Government.**

Lecture, three hours; discussion, one hour. Core Course. Development of state constitutions; the political, administrative, and judicial systems of state and county government; and relations between the state and local government, with special reference to California.

Mr. Bollens, Mr. Crouch

181. Introduction to Public Administration.

Lecture, three hours; discussion, one hour. Core Course. An introduction to modern theories of administration; the relation of administration to the political process; and the analysis of administrative organization and processes, including planning, personnel, finance, and law.

The Staff

182. Municipal Government.

A study of the modern municipality in the United States; legal aspects of city government; local election problems; types of municipal government; problems of metropolitan areas; relationship of the cities to other units; problems bearing on city government today.

Mr. Bollens, Mr. Crouch

183. Administration of International Agencies and Programs.

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

188A. 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, primarily at the national level. Special attention is paid to methods of comparative analysis and the utility of various models.

Mr. Fried, Mr. Guyot

188B. Comparative Urban Government.

This course may be counted in either Group IV or Group VI. A cross-cultural examination of the forms and processes of urban government. Particular attention will be paid to the role of urbanization in political development.

Mr. Fried

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 prob-

lems 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, Mr. Hoffenberg

192. Science and Public Policy.

An examination of the role of science and scientists in public affairs with emphasis upon the policies and administration of science programs. Particular attention will be paid to the values and behavioral patterns of science groups and professions.

Mr. Engelbert

See also Courses 138C, 173, and 174.

UNGROUPED**197A-197D. Undergraduate Honors Preseminars.**

Prerequisite: four upper division courses of political science and a general grade-point average of 3.0. Several preseminals will be offered each quarter, dealing with selected research topics to be announced during the preceding quarter. Admission by consent of the Department and the instructor. No preenrollment permitted. See additional information in statement of requirements for the major in political science.

The Staff

198. Special Studies in Political Science.

(½ to 1 course)

Prerequisite: credit for two upper division courses in political science and consent of the instructor.

The Staff

199. Readings in Political Science. (½ to 1 course)

Prerequisite: senior standing and consent of the instructor.

The Staff

Graduate Courses**203. Introduction to Political Inquiry.**

203A. Problems of Scientific Inquiry and Normative Discourse.

203B. Major Conceptual Frameworks and Approaches to Political Science.

Normally, 203A or its equivalent will be taken prior to 203B.

203C. Research Methods and Techniques of Political Science.

211. Political Theory.

An analysis of the central problems of political inquiry and their relation to political philosophy.

Mr. Nixon, Mr. Rapoport

212. International Relations.

An analysis of contemporary international relations including international organizations and an examination of contemporary theories and methodologies in international relations.

The Staff

214A. Politics and Society.

An analysis of attitude formation, electoral behavior, political socialization and political recruitment, with special emphasis upon American materials. The Staff

214B. The Study of Politics.

An analysis of the major approaches to the study of the American political system, with special emphasis upon the character of decision-making processes. The Staff

215. Comparative Government.

Approaches to the study of comparative politics and problems of comparative political analysis. 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

218A. Public Administration and Local Government.

An analysis of the nature and scope of public administration and its role in modern political systems. An introduction to the problems of government of local subsystems. The Staff

218B. The Administrative System.

A behavioral analysis of the processes of public administrative structures in the American political system. Emphasis on the possibilities for and limits on rational decision-making and program innovation and on the problems of maintaining public responsibility. Mr. Crouch, Mr. Ries

220. Special Studies in Political Theory.

Directed work in the history of political theory for students preparing for the M.A. or Ph.D. examination in political theory. Mr. Ashcraft, Mr. Nixon, Mr. Rapoport

221. Selected Texts in Political Theory.

A critical examination of major texts in political theory with particular attention to their philosophic system, their relations to the contemporary political and intellectual currents, and the importance of the system for present-day political analysis. The Staff

222. Selected Topics in Political Theory.

A critical examination of a major problem in political theory. The Staff

224. Studies in Politics.**224A. Quantitative Applications.**

A survey of quantitative research techniques and their application to the study of political phenomena. Mr. Hensler, Mr. Marvick

224B. Political Recruitment.

Intensive and critical evaluation of behavioral literature concerned with the provenance and *causus honorum* of public men, and with the screening and sponsoring mechanisms affecting their careers and political perspectives. Mr. Marvick

224C. Political Sociology.

A consideration of problems common to Political Science and Sociology, with special attention to the applicability of selected sociological theories to political phenomena. Mr. Merelman, Mr. Snowiss

224D. The Group Process.

Critical appraisal of "group theory" approaches

to the study of political decision-making, with special attention to empirical research problems and findings. Mr. Hensler, Mr. Scoble

224E. Legislative Behavior.

The analysis of the major approaches to the study of representative institutions, with special emphasis upon the assumptions, concepts, methods, and theoretical implications associated with each approach. Mr. Snowiss

224F. Political Leadership.

An analysis of political leaderships, with emphasis on the American presidency and its relation to various aspects of American politics, including Congress, political parties, elections, and public opinion. Mr. Longaker

224G. Political Psychology.

(Same as Psychology 228.) Examination of political behavior, political socialization, personality and politics, racial conflict, and the analysis of public opinion on these issues. Mr. Marvick, Mr. Merelman, Mr. Sears

224H. Comparative Community Political Systems.

Critical evaluation of the literature on community power and secondary analysis of data from extant research (primarily American, but increasingly comparative). Special attention to power distributions, leadership recruitment, and public and private decision-making. Mr. Scoble

225. Selected Topics in Comparative Government.

A critical examination of a major problem in comparative government. The Staff

228A. Personnel and Human Relations.

An analysis of the policies, processes, organizations, and interrelationships involved in manning the public services. Mr. Crouch, Mr. Guyot

228B. Public Planning, Programming, and Budgeting.

Public budgeting processes within a political and organizational framework. Special emphasis on the Federal program-budgeting system and the interplay between contemporary bureaucratic and decision theory of rational allocation of resources. Mr. Hoffenberg, Mr. Ries

229. Urban Government.

An analysis of the policies, processes, interrelations, and organization of governments in heavily populated areas. Mr. Bolles

230. Comparative Development Administration.

An analysis of the administration of development programs and the development of administrative institutions, with special attention to ecology. Comparisons are made both between countries and within countries. Mr. Fried, Mr. Guyot, Mr. Sisson

231. Studies in International Relations.**231A. Contemporary Problems in United States Foreign Policy.**

An intensive analysis of the policy-formulation process and the substance of selected contemporary problems in foreign policy. Political and institutional factors affecting foreign policies will be stressed along with the analysis of policy options. Mr. Gerberding

231B. National and International Defense Problems.

(Formerly numbered 264.) This course analyzes various national security problems in both their military-technical and political dimensions. It seeks

to develop in some depth issues likely to be raised in Political Science 138A, which, however, is not a prerequisite.

Mr. Brodrie

231C. International Law and Organization.

This course emphasizes the role of law and organization in the conduct of contemporary international politics. International organization is considered as an integral process within the contemporary international legal system whose characteristics are explored in depth.

The Staff

231D. International Relations Theory.

An introduction to contemporary problems in international relations theory.

Mr. Wilkinson

231E. Theories of Regional International Relations.

An examination of varying approaches to the study of regional international relations.

Mr. Cantori, Mr. Scheimman, Mr. Spiegel

238. Studies in Public Law.

238A. Evolution of Anglo-American Law Books.

Surviving early records. Case reporting, from the year books to the modern reports. Legal treatises from Glanvill to today. Statutes and how to find them. The language of the law. Although emphasis will be placed upon American materials the entire English speaking world will be covered.

Mr. Gerstein, Mr. Grant

238B. Making of the Constitution.

An examination of the development of constitutional law during selected periods of American history, such as Founding, the Marshall and Taney eras, and the New Deal. The focus will be on both judicial and nonjudicial materials.

Mr. Hobbs, Mr. Longaker

238C. The Bill of Rights and the States.

An examination of the problems surrounding the application to the states of Amendments 1-9.

Mr. Grant, Mr. Hobbs

238D. Current Problems in Public Law.

A discussion of selected contemporary problems in jurisprudence, the judicial process, judicial behavior, and legal controls on social conduct.

Mr. Gerstein, Mr. Longaker

Graduate Seminars

Prerequisite for all graduate seminars: advance consent of instructors.

250. Seminars in Regional and Area Political Studies.

250A. Latin-American Studies. Mr. Gonzalez

250B. Russian and Slavic Studies.

Mr. Cattell, Mr. Korbonksi

250C. Chinese and East Asian Studies.

Mr. Baum, Mr. Steiner

250D. Japanese and Western Pacific Studies.

Mr. Baerwald

250E. African Studies.

Mr. Lofchie

250F. Middle Eastern Studies.

Mr. Kerr

250G. Commonwealth Studies.

The Staff

250H. Western European Studies.

Mr. Fried, Mr. Neumann

250J. Southeast Asian Studies.

Mr. Wilson

250K. North African Studies.

Mr. Cantori

250L. South Asian Studies.

Mr. Sisson

252. Seminar in Public Law. The Staff

253. Seminar in International Relations. The Staff

254. Seminar in Public Administration. The Staff

256. Seminar in Comparative Government. The Staff

257. Seminar in Political Theory. The Staff

259. Seminar in Political and Electoral Problems.

Prerequisite: two graduate courses in Politics, including at least one in the 214 sequence.

The Staff

262. Seminar in Municipal Government. The Staff

263. Seminar in Political and Administrative

Aspects of Planning.

The Staff

271. Seminar in Political Change.

An interdisciplinary seminar directed toward the analysis of political change. To be offered by members of the Department of Political Science.

The Staff

Professional Course

401. Internship in Public Service. (½ to 1 course)

Directed work in applying the techniques of public administration during a period of service in a governmental agency. A required course for students enrolled in the Master of Public Administration program. Open to other properly qualified graduate students upon application.

Mr. Bollens, Mr. Engelbert

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 ordinarily may be used for this requirement only once.

597. Preparation for the Comprehensive Examination for the Master's Degree or the Qualifying Examinations for the Ph.D.

(½ to 2 courses)

This course is ordinarily taken only during the quarter in which the student is being examined. A grade of Satisfactory (S) or Unsatisfactory (U) will be assigned by the Department on the basis of the student's performance in the examination(s).

598. Research for and Preparation of the Master's Thesis. (½ to 2 courses)

A grade of Satisfactory (S) or Unsatisfactory (U) will be assigned by the professor supervising the master's thesis. (This course will rarely be taken in the Department because students normally receive their master's degree under the Comprehensive Examination Plan.)

599. Research for and Preparation of the Doctoral Dissertation. (½ to 2 courses)

A grade of Satisfactory (S) or Unsatisfactory (U) will be assigned by the professor supervising the dissertation.

Only course 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.*
 Nathaniel A. Buchwald, Ph.D., *Professor of Anatomy in Residence.*
 Joaquin M. Fuster, M.D., *Professor of Psychiatry in Residence.*
 James T. Marsh, Ph.D., *Professor of Medical Psychology.*
 Ivan N. Mensh, Ph.D., *Professor of Medical Psychology.*
 George J. Popjak, M.D., *Professor of Psychiatry and Biological Chemistry.*
 Arnold B. Scheibel, M.D., *Professor of Psychiatry and Anatomy.*
 Robert J. Stoller, M.D., *Professor of Psychiatry.*
 Frank F. Tallman, M.D., *Professor of Psychiatry and Public Health.*
 George Tarjan, M.D., *Professor of Psychiatry and Public Health in Residence.*
 Frederic G. Worden, M.D., *Professor of Psychiatry.*
 Henry H. Work, M.D., *Professor of Psychiatry and Public Health (Acting Chairman of the Department).*
 Stanley W. Wright, M.D., *Professor of Pediatrics in Residence.*
 Charles W. Tidd, M.D., *Emeritus Professor of Psychiatry.*
 Pietro Castelnovo-Tedesco, M.D., *Associate Professor of Psychiatry in Residence.*
 Robert B. Edgerton, Ph.D., *Associate Professor of Anthropology in Residence.*
 Samuel Eiduson, Ph.D., *Associate Professor of Biological Chemistry and Psychiatry in Residence.*
 Frank M. Hewett, Ph.D., *Associate Professor of Education and Medical Psychology.*
 Henry Lesse, M.D., *Associate Professor of Psychiatry in Residence.*
 Lowell H. Storms, Ph.D., *Associate Professor of Medical Psychology in Residence.*
 Charles W. Wahl, M.D., *Associate Professor of Psychiatry.*
 Frederick D. Abraham, Ph.D., *Assistant Professor of Medical Psychology in Residence.*
 William C. Beckwith, Ph.D., *Assistant Professor of Medical Psychology in Residence.*
 Martha E. Bernal, Ph.D., *Assistant Professor of Medical Psychology in Residence.*
 Robert J. Bonkowski, Ph.D., *Assistant Professor of Medical Psychology in Residence.*
 Alexander B. Caldwell, Ph.D., *Assistant Professor of Medical Psychology in Residence.*
 J. Alfred Cannon, M.D., *Assistant Professor of Psychiatry and Public Health in Residence.*
 Roberta Crutcher, M.D., *Assistant Professor of Psychiatry in Residence.*
 Louise D. Epps, Ph.D., *Assistant Professor of Medical Psychology in Residence.*
 Edward Geller, Ph.D., *Assistant Professor of Biological Chemistry in Residence.*
 Joshua S. Golden, M.D., *Assistant Professor of Psychiatry in Residence and Assistant Dean of the Medical School.*
 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.*
 Richard Green, M.D., *Assistant Professor of Psychiatry in Residence.*
 Peter B. Gruenberg, M.D., *Assistant Professor of Psychiatry in Residence.*
 John Hanley, M.D., *Assistant Professor of Psychiatry in Residence.*
 Lewis L. Judd, M.D., *Assistant Professor of Psychiatry and Psychology.*
 Anthony Kales, M.D., *Assistant Professor of Psychiatry in Residence.*
 John G. Kennedy, Ph.D., *Assistant Professor of Anthropology in Residence.*
 Boyd M. Krout, M.D., *Assistant Professor of Psychiatry in Residence.*
 Calista V. Leonard, Ph.D., *Assistant Professor of Medical Psychology in Residence.*
 Gayle G. Marsh, Ph.D., *Assistant Professor of Medical Psychology in Residence.*
 Thelma S. Moss, Ph.D., *Assistant Professor of Medical Psychology in Residence.*
 Edward M. Ornitz, M.D., *Assistant Professor of Psychiatry in Residence.*

Robert O. Pasnau, M.D., *Assistant Professor of Psychiatry in Residence.*
 Morris J. Paulson, Ph.D., *Assistant Professor of Medical Psychology in Residence.*
 Robert J. Rhodes, Ph.D., *Assistant Professor of Medical Psychology in Residence.*
 William H. Rickles, M.D., *Assistant Professor of Psychiatry in Residence.*
 Edward R. Ritvo, M.D., *Assistant Professor of Psychiatry in Residence.*
 Alexander C. Rosen, Ph.D., *Assistant Professor of Medical Psychology and Psychology in Residence.*
 Robert T. Rubin, M.D., *Assistant Professor of Psychiatry in Residence.*
 Paul F. Slawson, M.D., *Assistant Professor of Psychiatry in Residence.*
 John M. Suarez, M.D., *Assistant Professor of Psychiatry in Residence.*
 J. Thomas Ungerleider, M.D., *Assistant Professor of Psychiatry in Residence.*
 Arthur Yuwiler, Ph.D., *Assistant Professor of Biological Chemistry in Residence.*
 Leila Beckwith, Ph.D., *Instructor in Medical Psychology in Residence.*
 Bertram Goldstein, M.D., *Instructor in Psychiatry in Residence.*
 Douglas R. Schiebel, Ph.D., *Instructor in Medical Psychology in Residence.*
 Charles B. Stone, M.D., *Instructor in Psychiatry in Residence.*
 Roland C. Summit, M.D., *Instructor in Psychiatry in Residence.*



Roland M. Atkinson, M.D., *Assistant Clinical Professor of Psychiatry.*
 Suzanne G. Bonkowski, M.S.W., *Associate in Social Work.*
 William H. Boyd, M.D., *Assistant Clinical Professor of Psychiatry.*
 Marvin Brown, M.S.W., *Lecturer in Social Work.*
 James A. Burns, M.D., *Clinical Instructor in Psychiatry.*
 Maury T. Carlin, Ph.D., *Clinical Instructor in Medical Psychology.*
 Robert E. Carrel, M.D., *Assistant Clinical Professor of Psychiatry and Pediatrics.*
 Herbert H. Eveloff, M.D., *Assistant Clinical Professor of Psychiatry.*
 Hanna Fenichel, Ph.D., *Associate in Psychiatry.*
 Don E. Flinn, M.D., *Associate Clinical Professor of Psychiatry.*
 Barbara Frederich, M.S.W., *Associate in Social Work.*
 Florence Frisch, M.S.W., *Associate in Social Work.*
 Ronald J. Griffith, M.D., *Assistant Clinical Professor of Psychiatry.*
 Betty L. Harker, M.S.S., *Lecturer in Social Work.*
 Frederick S. Hoedemaker, M.D., *Assistant Clinical Professor of Psychiatry.*
 Jerome Karasic, M.D., *Assistant Clinical Professor of Psychiatry.*
 Sheldon H. Kardener, M.D., *Assistant Clinical Professor of Psychiatry.*
 Charles V. Keeran, M.S.W., *Lecturer in Mental Hospital Administration.*
 Nancy W. Kirshberg, M.S.W., *Associate in Social Work.*
 Julian Kivowitz, M.D., *Clinical Instructor in Psychiatry.*
 Norma E. Lappen, M.S.W., *Associate in Social Work.*
 Perry C. Lessin, M.S.W., *Associate in Social Work.*
 Philip R. A. May, M.D., *Clinical Professor of Psychiatry.*
 Freda G. Morris, Ph.D., *Assistant Clinical Professor of Medical Psychology.*
 James O. Palmer, Ph.D., *Associate Clinical Professor of Medical Psychology and Lecturer in Psychology.*
 Irene Paulson, M.S.W., *Associate in Social Work.*
 Stephanie L. Pearlstein, M.S.S., *Associate in Social Work.*
 Frederick R. Penrose, M.S.W., *Associate in Social Work.*
 Patricia J. Rickert, M.S.W., *Associate in Social Work.*
 Dolores I. Rodriguez, M.S.W., *Associate in Social Work.*
 Rita R. Rogers, M.D., *Assistant Clinical Professor of Psychiatry.*
 Margarette Ruben, *Associate in Psychiatry.*
 Ernest M. Sable, M.P.H., *Lecturer in Mental Hospital Administration.*

Barbara R. Salkin, M.S.W., *Associate in Social Work.*

James Q. Simmons, M.D., *Associate Clinical Professor of Psychiatry.*

Mario Valente, M.D., *Assistant Clinical Professor of Psychiatry and Pediatrics.*

Program

The Department of Psychiatry in cooperation with the Departments of Anthropology and Sociology offers an advanced training program in social and community psychiatry leading to the new degree of Master of Social Psychiatry (M.S.P.). The Department cooperates with the School of Public Health in offering courses leading to the degree of Master of Public Health. Curriculum requirements are described in the UCLA ANNOUNCEMENT OF THE SCHOOL OF PUBLIC HEALTH and on page 135 of this bulletin. In addition the Department participates in an interdisciplinary program of mental health research training.

Master of Social Psychiatry Degree

The two-year program for the Master of Social Psychiatry degree, largely funded by the National Institute of Mental Health, includes training in statistical methods, interdisciplinary research, pertinent social science training, mental health consultation and group dynamics. Also included is training in organization and administration of community mental health services with appropriate field placement. Special emphasis is given to the interdisciplinary team approach in attempting to understand the crucial variables in community structure and in seeking solutions to mental health problems of populations particularly associated with poverty, minorities, and related urban crises.

Admission Requirements for the Master of Social Psychiatry Degree

Requirements for admission are acceptance by the UCLA Graduate Division, approval of the staff of the Division of Social and Community Psychiatry, an M.D. degree and completion of at least two years of psychiatric residency training at a center approved by the American Board of Psychiatry and Neurology.

Three types of applicants are eligible for admission to the degree program: 1) applicants who have completed three years of an approved psychiatric residency and who are funded by two-year stipends from the National Institute of Mental Health, 2) third year psychiatric residents who may combine their last year of residency with the first year

of the degree program and complete the program the following year, and 3) selected applicants in the UCLA child psychiatry training program who combine training in child psychiatry and social and community psychiatry.

Degree Requirements

With the consent of his faculty adviser, each candidate must pursue one of the following plans for the Master of Social Psychiatry degree. Under either plan, all requirements for the degree must be satisfied within one calendar year from the time of completion of course requirements.

Thesis Plan. At least 9 courses in the graduate or upper division level and a thesis are required. No less than 5 of the 9 courses must be in the graduate level 400 or 500 series of social psychiatry. After these requirements are met, the candidate may select any course in the 100 or 200 series (a minimum of three courses in the Departments of Anthropology or Sociology is required), subject to approval by the graduate adviser.

Comprehensive Examination Plan. A minimum of 11 courses of graduate and upper division level are required, of which at least 6 courses must be in the graduate level 400 or 500 series of social psychiatry. After these requirements are met, the student may select any course in the 100 or 200 series (a minimum of three courses in the Departments of Anthropology or Sociology is required), subject to approval by the graduate adviser. The comprehensive written and oral examination will cover the following subject areas: (a) Community psychiatry administration theory and practice; (b) Mental health consultation theory and application; (c) The social sciences in psychiatry; (d) Research methods in social psychiatry.

Required Courses. Mandatory courses for the Master of Social Psychiatry degree are: (a) Social Psychiatry in Theory and Practice (Psychiatry 454A-454B); (b) Statistics (Psychiatry 461, Public Health 160A, Sociology 110A, or Psychology 250A); (c) Concepts of Mental Health Consultation (Psychiatry 456A-456B); (d) Research Methods in Social Psychiatry (Psychiatry 457A-457B); (e) Administration in Community Psychiatry (Psychiatry 460A-460B).

Upper Division Course

105. The Social Sciences in Psychiatry.

(Same as Anthropology 101.) Prerequisite: consent of the instructor. An introduction to the fields of social psychology, sociology, cultural anthropology, and ethology. Mr. Kennedy

Graduate Courses

200. Basic Concepts in Psychiatry. (½ course)

The psychiatric disorders are studied to aid the research worker. Problems of behavior evaluation and symptom development are considered. May be taken for credit three times. Mr. Kales

201. Contemporary Problems in Behavioral Experimentation. (½ course)

Animal and human research in the behavioral sciences will be reviewed. Specific subject matter will vary according to the interests of the students. The Staff

Professional Courses

454A-454B. Social Psychiatry in Theory and Practice. (½ course each)

(Formerly numbered 255A-255B.) Prerequisite: graduate standing in social science discipline and consent of the instructor. Introduction to problem areas of social and community psychiatry. Mr. Cannon

455. Introduction to Community Structure. (½ course)

Prerequisite: graduate standing in social science discipline and consent of the instructor. Coordinated field visits and seminars to provide an understanding of the relationship between institutions observed and the mental health field. Mr. Cannon

456A-456B. Concepts of Mental Health Consultation.

(Formerly numbered 251.) Lecture, two hours; field placement, six hours. Prerequisite: graduate standing in social science discipline and consent of the instructor. Course 456A is prerequisite for course 456B. Review of major theories of consultation and presentation of techniques for dealing with common problems of consultant-client interactions. Mr. Cannon

457A-457B. Research Methods in Social Psychiatry. (½ course each)

Prerequisite: graduate standing in social science

discipline and consent of the instructor. Course 457A is prerequisite for course 457B. Emphasis upon interdisciplinary evolution of social psychiatric research methods. Mr. Kennedy

458. Problems in Culture and Mental Health. (½ course)

(Formerly numbered 250.) Prerequisite: graduate standing in social science discipline and consent of the instructor. Study of the mental health patterns of various ethnic and social class groups. Mr. Kennedy

***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 the development of the field, and an 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. (1½ courses only)

(Formerly numbered 253A-253B.) Lecture, two hours; laboratory, 16 hours. Prerequisite: graduate standing in social science discipline and consent of the instructor. Review of administrative practices in operating community-based mental health programs, including psychiatric hospitals, outpatient services, and community clinics. Mr. Tallman

461. Statistical Methods in Social Psychiatry. (½ course)

Lecture, two hours; laboratory, two hours. Prerequisite: graduate standing in Social and Community Psychiatry. Statistical methods appropriate for community mental health research. Problems in measurement of human behavior, descriptive statistics, parametric and nonparametric tests of group differences, correlation and partial correlation. Emphasis on appropriate use of statistical techniques especially in field study designs. Mrs. Eggs

Individual Study and Research

596. Special Studies in Social Psychiatry. (½ to 1 course)

Prerequisite: advanced graduate standing in Social and Community Psychiatry. A course of independent study designed for advanced graduate students in social psychiatry who desire to specialize in an area involving supervised research and study. The Staff

■ PSYCHOLOGY

(Department Office, 1283 Franz Hall)

William E. Broen, Jr., Ph.D., *Professor of Psychology.*

Edward C. Carterette, Ph.D., *Professor of Psychology.*

Harry W. Case, Ph.D., *Professor of Psychology and Engineering.*

Richard Centers, Ph.D., *Professor of Psychology.*

James C. Coleman, Ph.D., *Professor of Psychology and Education.*

Andrew L. Comrey, Ph.D., *Professor of Psychology.*

Seymour Feshbach, Ph.D., *Professor of Psychology and Head of the Fernald School.*

* Not to be given, 1969-1970.

- Joseph A. Gengerelli, Ph.D., *Professor of Psychology.*
 Harold B. Gerard, Ph.D., *Professor of Psychology.*
 Michael J. Goldstein, Ph.D., *Professor of Psychology.*
 Milton E. Hahn, Ph.D., *Professor of Psychology.*
 Wendell E. Jeffrey, Ph.D., *Professor of Psychology.*
 F. Nowell Jones, Ph.D., *Professor of Psychology (Chairman of the Department).*
 Harold H. Kelley, Ph.D., *Professor of Psychology.*
 George F. J. Lehmer, Ph.D., *Professor of Psychology.*
 Donald B. Lindsley, Ph.D., *Professor of Psychology and Physiology.*
 O. Ivar Lovaas, Ph.D., *Professor of Psychology.*
 John H. Lyman, Ph.D., *Professor of Engineering and Psychology.*
 Irving Maltzman, Ph.D., *Professor of Psychology.*
 Allen Parducci, Ph.D., *Professor of Psychology.*
 Bertram H. Raven, Ph.D., *Professor of Psychology.*
 Eliot H. Rodnick, Ph.D., *Professor of Psychology.*
 John P. Seward, Ph.D., *Professor of Psychology.*
 Joseph G. Sheehan, Ph.D., *Professor of Psychology.*
 Gerald H. Shure, Ph.D., *Professor of Psychology in Residence.*
 Marion A. Wenger, Ph.D., *Professor of Psychology.*
 Howard C. Gilhousen, Ph.D., *Emeritus Professor of Psychology.*
 Richard P. Barthol, Ph.D., *Associate Professor of Psychology.*
 Barry E. Collins, Ph.D., *Associate Professor of Psychology.*
 Kent Dallett, Ph.D., *Associate Professor of Psychology.*
 Morton P. Friedman, Ph.D., *Associate Professor of Psychology.*
 John P. Houston, Ph.D., *Associate Professor of Psychology.*
 George E. Mount, Ph.D., *Associate Professor of Psychology.*
 Charles Y. Nakamura, Ph.D., *Associate Professor of Psychology.*
 Donald Novin, Ph.D., *Associate Professor of Psychology.*
 Jessie L. Rhulman, Ed.D., *Associate Professor of Psychology.*
 David O. Sears, Ph.D., *Associate Professor of Psychology and Political Science.*
 James P. Thomas, Ph.D., *Associate Professor of Psychology.*
 S. Carolyn Fisher, Ph.D., *Emeritus Associate Professor of Psychology.*
 Jackson Beatty, Ph.D., *Assistant Professor of Psychology.*
 Peter M. Bentler, Ph.D., *Assistant Professor of Psychology.*
 Bradley D. Bucher, Ph.D., *Assistant Professor of Psychology.*
 Larry L. Butcher, 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.*
 Gilbert Freitag, Ph.D., *Assistant Professor of Psychology.*
 James E. Gardner, Ph.D., *Assistant Professor of Psychology and Public Health in Residence.*
 Gerald M. Goodman, Ph.D., *Assistant Professor of Psychology.*
 Barbara A. Henker, Ph.D., *Assistant Professor of Psychology.*
 Morris K. Holland, Ph.D., *Assistant Professor of Psychology.*
 Eric W. Holman, Ph.D., *Assistant Professor of Psychology.*
 Ian Hunter, Ph.D., *Assistant Professor of Psychology in Residence.*
 Lewis L. Judd, M.D., *Assistant Professor of Psychology and Psychiatry in Residence.*
 David E. Kanouse, Ph.D., *Assistant Professor of Psychology.*
 Franklin B. Krasne, Ph.D., *Assistant Professor of Psychology.*
 John C. Liebeskind, Ph.D., *Assistant Professor of Psychology.*
 Donald G. MacKay, Ph.D., *Assistant Professor of Psychology.*
 Millard C. Madsen, Ph.D., *Assistant Professor of Psychology.*

Albert Mehrabian, Ph.D., *Assistant Professor of Psychology.*
 Allan J. Pantle, Ph.D., *Assistant Professor of Psychology.*
 Alexander C. Rosen, Ph.D., *Assistant Professor of Psychology and Medical Psychology in Residence.*
 Crayton C. Walker, Ph.D., *Assistant Professor of Psychology.*
 Bernard Weiner, Ph.D., *Assistant Professor of Psychology.*



Howard S. Adelman, Ph.D., *Lecturer in Psychology.*
 Armand A. Alkire, Ph.D., *Assistant Clinical Professor of Psychology.*
 Dorothy V. Anderson, Ph.D., *Assistant Clinical Professor of Psychology.*
 Anne S. Anzel, Ph.D., *Lecturer in Psychology.*
 Gertrude Baker, Ph.D., *Associate Clinical Professor of Psychology.*
 Alan A. Benton, Ph.D., *Assistant Research Psychologist.*
 Martha E. Bernal, Ph.D., *Assistant Professor of Medical Psychology in Residence and Lecturer in Psychology.*
 Frances B. Berres, Ph.D., *Associate Head and Supervisor of Teaching in the Fernald School.*
 Daphne E. Bugental, Ph.D., *Assistant Research Psychologist.*
 Matthew W. Buttiglieri, Ph.D., *Associate Clinical Professor of Psychology.*
 J. Brooks Carder, M.A., *Acting Assistant Professor of Psychology.*
 Phillip M. Carman, Ph.D., *Associate Clinical Professor of Psychology.*
 Leslie B. Cohen, Ph.D., *Visiting Assistant Professor of Psychology.*
 Thomas D. Cullen, Ph.D., *Assistant Research Psychologist.*
 Ian S. Curthoys, Ph.D., *Assistant Research Psychologist.*
 Darrell C. Dearmore, M.A., *Associate in Psychology.*
 Annette Ehrlich, Ph.D., *Visiting Assistant Professor of Psychology.*
 Carl A. Faber, Ph.D., *Lecturer in Psychology.*
 Linda Fleischer, Ph.D., *Acting Assistant Professor of Psychology.*
 Edward Gould, Ph.D., *Assistant Research Psychologist.*
 Harry M. Grayson, Ph.D., *Clinical Professor of Psychology.*
 James A. Green, Ph.D., *Assistant Research Psychologist.*
 Donald G. Griffin, Ph.D., *Lecturer in Psychology.*
 Brett B. Hamilton, B.A., *Lecturer in Psychology.*
 Charlyne T. Herbert, Ph.D., *Associate Clinical Professor of Psychology.*
 Evelyn Gentry Hooker, Ph.D., *Research Psychologist.*
 Gordon L. Humphrey, Ph.D., *Acting Assistant Professor of Psychology.*
 Harrington V. Ingham, M.D., *Associate Clinical Professor of Psychiatry and Psychology.*
 Newton L. P. Jackson, Jr., Ph.D., *Assistant Research Psychologist.*
 Margaret Hubbard Jones, Ph.D., *Research Psychologist in Education and Psychology.*
 Arie Kruglanski, Ph.D., *Assistant Research Psychologist.*
 Ella A. Kube, Ph.D., *Assistant Research Psychologist.*
 Edward Levonian, Ph.D., *Acting Associate Professor of Psychology and Associate Research Psychologist in Engineering.*
 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., *Assistant Research Psychologist.*
 John W. McKelligott, Ph.D., *Associate Clinical Professor of Psychology.*
 Sigrid R. McPherson, Ph.D., *Lecturer in Psychology.*
 Norman Miller, Ph.D., *Research Psychologist.*

Wilbur E. Morley, Ph.D., *Lecturer in Psychology.*

Elizabeth M. Nel, Ph.D., *Acting Assistant Professor of Psychology.*

Phillip Oderberg, Ph.D., *Lecturer in Psychology.*

James O. Palmer, Ph.D., *Associate Clinical Professor of Medical Psychology and Lecturer in Psychology.*

Thomas W. Richards, Ph.D., *Clinical Professor of Psychology.*

Bruce D. Rubenstein, Ph.D., *Lecturer in Psychology.*

Edward K. Sadalla, B.A., *Acting Assistant Professor of Psychology.*

George F. Seacat, Ph.D., *Clinical Professor of Psychology.*

Robert D. Singer, Ph.D., *Visiting Associate Professor of Psychology.*

James E. Skinner, Ph.D., *Assistant Research Psychologist.*

Manuel J. Smith, Ph.D., *Lecturer in Psychology.*

Ilan Spector, Ph.D., *Lecturer in Psychology.*

Zanwil Sperber, Ph.D., *Lecturer in Psychology.*

Warren D. TenHouten, Ph.D., *Assistant Professor of Sociology and Assistant 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 1A-1B or Biology 2; Mathematic: 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 two additional upper division elective courses in psychology. Students are encouraged to consult the bulletin, UNDERGRADUATE PROGRAM IN PSYCHOLOGY, available in the office of the Department of Psychology.

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 additional courses in mathematics which would count toward the satisfaction of the course requirements in a related department. The third is social psychology. Students interested in this area may, with the consent of an adviser, offer two advanced courses in anthropology, political science, or sociology in place of two elective courses in psychology required for the major, and may in addition offer courses in these areas toward the course requirements in related departments.

Students who expect to study for the Ph.D. would be well advised to devote as many elective courses as possible to the area which is most germane to their field of research interest. They should also plan to give some time to the acquisition of a reading knowledge of one or two foreign languages which might be required for the Ph.D. Our Department currently requires one language or a substitute program, but at many universities two languages are required.

Transfer Students and Those Changing to

Psychology. Such persons should consult an adviser regarding a program of study designed to absolve extra-departmental and premajor requirements. Psychology 101 is acceptable in lieu of Psychology 10.

Prerequisites to Courses. These are listed for each course. For a limited number of courses (see page 444), 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 78.

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. (See page 443.) For the Ph.D. degree, all students are required to obtain thorough grounding in research methodology and psychological theory. Specialized training is available in such areas of psychology as child development, clinical, comparative, counseling, engineering, human and animal learning, industrial, mathematical, measurement, perception and psychophysics, personality and psychopathology, physiological, psychometrics and social psychology.

Admission to the Graduate Program

In addition to meeting the general graduate requirements listed on page 28 of this bulletin, students must be admitted to the Department by a selection committee within the Department. Graduate enrollment is limited and candidates will be chosen on the following bases: (1) prior scholastic performance; (2) ratings and recommendations by professors and other individuals; (3) autobiographical material; (4) scores on the Graduate Record Examination (verbal, quantitative and psychology advanced test) and on the Miller Analogies Test. Application materials may be obtained by writing to the Depart-

ment 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 142. 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

12. Introductory Physiological Psychology.

An introduction to psychobiological problems.

Mr. Ellison, Mr. Gengerelli, Mr. Liebeskind

70. Psychology of Human Relations.

An introduction to the theory and principles of personal growth and interpersonal effectiveness. Both intra- and interpersonal dynamics are reviewed.

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. 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. 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.

Mr. Dallett

112B. Theories of Learning.

Critical discussion of the major theories in the light of experimental evidence.

Mr. Seward

112C. Thinking.

(Formerly numbered 135.) An analysis of experimental studies of problem solving, reasoning, insight, concept formation, and related topics.

Mr. Maltzman

112D. Motivation.

Theories and experimentally determined facts concerning drives, needs, preferences, and desires.

Mr. Seward

115. Physiological Psychology.

(Formerly numbered 108.) Prerequisite: Biology 1A-1B or Biology 2 or consent of the instructor. Integrative activities, receptor and effector processes in relation to neuromuscular structure and function. Facts, problems, and methods.

Mr. Ellison, Mr. Gengerelli, Mr. Liebeskind

116. Physiological Psychology Laboratory.

(½ course)

Prerequisite or concurrent: course 115. Laboratory experience with various topics in physiological psychology.

Mr. Ellison, Mr. Liebeskind, Mr. MacKay

117A-117B-117C. Preseminars in Physiological Psychology.

(Formerly numbered 138 and 150A.) Prerequisite: course 115 or Zoology 109. May be taken independently and in any order. Advanced topics in physiological psychology, for example:

117A. Feeling and Emotion.

The nature and basis of the affective factor in life with particular emphasis on the critical evaluation of affective theory.

Mr. Wenger

117B. Comparative Psychobiology.

A survey of the determinants of species-specific behavior including genetic influences and learning.

Mr. Krass

117C. Advanced Topics.

Advanced topics in brain and behavior. May be repeated for credit with permission of the instructor.

The Staff

120. Perception.

(Formerly numbered 131.) Methods and approaches to the study of perception. Experimental results, theoretical interpretations, and demonstrations.

Mr. Carterette, Mr. Dowling, Mr. Friedman

121. Perception Laboratory. (½ course)

Prerequisite or concurrent: course 120. Laboratory experience with various topics in perception.

Mr. Carterette, Mr. Dowling, Mr. Friedman

122. Language and Communication.

(Formerly numbered 142.) Prerequisite: course 141 or consent of the instructor. A survey of language behavior, communication and speech perception, including acquisition, sequential structure, and semantic aspects. Recent developments in linguistics, theory of information transfer, analysis and synthesis of speech. Social communication. Aphasia and speech pathology. Animal communication.

Mr. Carterette, Mr. Mehrabian

123. Psycholinguistics.

(Same as Linguistics 123.) A survey of current theory and research in Psycholinguistics: the description of language in generative grammars; the acquisition of language by children; experiments on

speech recognition, production and comprehension; errors in speech perception and production; speech physiology and pathology. Mr. MacKay

124. Preseminars in Perception.

Advanced consideration of special topics. May be repeated for credit.

125. Personality.

(Formerly numbered 148.) The physiological, behavioral, and cultural role of perception, learning, and motivation in personality. These topics will be discussed in the context of current research and major theories.

Mr. Comrey, Mr. Mehrabian, Mr. Weiner

126. Personality Laboratory. (½ course)

Prerequisite or concurrently with special permission: course 125. Laboratory experience with various topics in personality. Mr. Mehrabian

127. Abnormal Psychology.

(Formerly numbered 168.) Study of the dynamics and prevention of abnormal behavior, including neuroses, psychoses, character disorders, psychosomatic reactions and other abnormal personality patterns. Mr. Goldstein, Miss Henker

128. Structure of Individual Differences.

(Formerly numbered 188.) The logical and experimental approaches to human aptitudes, abilities, and interests as used in counseling. Mental organization, physiological and psychological traits, individual and group educational-vocational-personality characteristics, derivation of interest and ability pattern, pattern analysis and its counseling applications. (Nonmajors see course 428.) Mr. Hahn

129. Preseminars in Personality.

Advanced topics in personality. May be repeated for credit.

130. Developmental Psychology.

(Formerly numbered 112.) An elaboration of the developmental aspects of physical, mental, social, and emotional growth from birth to adolescence. Mr. Madsen

***131. Developmental Psychology Laboratory.**

(½ course)

Prerequisite or concurrent: course 130. Observation and experimentation in developmental psychology.

132A. Learning Disorders.

(Formerly numbered 167A.) An examination of the psychological factors underlying the understanding, diagnosis and treatment of reading and other learning disorders in children, adolescents and young adults. Mr. Adelman

132B. Learning Disorders: Laboratory.

(½ to 1 course)

(Formerly numbered 167B.) Prerequisite or concurrently: course 132A. This course provides supervised laboratory experience with remedial cases in the Fernald School. May be repeated for credit to a maximum of two courses. Mr. Rubenstein

133A-133B-133C. Preseminars in Developmental Psychology.

Prerequisite: course 130 or consent of the instructor.

tor. 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 Ruhlman

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. Lovass

***133C. Aging.**

The psychological problems of later maturity and old age.

134. Educational Psychology.

(Formerly numbered 110.) A general survey of the basic principles of psychology that are pertinent to education. Includes a study of growth and development, abilities, intelligence, social and emotional factors, and principles of learning. Miss Ruhlman

135. Social Psychology.

(Formerly numbered 145.) The interrelationships between the individual and his social environment. Social influences upon motivation, perception and behavior. The development and change of attitudes and opinions. Psychological analysis of small groups, social stratification and mass phenomena. Mr. Centers, Mr. Collins, Mr. Raven

136. Social Psychology Laboratory. (½ course)

Prerequisite or concurrent: course 135. Laboratory experience with such topics as small group behavior, attitude measurement, and interpersonal influence. Mr. Kelley, Mr. Raven

137A-137B-137C. Preseminars in Social Psychology.

Prerequisite: course 135. Advanced topics in social psychology. May be taken independently and in any order.

137A. Group Behavior.

Psychology of interdependence, group membership, leadership, and social influence. Mr. Kelley

137B. Attitude Formation and Change.

Effects of propaganda, personal influence, socialization and social structure on private attitudes and public opinion. Mr. Sears

137C. Survey Research in Psychology.

The nature of attitudes and opinions, and their measurement by means of attitude scales and public opinion surveys. Class projects and field work. Mr. Centers

141. Elementary Statistics in Psychology.

(Formerly numbered 105.) Prerequisite: Mathematics 2A or 3A. Students who have credit for any other course in statistics will normally receive one-fourth course credit for the course. Full course credit may be granted by petition where it is judged that the overlap of contents is insignificant. Measures of central tendency, variability and correlations. Applications of statistical inference to research in psychology. Reliability and validity of psychological tests and measurements. Mr. Comrey, Mr. Walker

142. Advanced Psychometric Methods.

(Formerly numbered 107.) Prerequisite: course 141. The application of higher statistical methods to psychological data. Mr. Comrey, Mr. Walker

* Not to be given, 1969-1970.

143. Foundations of Psychological Investigation.

(Formerly numbered 106.) Prerequisite: course

141. Outline and examination of concepts associated with psychological investigation and the interpretation of results. Readings, discussions and reports, individual and class projects. Mr. Mount

144. Psychological Tests and Evaluation.

(Formerly numbered 111.) Prerequisite: course

141. Further study of the principles of measurement, stressing basic concepts. Application to problems of test construction, administration, and interpretation. Mr. Broen

148. Personnel and Industrial Psychology.

(Formerly numbered 185 and 187.) Students who have credit for either the courses formerly numbered 185 or 187 will receive one-half course credit for this course. Introduction to the applications of psychology in industry and business. Mr. Case

149. Problems in Human Relations.

(Formerly numbered 181.) Understanding human relations problems and developing skills in interpersonal relations. Topics include the effective use of human resources; group management and leadership skills; interviewing, counseling, and conference techniques. Mr. Barthol

184. Disorders of Human Communication.

(Formerly numbered 182.) 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. Houston, Mr. Sears

198. Senior Seminars in Psychology.

Prerequisite: senior standing in psychology and consent of the instructor. Seminars on special topics according to staff interests.

199. Special Studies in Psychology. (½ to 1 course)

Prerequisite: senior standing and consent of instructor. May be repeated for total of two full courses. Individual study. The Staff

Graduate Courses**200A. Learning I.**

Emphasis is primarily on animal and human conditioning. The Learning Staff

200B. Learning II.

A critical analysis in contemporary theory and research related to complex processes, primarily human. The Learning Staff

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-204F. 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.

204B. Human Learning.

Acquisition, retention, and transfer of verbal and nonverbal human learning. Mr. Dallett

204C. Behavior Theory.

Theoretical and experimental analyses of orienting and defensive reflexes, and their implications for theories of learning, motivation, and abnormal behavior. Mr. Maltzman

204D. Behavior Theory.

A continuation of 204C. Mr. Maltzman

***204E. Discrimination Learning.**

A review and detailed examination of contemporary viewpoints of discrimination learning with emphasis on the notion of attention as a construct in these theories.

204F. Aversive Motivation.

Analysis of recent theories of aversive motivation, including avoidance behavior, punishment, stress, and interactions between appetitive and aversive motivation. Mr. Carder

205. Physiological Correlates of Behavior.

(Formerly numbered 204.) Prerequisite: Section 1: graduate standing; Section 2: course 115 or equivalent and consent of the instructor. The physiological substrate of behavior and the neural and endocrine mechanisms which underlie psychological phenomena and behavior. New concepts of structural and functional organization in the nervous system and the ways these relate to behavioral and neurological dysfunction. The Physiological Staff

206. Psychophysiology of Brain Function.

(Formerly numbered 228.) Modern concepts of the functional organization of the brain with particular reference to psychological phenomena and behavior. Recent advances in neurophysiology and electroencephalography bearing on perception, attention, drive, sleep-wakefulness, levels of consciousness, etc. Some emphasis on pathology of behavior resulting from brain injury. Mr. Lindsay

207A-207B-207C. Seminar in Physiological Psychology.

(Formerly numbered 253A-253B.) Prerequisite: course 115 or the equivalent. Mr. Ellison, Mr. Gengerelli

***208. Seminar in Comparative Psychobiology.**

Mr. Krasne

* Not to be given, 1969-1970.

209. Laboratory Methods in Physiological Psychology.

Prerequisite: consent of the instructor. Surgical skills, bioelectric instrumentation and experimental techniques, data analysis and interpretation.
The Physiological Staff

211. Perception.

(Formerly numbered 201.) Basic experiments and theories of perception and judgment, with applications to learning, motivation, and personality. Laboratory demonstrations and individual experiments.
The Perception Staff

212. Advanced Perception.

Advanced study of topics in perception with emphasis on theories of perception. Mr. Carterette

213. Psychology of Vision.

An advanced treatment of psychophysiology and psychophysics of vision with special attention to modern theories. Mr. Thomas

214. Psychology of Audition.

An advanced treatment of the psychophysiology and psychophysics of audition with special attention to modern theories. Mr. Carterette

***215. Psychology of Somesthesia and the Chemical Senses.**

Prerequisite: course 211. A consideration of the current status of research on the senses other than vision and audition. Mr. Jones

***216. Critical Problems in Perception.**

(Formerly numbered 282.) Mr. Friedman

220. Social Psychology.

(Formerly numbered 205.) An intensive consideration of the concepts, theories, and major problems in social psychology. The Social Staff

221. Seminar in Attitude Formation and Change.

(Formerly numbered 263A-263B.) Prerequisite: course 220, 227, or consent of the instructor. 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.) Prerequisite: course 220, 227, or consent of the instructor. Special topics in interpersonal relations and group dynamics. Power control, structure and organization, group functioning. Mr. Raven

223. Survey Methods in Psychology.

(Formerly numbered 266.) Prerequisite: course 220, 227, or consent of the instructor. A critical review of the theory and practice of large-scale sampling, measurement, and analysis of beliefs, attitudes, and other psychological variables. Mr. Centers

224. Experimental Methods in Social Psychology.

(Formerly numbered 268.) Prerequisite: course 220, 227, or consent of the instructor. 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.) Prerequisite: course 220, 227, or consent of the instructor. May be repeated for credit with consent of the instructor. Mr. Centers, Mr. Kelley

***226. Seminar in Behavioral Science and the Law.**

(Same as Law 333.) Prerequisite: consent of the instructor. Critical examination of selected issues of mutual concern to behavioral scientists and legal scholars such as decision-making processes, criminal sentencing, effect of deterrents, privacy and consent in experimentation.

227. Advanced Issues in Social Psychology.

Prerequisite: course 220 or consent of the instructor. An intensive analysis of three advanced issues in social psychology drawn from such topics as small groups, attitude change, social psychology of urban affairs, social psychology of education, race relations, methodology. Recommended for students selecting Social Psychology as a minor or cognate area. The Social Staff

228. Seminar in Political Psychology.

(Same as Political Science 224G.) Prerequisite: course 220 or consent of the instructor. Examination of political behavior, political socialization, personality and politics, racial conflict, and the analysis of public opinion on these issues. Mr. Sears

231. Seminar in Language and Communication.

(Formerly numbered 283.) Prerequisites: courses 260A-260B. Mr. Dowling, Mr. MacKay

232. Seminar in Judgment.

Consideration of topics in human judgment. Mr. Parducci

235. Personality.

(Formerly numbered 202.) A survey of cognitive, analytic, and learning theory approaches to the study of personality. Emphasis will be on the intensive exploration of selected concepts and related research. The Personality Staff

236. Personality Theories.

(Formerly numbered 222A-222B.) A survey of the theoretical views of Freud, Jung, Adler, Rank, and various modern writers, including Allport, Lewin, Murray and Murphy. Mr. Lehner

***237. Survey of Projective Methods in Personality Assessment.**

(Formerly numbered 224.) Survey of theories and fields of application of projective methods, and supervised practice in techniques. For nonclinical psychology students. Mr. Sheehan

***238. Seminar in Mental Measurements.**

(Formerly numbered 252.) Mr. Comrey

239. Experimental Research in Personality.

Prerequisite: course 202. A detailed analysis of some of the current research in personality. The relation of personality to the process areas will be stressed. Students will conduct independent research projects. Mr. Weiner

* Not to be given, 1969-1970.

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.) Prerequisite: course 240 or equivalent and consent of the instructor. Selected topics. May be repeated for credit with consent of the instructor. Mr. Jeffrey, Mr. Madsen

243A-243B. Seminar in Practical Issues in Developmental Psychology.

(Formerly numbered 255A-255B.) Prerequisite: course 240 or equivalent, and consent of the instructor. Credit and grade to be given only upon completion of 243B. Mr. Nakamura

244. Critical Problems in Developmental Psychology.

Prerequisites: course 240 or equivalent, and consent of the instructor. The course will be concerned with current problems and will vary from time to time depending upon the interest of the class and instructor. May be repeated for credit with consent of the instructor. Mr. Madsen

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.)

247A-247B. Computer Techniques in the Behavioral Sciences.

(Formerly numbered 292.) Introduction to statistical and mathematical techniques applicable to behavioral sciences which would not be feasible without digital computers. Topics discussed will include special statistical methods, Monte Carlo simulation, and information processing models. Mr. Walker

250A. Advanced Psychological Statistics.

(Formerly numbered 203A.) Review of fundamental concepts. Basic statistical techniques as applied to the design and interpretation of experimental and observational research. Mr. Bucher

250B. Advanced Psychological Statistics.

(Formerly numbered 203B.) Advanced experimental design and planning of investigations. Mr. Bucher

251A-251B. Research Methods.

(Formerly numbered 206.) Credit and grade to be given only upon completion of 251B. Students will

* Not to be given, 1969-1970.

design and conduct original research projects under the supervision of the instructor in charge. The Staff

252. Quantitative and Laboratory Methods in Psychology.

(Formerly numbered 207.) Fundamentals of measurement, laboratory techniques and instruments, sources and types of error, treatment and presentation of data, problems in the design and interpretation of experiments in representative areas of laboratory investigation. Mr. Mount

253. Factor Analysis.

(Formerly numbered 209.) Theory and practice of factor analysis in psychological research. Methods of factor extraction and rotation. Applications of computers to computations in factor analysis. Mr. Comrey

254. Seminar in Psychological Scaling.

(Formerly numbered 210.) Theory of measurements, law of comparative judgment, methods of unidimensional scaling, multidimensional scaling, and related topics of current interest. Mr. Comrey

255. Quantitative Aspects of Assessment.

(Formerly numbered 211.) Fundamental assumptions and equations of test theory. Current problems in assessment. Mr. Bentler

256. Seminar in Critical Problems in Psychological Measurement.

(Formerly numbered 281.) Critical examination of issues in the major approaches to psychological measurement; relation of psychological methods and data to a general theory of measurement. Mr. Mount

260A. Psycholinguistics I. Seminar.

(Same as Linguistics 260A.) Prerequisite: course 123 and Linguistics 230. Current psycholinguistic theory and research problems; coding and decoding, psycholinguistic parameters in language learning; speech recognition and perception. Mr. Kelley, Mr. MacKay

260B. Psycholinguistics II. Seminar.

(Same as Linguistics 260B.) Prerequisite: course 260A. Continuation of course 260A. Mr. Dowling, Mr. MacKay

261A-261B-261C. Advanced Industrial Psychology.

(Formerly numbered 235A-235B.) Selection and training of employees, factors influencing efficiency of work. Mr. Barthol

***262. Special Problems in Industrial Psychology.**

(Formerly numbered 235.) Mr. Barthol

270. Issues and Concepts of Clinical Psychology.

(Formerly numbered 217A.) Mr. Broen

271A-271B-271C. Clinical Psychological Methods.

(Formerly numbered 230A-230B.) Advanced study of tests in clinical diagnostic study, including individual and group tests of intelligence, structured personality tests, and projective techniques. Emphasis will be placed on application in the clinical situation. The Clinical Staff

272A-272B-272C. Psychotherapy.

(Formerly numbered 257A-257B.) Course 401 must be taken concurrently, except with consent of instructor.

- 272A. Introduction. Mr. Sheehan
- 272B. Psychotherapy with Adults. Mr. Ingham
- 272C. Psychotherapy with Children. Mrs. Love

273. Advanced Clinical Interpretation.
(Formerly numbered 225.) Mr. Goldstein

274A-274B. Group Therapy Dynamics.
(Formerly numbered 257C.) Mr. Lehner

275A-275B. Seminar in Abnormal Psychology.
(Formerly numbered 258A-258B.) Mr. Coleman

276A-276B. Seminar in Learning Disorders.
(Formerly numbered 259 and same as Education 263B-263C.) Mr. Coleman

***277. Seminar in Clinical Psychology and Speech Pathology.**
(Formerly numbered 262.) Mr. Sheehan

278A-278B. Seminar in Motivation, Conflict and Neurosis. Mr. Feshbach

279A-279B. Seminar in Experimental Research in Psychopathology.
(Formerly numbered 293.) Mr. Rodnick

280. Seminar in Experimental Psychodynamics.
Mr. Broen

281. Seminar in Behavior Therapy. Mr. Lovas

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 I.) Prerequisite: courses 271A-271B-271C. Students on practicum assignments are required to register for this course each quarter. Exception with consent of Clinical Program Committee. The Clinical Staff

402. Field Work in Speech Pathology.
(1 or 2 courses)
(Formerly numbered 279A-279B, Section 2.) Prerequisite: consent of the instructor. Practical work in hospitals and clinics in diagnostic testing and psychotherapy with speech disorders. Mr. Sheehan

403. Field Work in Counseling Psychology.
(1 or 2 courses)
(Formerly numbered 277A-277B.) Prerequisite: consent of the instructor. Internship in the Student Counseling Center, which includes psychometrics, observation of counseling, preparation of case materials for counselors, record keeping, test scoring, case discussions, and participation in other service activities. Minimum of ten hours per week, including one or two hours of staff meetings and conferences. The Staff

410. Problems in Professional Communication.
(Formerly numbered 227B.) Study of the theoretical and practical problems arising from the use of psychological methods and instruments on case work material. Emphasis on psychoevaluation and

nonverbal communication. For graduate students in psychology and related disciplines: enrollment limited. Consent of the instructor required. Mr. Hahn

411. Personal Evaluation.
(Formerly numbered 227A.) Prerequisite: consent of the instructor. Seniors and graduate students with appropriate backgrounds in psychology. Assessment, evaluation, and psychoevaluation of individuals in a case study setting. Includes 30 hours of volunteer hospital services. Mr. Hahn

***412. Psychological Interviewing and Case Study Methods.**
(Formerly numbered 144.) Procedures, methods, and problems in the collection of personal data in the interview situation.

***428. Assessment of Individual Differences.**
(Formerly numbered 188.) Open to nonmajors only. The logical and experimental approaches to human aptitudes, abilities and interests as used in counseling. Mental organization, physiological and psychological traits, individual and group educational-vocational-personality characteristics, derivation of interest and ability patterns, pattern analysis and its counseling applications.

451. Internship in Clinical Psychology.
(Formerly numbered 401A-401B, Section 1.) Prerequisite: course 401. Open only to students who have passed departmental qualifying examination. May be repeated for credit. The Clinical Staff

452. Internship in Counseling Psychology.
(Formerly numbered 401A-401B, Section 2.) The Staff

454. Internship in Industrial Psychology. (½ to 1 course)
(Formerly numbered 401A-401B, Section 3.) The Staff

Individual Study and Research

596. Directed Individual Research and Study in Psychology. (½ to 2 courses)
One course required during second year of graduate study. One course in 596 or 599 required during each succeeding year of graduate study. (Terminal M.A. candidates are excused from these requirements.) The Staff

597. Individual Studies. (½ to 1 course)
Intended primarily for preparation for Ph.D. qualifying examinations. May be required by some area committees as prerequisite for taking qualifying examinations. The Staff

599. Research on Dissertation. (½ to 2 courses)
Prerequisite: Satisfactory performance in qualifying examinations. One course required during each year following passing of qualifying examinations. The Staff

Psychology Clinic

The Psychology Clinic was established in 1949 in Franz Hall by the Department of Psychology as a training and research center

* Not to be given, 1969-1970.

in clinical psychology. It has specialized facilities for the investigation, assessment and treatment of a variety of psychological disabilities and adjustment problems of children, adolescents and adults of the greater Los Angeles community.

The Clinic provides a broad range of psychological services to clients including individual, group and family therapy, behavior modification procedures and consultation to agencies in the community. The emphasis on systematic research investigation in the Clinic leading to new knowledge and the improvement of clinical psychological procedures is in keeping with a primary function of a University-based clinic. The number and types of clients served are consonant with this goal. Apart from those investigations related directly to the professional services for the clients, there are a number of research programs in the clinic which reflect the current interests of the staff, such as 1) communication patterns in the family constellation relevant to both the development and the amelioration of behavioral disturbance, 2) the development of innovative techniques of behavior modification which are effective in treating various psychological problems and, 3) exploration of new modes of delivering psychological services to currently unserved segments of the population.

These service and research functions serve as the basis for the professional education and training of clinical psychologists as an integral part of their graduate study in the Department of Psychology. The Clinic also provides training experiences to students of other mental health professions, such as social work. Although the Clinic is staffed primarily by psychologists, some staff members are drawn from other professions, such as clinical social work, psychiatry, pediatrics and special education.

Fernald School

The Fernald School (formerly the Psychology Clinic School), a facility of the Depart-

ment of Psychology, was established in 1921 as a research and training center for the study, diagnosis, and treatment of learning disabilities.

The uniqueness of the facility lies in its lively experimental atmosphere, in its varied population, in the scope of its training, demonstration and research programs and in its interdisciplinary approaches in which the talents of teachers, clinical psychologists, school counselors, and social workers are integrated and brought to bear upon the student's learning difficulties. The School's current focus is on those children with average or better intelligence who are functioning significantly below grade level in basic school skills and school achievement.

The Fernald School offers observation, classroom participation and intervention research and other training opportunities to graduates and undergraduates in many fields, notably psychology, education and social welfare. Fellowships are available for graduate students in psychology and education. Two courses focusing on learning disabilities, Psychology 132A and 132B, are specifically associated with the Fernald School programs. Psychology 132A provides the opportunity to examine factors concerning etiology, diagnosis and treatment of learning difficulties. Psychology 132B affords the opportunity to observe and participate, under supervision, in the remediation of the academic deficiencies of Fernald School students.

The Fernald School population includes approximately 100 students, enrolled in regular and small group classroom programs, and an average of 200 children, adolescents and adults who are seen in individual and small group tutoring programs. In addition, another 250 individuals are seen for diagnostic evaluation each year. The research activities, based on these populations, are directed toward an analysis of the processes mediating learning difficulties and toward an evaluation of the effectiveness of various therapeutic and remedial programs.

■ PUBLIC HEALTH

(Department Office, 71-269 Center for the Health Sciences)

Roslyn B. Alfin-Slater, Ph.D., *Professor of Nutrition.*

Ruth Boak, Ph.D., M.D., *Professor of Medical Microbiology and Immunology, Professor of Pediatrics and Professor of Public Health.*

Lester Breslow, M.D., M.P.H., *Professor of Health Services Administration (Vice-Chairman of the Department).*

- 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 Engineering and Professor of Public Health.*
- John M. Chapman, M.D., M.P.H., *Professor of Preventive Medicine and Public Health, Professor of Medical Microbiology and Immunology and Professor of Epidemiology.*
- Wilfrid J. Dixon, Ph.D., *Professor of Biostatistics and Professor of Biomathematics.*
- Gladys A. Emerson, Ph.D., *Professor of Nutrition.*
- Lenor S. Goerke, M.D., M.S.P.H., *Professor of Public Health and Professor of Preventive Medicine and Public Health.*
- Ralph Goldman, M.D., *Professor of Medicine and Professor of Public Health.*
- Carl E. Hopkins, Ph.D., M.P.H., *Professor of Public Health in Residence.*
- Raymond J. Jessen, Ph.D., *Professor of Business Administration and Professor of Public Health.*
- Edward B. Johns, Ed.D., *Professor of School Health Education.*
- Alfred H. Katz, M.A., D.S.W., *Professor of Public Health and Professor of Social Welfare.*
- John W. Knutson, D.D.S., Dr. P.H., *Professor of Public Health and Professor of Preventive Dentistry.*
- Frank J. Massey, Jr., Ph.D., *Professor of Biostatistics and Professor of Preventive Medicine and Public Health (Chairman of the Department).*
- Edward L. Rada, Ph.D., *Professor of Economics in Public Health.*
- Leo G. Reeder, Ph.D., *Professor of Public Health and Professor of Sociology.*
- Milton I. Roemer, M.D., M.P.H., *Professor of Public Health and Professor of Preventive Medicine and Public Health.*
- Marian E. Swendseid, Ph.D., *Professor of Nutrition and Professor of Biological Chemistry.*
- Frank F. Tallman, M.D., *Professor of Psychiatry and Professor of Public Health.*
- George Tarjan, M.D., *Professor of Psychiatry and Professor of Public Health in Residence.*
- Daniel M. Wilner, Ph.D., *Professor of Public Health and Professor of Preventive Medicine and Public Health.*
- Henry N. Work, M.D., *Professor of Public Health and Professor of Psychiatry.*
- Telford Work, M.D., M.P.H., D.T.M.&H., *Professor of Infectious and Tropical Diseases (Vice-Chairman of the Department).*
- John F. Kessel, Ph.D., *Emeritus Professor of Infectious Diseases and Research Parasitologist.*
- H. B. Thompson, Ph.D., *Emeritus Professor of Home Economics.*
- A. Ralph Barr, Sc.D., *Associate Professor of Public Health.*
- Virginia A. Clark, Ph.D., *Associate Professor of Public Health.*
- Olive Jean Dunn, Ph.D., *Associate Professor of Biostatistics and Associate Professor of Biomathematics.*
- Edward H. Forgotson, M.D., LL.B., *Associate Professor of Public Health in Residence.*
- Richard Kalish, Ph.D., *Associate Professor of Public Health in Residence.*
- Agnes A. O'Leary, R.N., M.P.H., *Associate Professor of Public Health Nursing and Lecturer in Public Health.*
- Robert S. Pogrund, Ph.D., *Associate Professor of Public Health in Residence.*
- 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.*

- Abdelmonem A. Afifi, Ph.D., *Assistant Professor of Biostatistics and Assistant Professor of Biomathematics.*
- Lawrence R. Ash, Ph.D., *Assistant Professor of Public Health in Residence.*
- J. Alfred Cannon, M.D., M.P.H., *Assistant Professor of Public Health in Residence and Assistant Professor of Psychiatry in Residence.*
- Potter C. Chang, Ph.D., *Assistant Professor of Biostatistics in Residence.*
- Alfred J. Clark, Ph.D., *Assistant Professor of Public Health in Residence.*
- Donn L. Cochran, Ed.D., *Assistant Professor of Public Health in Residence.*
- James P. Cooney, Ph.D., *Assistant Professor of Hospital Administration.*
- David P. Discher, M.D., *Assistant Professor of Public Health and Assistant Professor of Preventive Medicine and Public Health.*
- Donald Du Bois, Dr.P.H., *Assistant Professor of Public Health in Residence.*
- Gary M. Fisher, Ph.D., *Assistant Professor of Public Health in Residence.*
- 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.*
- Alfred K. Neumann, M.D., M.P.H., *Assistant Professor of Public Health in Residence.*



- Lilla Aftergood, Ph.D., *Assistant Research Biochemist.*
- Chauncey A. Alexander, D.S.W., *Lecturer in Public Health and Lecturer in Social Welfare.*
- Charles I. Barron, M.D., *Associate Clinical Professor of Public Health.*
- Arnold R. Beisser, M.D., *Lecturer in Public Health.*
- Harold N. Broderston, M.D., M.P.H., *Lecturer in Public Health.*
- Samuel Brooks, Ph.D., *Lecturer in Public Health.*
- Harold V. Brown, B.A., M.P.H., *Associate in Occupational Health.*
- Richard Call, M.D., *Associate Clinical Professor of Public Health.*
- Edith M. Carlisle, Ph.D., *Assistant Researcher in Nutrition.*
- Flavio Ciferri, M.D., M.P.H., *Lecturer in Public Health.*
- Kenneth M. Eastman, B.S., *Associate Clinical Professor of Public Health.*
- Jean S. Felton, M.D., *Lecturer in Occupational Health.*
- Seymour Fisher, M.D., *Associate Clinical Professor of Medical Care.*
- John T. Fodor, Ed.D., *Lecturer in Public Health.*
- 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.*
- James E. Gardner, Ph.D., *Lecturer in Public Health and Lecturer in Psychology.*
- John R. Goldsmith, M.D., M.P.H., *Lecturer in Public Health.*
- Gerald A. Heidbreder, M.D., M.P.H., *Lecturer in Public Health.*
- Herbert L. Herschensohn, M.D., *Lecturer in Public Health, Associate Clinical Professor of Preventive Medicine and Public Health and Associate Clinical Professor of Medicine.*
- Robert W. Hetherington, Ph.D., *Lecturer in Medical Care Organization and Assistant Research Sociologist.*
- James C. Hitchcock, Jr., Sc.D., *Assistant Research Entomologist.*
- Marvin Hoffenberg, Ph.D., *Lecturer in Public Health and Lecturer in Political Science.*
- Arthur C. Hollister, M.D., M.P.H., *Lecturer in Public Health.*
- Josef Hrachovec, M.D., Sc.D., M.Sc., *Associate Researcher in Public Health.*
- Olive G. Johnson, B.A., *Lecturer in Public Health and Lecturer in Preventive Medicine.*
- Charles Keeran, M.S.W., *Lecturer in Mental Hospital Administration.*

- Addie Lou Klotz, M.D., M.P.H., *Lecturer in Public Health.*
- Benjamin A. Kogan, M.D., Dr. P.H., *Lecturer in Public Health.*
- Joel W. Kovner, Dr. P.H., *Assistant Researcher in Medical Care Organization.*
- Irving Krasnow, Ph.D., *Lecturer in Public Health.*
- Howard Laitin, Ph.D., *Associate Clinical Professor of Medical Care Organization.*
- Carl A. Lawrence, Ph.D., M.S., *Lecturer in Public Health.*
- Hallett A. Lewis, M.D., *Assistant Clinical Professor of Public Health.*
- William P. Lewis, Ph.D., *Lecturer in Public Health and Assistant Research Parasitologist.*
- David Littauer, M.D., *Associate Clinical Professor of Medical Care Organization.*
- Allen W. Mathies, Ph.D., M.D., *Lecturer in Infectious and Tropical Diseases.*
- Harold Mazur, M.D., M.P.H., *Lecturer in Public Health and Lecturer in Preventive Medicine.*
- Florence C. McGucken, M.S., *Lecturer in Nutrition.*
- Malcolm H. Merrill, M.D., M.S., M.P.H., *Lecturer in Public Health.*
- 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.*
- Howard W. Mitchell, M.D., *Lecturer in Public Health.*
- Donald F. Muhich, M.D., *Lecturer in Public Health.*
- David M. Myers, B.A., M.P.A., *Lecturer in Medical Care Organization.*
- David Odell, A.B., M.P.H., *Lecturer in Hospital Administration.*
- Harriet B. Randall, M.D., *Lecturer in Public Health.*
- Henry A. Renteln, M.D., M.P.H., *Lecturer in Epidemiology.*
- † Donald T. Rice, M.D., M.P.H., *Lecturer in Public Health and Preventive Medicine.*
- Shirley W. Rich, B.A., M.P.H., *Associate in Public Health.*
- Robert S. Rocke, M.D., M.P.H., *Lecturer in Public Health.*
- Jack C. Rogers, B.S., *Lecturer in Occupational Health.*
- Edward L. Russell, M.D., M.A., *Lecturer in Public Health.*
- Ernest M. Sable, A.B., M.P.H., *Lecturer in Hospital Administration.*
- Helen L. Salmon, R.N., B.S., *Lecturer in Occupational Health and Clinical Instructor in Public Health Nursing.*
- David Sanders, M.D., M.P.H., *Lecturer in Public Health and Assistant Clinical Professor of Psychiatry.*
- Charles E. Schoettlin, M.D., Dr. P.H., *Lecturer in Public Health.*
- Arthur N. Schwartz, Ph.D., *Lecturer in Public Health.*
- Marian G. Selvin, B.S., M.P.H., *Associate in Public Health.*
- Charles L. Senn, M.S., *Lecturer in Public Health.*
- Susan R. Sherman, Ph.D., *Assistant Researcher in Behavioral Science.*
- Robert L. Smith, M.D., M.P.H., *Associate Clinical Professor of Public Health.*
- Marilyn S. Talcott, B.A., LL.B., *Lecturer in Public Health and Assistant Researcher in Public Health Law.*
- Leo Tepper, M.D., M.P.H., *Lecturer in Public Health.*
- Robert E. Thomas, M.D., *Lecturer in Community Mental Health.*
- Packard Thurber, Jr., M.D., *Lecturer in Public Health and Associate Clinical Professor of Preventive Medicine and Public Health.*
- J. Albert Torribio, M.S.S.W., M.S.W., *Lecturer in Health Education.*
- Arthur J. Viseltar, Ph.D., M.P.H., *Lecturer, Assistant Research Historian.*
- Marsden Wagner, M.D., M.S.P.H., *Lecturer in Preventive Medicine, Public Health, and Pediatrics.*
- J. Arthur Waites, Ph.D., *Lecturer in Mental Health.*

† Absent on leave, 1969-1970.

Rosabelle P. Walkley, B.A., *Lecturer in Behavioral Sciences and Associate Research Behavioral Scientist.*

Lawrence Wayne, Ph.D., *Lecturer in Public Health.*

Paul F. Wehrle, M.D., *Lecturer in Epidemiology.*

Robert C. Weiss, M.D., M.P.H., *Lecturer in Maternal and Child Health.*

Lower Division Courses

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

44. Principles of Healthful Living.

Fundamentals of healthful living; designed to provide scientific health information and promote desirable attitudes and practices. The Staff

Upper Division Courses

100. Introduction to Principles of Public Health.

Prerequisite: twelve units of biology, zoology, and bacteriology, or consent of the instructor. The identification and discussion of the philosophy, concepts and principles of public health and the relationship of these to the ecological framework of community organization to meet health service needs. The Staff

101. Introduction to Medical Science.

Prerequisite: one year sequence in biology, zoology or physiology; or consent of the instructor. This course will present an introduction to disease processes. It is intended primarily for students in public health and is not open to premedical students. Mr. Goldman

102A-102B. Health Record Science.

Lecture, 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

105. Medical Care in Modern Society. (½ course)

Prerequisite: upper division standing or consent of the instructor. An analysis of the functions of our personal health service systems and the assumptions which underlie and dominate traditional patterns of medical care organization. Mr. Du Bois

106. Economic Problems of Families.

Prerequisite: Economics 1, 2. An analysis of the major economic problems of production, income and consumption affecting individuals and different types of American families. Mr. Rada

109. History of Public Health and Social Medicine.

(½ course)

Prerequisite: consent of the instructor. A world history of the ideas, attitudes and institutions of public health and social medicine, with some considerations of changing social, economic and cultural relationships. Mr. Viseltear

110. Environmental Health. (½ course)

Prerequisite: Bacteriology 100A-100B-100C, or Biology 1A and Chemistry 1A. The fundamental

objectives, goals and methods of environmental health, including the relationships of physical, biological and social factors of health. Mr. Sean

112. Public Health Engineering.

Prerequisite: course 110, and consent of the instructor. Planning, design, and survey of factors related to the physical aspects of environmental health with particular reference to water, wastes, pollution control, drainage and building design and equipment and environmental health planning. Mr. Sean

130A-130B. Health Science for Pre-Adults.

Theories and principles of health science in schools and colleges; legal aspects, instruction, services, environment, and interrelationships with community resources. Mr. Fodor

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. Mr. Johns

134. Community Health Education.

The theory, principles and practices of education and community organization involved in promoting motivation of individuals, groups and communities. Mr. Stewart, Mr. Torribio

147. Introduction to Epidemiology.

Lecture, 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 noninfectious diseases in populations. Laboratory problems illustrative of basic principles of epidemiology. Not open to physicians. Mr. Chapman, Mr. Discher and the Staff

149. Behavioral Sciences and Health.

(Formerly numbered 249A.) Prerequisite: consent of the instructor. Relationship of basic concepts in the behavioral sciences pertinent to health and medical care; cultural and social class variations in health status; health team and community relations; community decision making in public health. Mrs. Morris

153. Public Health Microbiology.

Lecture, two hours; laboratory, six hours. Prerequisite: Bacteriology 100A, Chemistry 1A, 1B, 1C, 4A, 4B, 4C, 6A, 6B, 6C, Biology 1A, 1B, 1C or equivalents. Basic principles and laboratory procedures employed in the provision of sanitary elements to the community, including food and milk, water supply and waste disposal, soil, and environmental effluents. Mrs. Boak

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 determi-

nants 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 100 or 160, 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

160A. Introduction to Biostatistics.

Lecture, 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. The Staff

160B. Introduction to Biostatistics.

Lecture, 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. The Staff

160C. Introduction to Biostatistics.

Lecture, 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. The Staff

160D. Introduction to Biostatistics.

Lecture, 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.

Lecture, 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

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. The Staff

198. Special Courses. (½ or 1 course)

All fields of study. The Staff

199. Special Studies. (½ or 1 course)

Prerequisite: senior standing and consent of the instructor. All fields of study. The Staff

Graduate Courses

201A. Principles of Hospital Administration.

Prerequisite: consent of the instructor. Principles of the organization and administration of general hospitals and related facilities. Mr. Cooney

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. Cooney

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. Mr. Kisch

203. Maternal and Child Health.

(Formerly numbered 203A.) Study of the important health problems of children and of women of childbearing age and the programs developed to meet these problems. Studies include maternal health, out-of-wedlock and teenage pregnancy, perinatal mortality, child health supervision, school health services, handicapped children, etc. Mr. Wagner

205. Fundamentals of Medical and Hospital Organization. (½ course)

Prerequisite: three courses in sociology, economics, or political science. Philosophical and historical foundations of medical and hospital organization. Social needs (morbidity and disability) and resources (personnel and facilities) for service. Costs and utilization. Mr. Roemer and the Staff

206. Medical Care Systems in International Perspective. (½ course)

Prerequisite: consent of the instructor. Analysis of systems of medical care organization in countries of different stages of economic development and diverse political settings. Comparative approaches to ambulatory, institutional, and preventive services in the private, insurance, and governmental sectors. Mr. Roemer

206. Law, Social Change and Health Service Policy.

Prerequisite: course 200A and consent of the instructor. Critical legal issues affecting policy formulation for environmental, preventive and curative health service programs in light of changing social conditions. Emphasis will be given to political power, constitutional change, legislative policy and specific critical issues in health services, such as professional licensure and prepaid medical care. Mr. Forgotson

210. Advanced Environmental Health.

Prerequisite: course 110, or equivalent. Theoretical considerations and supporting data requisite for scientific establishment and justification of environmental health standards and requirements, with particular reference to related health factors. Mr. Senn

213A. Environmental Science. (½ course)

Prerequisite: course 112 or equivalent, or consent of the instructor. Advanced study of the relationship of the physical environment to man. The Staff

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

215. Infectious Diseases in Temperate Regions.

Prerequisite: course 147 or 246A, or consent of the instructor. Practice of public health related to communicable diseases in the region. Mr. Mathies

216A. Infectious Diseases in Tropical Regions.

Prerequisites: course 147 or 246A and Bacteriology 100A-100B or Medical Microbiology and Immunology 201A. Introduction to the literature on infectious diseases. Systematics, zoogeography, ecology, life zones, human behavior and disease, and the phenomena of infection and immunity in relation to causation and distribution of tropical diseases.

Mr. Work and the Staff

216B. Infectious Diseases in Tropical Regions.

(Formerly numbered 216A.) Lecture, two hours; laboratory, six hours. Prerequisite: course 216A or consent of the instructor. Lectures, demonstrations and laboratory exercises dealing with the natural history, epidemiology, diagnosis and prevention of viral, rickettsial, bacterial and fungal diseases encountered in tropical regions. Mr. Work and the Staff

216C. Infectious Diseases in Tropical Regions.

(Formerly numbered 216B.) Lecture, two hours; laboratory, six hours. Prerequisite: courses 216A-216B. Lectures, demonstrations and laboratory exercises dealing with the natural history, epidemiology, diagnosis and prevention of protozoal and metazoal parasitic diseases encountered in tropical regions.

Mr. Work and the Staff

217. Public Health Microbiology.

Lecture, two hours; laboratory, six hours. Prerequisite: Bacteriology 100A or equivalent. Advanced principles and laboratory procedures employed in solution of public health problems in control of infectious diseases with special emphasis on food, milk, water, waste disposal and contamination of soil, water and atmosphere. Mrs. Boak and the Staff

219. Arthropods of Medical Importance.

Lecture, two hours; laboratory, six hours. Prerequisite: consent of the instructor. The biology and identification of mites and insects of public health importance involved in the transmission and causation of human diseases. Mr. Barr and the Staff

220A-220B. Occupational Health Administration.

(½ course each)

Prerequisite: consent of the instructor. A detailed consideration of the philosophy, organization, principles and operation of various types of occupational health programs with a review of pertinent literature, and a discussion of record systems, communications and relationships with rehabilitation and insurance programs. Mr. Felton

221A-221B. Occupational Hygiene.

Lecture, two hours; laboratory, six hours. Prerequisite: consent of the instructor. Identification and measurement of chemical and physical factors in the occupational environment. Advanced analytical techniques, evaluation procedures, and on-site studies are undertaken in course 221B.

Mr. Bryan and the Staff

222A-222B. Physical and Chemical Environmental Stresses.

Prerequisite: courses 221A-221B, 227A-227B and 229. The mechanisms by which the many environmental stresses cause disease and disability, with particular emphasis upon the various types of toxic materials found in work establishments and the surrounding communities. Mr. Bryan, Mr. Pogrund

224A-224B. Environmental Toxicology. (½ course each)

Prerequisite: courses 221A-221B, 474A-474B or consent of the instructor. A discussion of the many toxic chemicals encountered in man's various work environments with emphasis upon the specific action of toxic chemicals upon cells, selective affinity of toxic materials for tissues, the toxic manifestations in man, diagnosis and treatment of environmental intoxications. Mr. Bryan

†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, referral, and emergency treatment of the emotionally disturbed industrial worker. Mr. Felton

‡226. Medical Aspects of Workmen's Compensation. (½ course)

Prerequisite: consent of the instructor. A comprehensive review of the Federal and State Workmen's Compensation legislation and its administration with special emphasis on the medical aspects, the physician's role and the relationship to rehabilitation. Mr. Felton

227A-227B. Environmental Physiology. (½ course each)

Prerequisite: consent of the instructor. Man's adaptive physiological and biochemical responses to interacting components of the physical and psychosocial environment. Total organism and cellular reaction to temperature, atmospheric gaseous and particle composition, electromagnetic spectra, noise, and to natural resource pollution of the biological food chain within a framework of stressful life situations. Mr. Pogrund

228A-228B. Occupational Diseases. (½ course each)

Prerequisite: courses 221A-221B, 474A-474B, or consent of the instructor. A detailed consideration of the etiology, pathology, clinical manifestations, diagnosis and treatment of selected occupational diseases with emphasis upon prevention. Mr. Bryan, Mr. Discher

229. Control of Health Hazards in the Work Environment. (½ course)

Prerequisite: 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

† Given alternate years only. Not to be given 1969-1970.

‡ Given alternate years only. To be given 1969-1970.

230. School Health Program Development and Evaluation.

Prerequisite: courses 130A-130B, 250. Program components, process, implementation, and evaluation. Mr. Johns

231. Advanced Public Health Microbiology.

Lecture, two hours; laboratory, six hours. Prerequisite: consent of the instructor. Advanced studies in mycobacteria, venereal diseases and enteric diseases including cholera. Mrs. Boak and the Staff

232. Change Determinants in Health-Related Behavior.

Prerequisite: minimum of four courses of behavioral science (one of which must be upper division), concurrent enrollment in course 149, or consent of the instructor. A unified behavioral science approach to the natural determinants of change in health-related behavior at the community, group and individual levels, as a foundation for planned change. The Staff

234. Advanced Community Health Education.

Prerequisite: consent of the instructor. Problems of social, economic, and cultural origin as they apply to sound community organization in the public health field. Examination of the health education activities of professional, voluntary, and official health agencies and analysis of their interrelationships. Mr. Steuart

235. Health Education in Clinical Settings.

Prerequisite: consent of the instructor. Analysis of the role, methods, and techniques of health education pertaining to hospitals, clinics, and patient education. Observation and discussion of clinical activities in the medical center in relation to the process of health education. Mr. Steuart

236. Assessment in Planned Behavior Change.

Prerequisites: courses 160A, 245A, 234 and/or consent of the instructor. Analysis of the theoretical foundations of evaluation, with special reference to the design and implementation of the evaluation component in planned behavior change. Mr. Cochran

237. Mental Health Services as Social Systems.

Social system theory as applied to the problems encountered in the development, operation and administration of mental health services. Mr. Waites

238. Ecology of Mental Health.

Prerequisite: consent of the instructor. The effects of physical, social, political and economic environment on the mental health of the members of a society. Mr. Fisher

239A. Statistical Methods in Clinical Trials and Medical Surveys. (½ course)

Prerequisite: courses 160A, 160B, graduate standing in public health or related field. Design of experiments and statistical analysis appropriate to clinical trials and medical surveys. Mrs. Clark

239B. Statistical Methods in Clinical Trials and Medical Surveys. (½ course)

Prerequisite: Mathematics 12A, 12B, 152A, 152B, and equivalent of six units of statistical methods; course 239A is recommended but not required.

Review and development of statistical methodology applicable to clinical trials and medical surveys.

Mrs. Clark

240A-240B-240C. Biostatistics.

Prerequisite: courses 160A, 160B, 160C; Mathematics 152A-152B, 12A or the equivalent. With the consent of the instructor, certain of the prerequisites may be taken concurrently. Quantitative methods in public health, medicine, and the biological sciences, statistical theory and application to problems in the design and analysis of experiments and surveys.

Mrs. Clark, Mr. Dixon

241A-241B. Linear Statistical Models.

Prerequisite: Mathematics 152A-152B, courses 160A, 160B, 160C or equivalent. Topics in algebra and statistics pertinent to the application of linear statistical models, especially in the life and medical sciences. These include matrix algebra, quadratic forms, the Gauss-Markov theorem, types of linear models (fixed and random components).

Mr. A&B, Mrs. Dunn

242A-242B-242C. Multivariate Biostatistics.

Prerequisite: course 241A or equivalent. Multivariate analysis as it is used in biological and medical situations. Topics from component analysis, factor analysis, discriminant analysis, analysis of dispersion, canonical analysis.

Mr. A&B, Mrs. Dunn

243A. Advanced Topics: Stochastic Processes.

(½ course)

Prerequisite: courses in upper division mathematics including statistics and probability. Stochastic processes applicable to medical and biological research.

Mrs. Dunn

243B. Advanced Topics: Mathematical Epidemiology.

(½ course)

Prerequisite: course 243A or equivalent and courses in upper division mathematics including statistics and probability. Mathematical theory of epidemiology with deterministic and stochastic models, and problems involved in applying the theory.

Mr. Massey

243C. Advanced Topics: Statistical Genetics.

(½ course)

Prerequisite: courses in upper division mathematics including statistics and probability. Introduction to statistical genetics.

Mrs. Dunn, Mr. Massey

245A. Research Methods in Community Health.

(Same as Anthropology 292.) Prerequisite: course 160A, and 147 or 246A, or consent of the instructor. Preparation for planning and conducting research projects; methods and techniques of community health research; basic skills in research methodology.

Mrs. Morris, Mr. Reeder

245B. Advanced Research Methods in Community Health. (½ course)

Prerequisite: course 245A or consent of the instructor. An advanced seminar for doctoral degree candidates preparing for a research career. Focus upon defining problems for research, analyzing research designs, and constructing research designs using a variety of research methods in community health studies, including discussion of student's own research plans.

Mr. Reeder, Mrs. Morris

246A. Principles of Epidemiology.

Lecture, 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, Mr. Discher

246B. Advanced Epidemiology.

Lecture, 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, Mr. Discher

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, Mr. Discher and the Staff

249A. Sociocultural Aspects of Health and Illness.

(½ course)

(Same as Sociology 249A.) Prerequisite: course 149 or graduate standing in sociology, anthropology or psychology and consent of the instructor. Sociocultural aspects of health and disease, health behavior and health organizations.

Mr. Reeder and the Staff

249B. Sociocultural Aspects of Health and Illness.

(½ course)

(Same as Sociology 249B.) Prerequisite: course 249A or consent of the instructor. Theoretical and conceptual approaches in the behavioral sciences contributing to an understanding of various health conditions and health behavior.

Mr. Reeder and the Staff

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 Seminar.

Prerequisite: courses 230 and 250 or consent of the instructor. Responsibility and authority for school health in educational institutions and relationships with other agencies and groups.

Mr. Johns

252A-252B. Seminar in Community Mental Health.

(½ course each)

Prerequisite: consent of the instructor. Study of community problems in mental disease, retardation, deviations and delinquency, and the social agencies that have been developed to meet them. Covers also such areas as marriage counseling, divorce, psychological problems of aging, and forensic psychiatry. Emphasis is placed on the role of research in public health psychiatry.

Mr. Wilner and the Staff

255. Current Problems with Arthropod-borne Viruses.

Lecture, two hours; laboratory, six hours. Prerequisite: courses 216B, 418; Medical Microbiology

and Immunology 201A, 201B or equivalent, consent of the instructor. For the specialist or advanced student presentation of specific aspects in the etiology, epidemiology, epizootiology, ecology, pathogenesis; clinical manifestations, diagnosis, and control of arthropod-borne virus diseases through lectures and laboratory exercises.

Mr. Work and the Staff

256A-256B-259C. 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. Neumann and the Staff

260. Public Health Aspects of Rehabilitation of the Disabled. (½ course)

The course will focus on the research background for rehabilitation activities in the health-caring professions, and on those current rehabilitation programs and issues of greatest concern to public health.

Mr. Katz

261A-261B. Seminar in Community Health Education. (½ course)

Prerequisite: consent of the instructor.

Mr. Steuart and the Staff

262. Current Problems with Mosquito Vectors.

Lecture, two hours; laboratory, six hours. Prerequisite: course 219; Zoology 121, 122; Bacteriology 100C, or consent of the instructor. Current topics of significance on mosquito biology as related to colonization, disease transmission and control.

Mr. Barr and the Staff

263. Seminar in Maternal and Child Health.

(½ course)

(Formerly numbered 203B.) Study of selected health problems of children and of women of child-bearing age and programs developed to meet these problems. Recent advances in medical science relevant to maternal and child health, new ideas in the administration of maternal and child health programs, and international trends in maternal and child health programs.

Mr. Wagner

264. Current Problems with Metazoal Parasites.

Lecture, two hours; laboratory, six hours. Prerequisite: consent of the instructor. Advanced study of the epidemiology, host-parasite relationships, diagnosis and control of helminths, with special emphasis on morphological and biological aspects of the parasites and research approaches to their study.

Mr. Ash

265A-265B. Seminar in Epidemiology.

(½ course each)

Prerequisite: course 147 or 246A, or consent of the instructor. Student presentations of pertinent material examining the methods and principles of epidemiology as applied to specific diseases.

Mr. Chapman, Mr. Discher

266A-266D. Seminar in Infectious and Tropical Diseases. (½ course each)

Current topics of significance relating to public health microbiology, infectious and tropical diseases. Will be rotated from year to year for seminar discussions.

Mr. Work and the Staff

269A-269B-269C. Seminar in Biostatistics.

(1/2 course each)

Prerequisite: consent of the instructor. The Staff

270. Basic Processes and Medical Aspects of**Aging. (1/2 course)**

Prerequisite: course 271A or consent of the instructor. Review of basic physiological, medical, and psychiatric aspects of human aging; review of factors in rehabilitation and reeducation of persons in middle and later years.

Mr. Goldman, Mr. Rocke

271A-271B. Behavioral Science Aspects of Human**Aging.**

(Formerly numbered 271A.) Prerequisite: three quarter courses or the equivalent of advanced study in anthropology, psychology or sociology; course 149 (may be concurrent); or consent of the instructor. Behavioral science aspects of the middle and later years, with emphasis upon sociocultural influences and individual differences.

Mr. Kalish, Mr. Wilner

272. Community Programs and Services for the**Elderly. (1/2 course)**

(Formerly numbered 271B.) Prerequisite: course 271A or consent of the instructor. An analysis of governmental, voluntary and proprietary programs for persons in middle and later life. Emphasis on principles of priority planning, effectiveness and evaluation of programs for the elderly.

Mr. Wilner

275A-275B-275C. Seminar in Environmental**Physiology.**

Prerequisite: courses 227A-227B. Expansion of selected topics in environmental physiology, such as aerospace and undersea environment, natural resource contamination, pesticides, medical geophysics, biometeorology, noise, and application of systems analysis to urban-land management. Student presentation of published papers or own research progress.

Mr. Poggrund

276A-276B. Introduction to Aerospace Medicine and Health. (1/2 course each)

Prerequisite: consent of the instructor. Introduction to current issues in research in, and the practice of, aerospace medicine and in health problems of aerospace personnel. A detailed consideration of the physiologic factors pertinent to the aerospace environment and instrumentation requirements for physiological monitoring.

The Staff

277A-277B. Seminar in the Physiology of Work.

Lecture, two hours; laboratory, two hours. Prerequisite: course 227A-227B. The quantification of human capacity to tolerate work under a variety of occupational situations; the establishment of criteria for the prediction of work capacity as a function of age, medical history, sensory load, physical environment, rehabilitative training, and task nature.

Mr. Poggrund

279. Seminar: Advanced Studies in Gerontology.**(1/2 course)**

(Formerly numbered 270B.) Prerequisite: course 271A-271B. A critical analysis of special problems in aging. May be repeated for credit.

Mr. Kalish, Mr. Wilner

280A-280B. Seminar in Environmental Health.**(1/2 course each)**

Prerequisite: consent of the instructor. The Staff

281A-281B. Policy Issues in Governmental Health**Programs Seminar. (1/2 course each)**

Prerequisite: course 200A, and consent of the instructor. Credit and grade to be given only upon completion of 281B. Policy issues affecting governmental health programs in the metropolitan-urban environment. Key legal, political, administrative, and social questions affecting the formulation and implementation of governmental health policy.

Mr. Forgotson

282A-282B. Community Mental Health. (1 course,**1/2 course)**

Prerequisite: three upper division quarter courses in psychology, sociology, anthropology or the equivalent. Research methods background desirable. Principles of community mental health programs. Study of socioenvironmental setting in which mental illness occurs, is detected and is treated. Discussion of prevention of mental illness, program effectiveness, and mental health components of public health programs.

Mr. Sanders, Mr. Wilner

283. Seminar in Behavioral Sciences and Health.**(1/2 course)**

Prerequisite: courses 249A-249B or consent of the instructor. Recent significant contributions of the behavioral sciences to the understanding of health and illness, with selected and varying topics each quarter. May be repeated for credit.

Mr. Reeder, Mr. Wilner and the Staff

290. Special Group Studies. (1/2 or 1 course)

Prerequisite: consent of the instructor. The Staff

290A. Community and Institutions.

290B. Environmental Health.

290C. Epidemiology of specific diseases.

290D. Hospital Administration.

290E. International Health.

290F. Maternal and Child Health.

290G. Medical Care Organization.

290H. Occupational Health.

290J. Community Mental Health.

290K. Community Health Education.

290L. Public Health Nutrition.

290M. Biostatistics.

290N. School Health Education.

290P. Gerontology.

290Q. Infectious and Tropical Diseases.

290R. Public Health Administration.

400. Field Studies in Public Health. (1/2 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. Cooney

402A-402B. Health Records: Planning, Analysis and Research.

Lecture, three hours; laboratory, three hours. Prerequisite: consent of the 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.

Mrs. Johnson

404. Area-wide Planning of Health Facilities.

(½ course)

(Formerly numbered 204.) Prerequisite: consent of the instructor. Examination of methods and experiences of planning health facilities and services for geographic areas, including determination of social needs and adjustment of resource allocations to them. Special reference is made to hospitals, nursing homes and related facilities.

Mr. Hopkins

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. Cooney

410. Organization of Ambulatory Health Services.

(½ course)

Prerequisite: course 202A or consent of the instructor. An analysis of organizations providing health services to ambulatory patients.

Mr. Du Bois

411. Clinical Studies in Occupational Medicine.

Prerequisite: limited to residents in the second year of the Occupational Medicine Residency Program. Clinical experience in medical residence in the areas of Pulmonary Disease, Dermatology, Physical Medicine and Rehabilitation and Occupational Medicine.

Mr. Bryan and the Staff

418. Functions of the Public Health Laboratory.

(½ course)

Lecture, one hour; laboratory, three hours. Prerequisite: consent of the instructor. The organization and administration of services of the public health laboratory will be studied. A lecture and a laboratory session once a week in basic principles and laboratory methods precede participation in procedures at Bureau of Public Health Laboratories, County of Los Angeles Health Department.

Mrs. Boak, Mr. Lawrence and the Staff

430A. Practicum in Health Education: Analysis of Community Structure. (½ course)

Prerequisite: concurrent enrollment in course 149 and course 233 or consent of the instructor. Study of various aspects of demography, social structure and culture of client communities and groups, and analysis of these data with special reference to their implications for health education.

Mr. Fisher, Mr. Frost

430B. Practicum in Health Education: Determination of Community-felt Needs. (½ course)

Prerequisite: courses 234 and 430A or consent of the instructor. Application of survey and ethno-

graphic methods for appraisal of health-related needs felt by client communities and groups; analysis of data as foundation for program design.

Mr. Fisher, Mr. Frost

430C. Practicum in Health Education: Program Design and Evaluation.

Prerequisite: course 430B or consent of the instructor. Planning and design of health education programs based on prior data analysis; development of evaluation procedures; integration of the respective roles of agencies and groups in the client communities.

Mr. Cochran, Mr. Frost, Mr. Waites

430D. Practicum in Health Education: Selection and Pretesting of Methods.

Prerequisite: courses 430C and 235 or consent of the instructor. Preliminary selection of health education methods based upon prior data analysis and relevant to selected behavioral change objectives; pretesting of methods with contrasting subcultural groups in the client communities; beginning of total program implementation.

Mr. Cochran, Mr. Frost, Mr. Waites

430E. Practicum in Health Education: Program Implementation.

Prerequisite: course 430D or consent of the instructor. Implementation of total health education program with special reference to the respective roles of the contrasting client communities in relation to professional services; application of evaluation procedures and development of recommended program changes.

Mr. Cochran, Mr. Frost, Mr. Stewart

434. Change States in the Normative Individual: Intervention for Mental Health.

Prerequisite: consent of the instructor. Analysis of the psychological, social, and cultural factors affecting change states in the normative individual and their implications for the design and implementation of community preventive mental health education.

Mr. Fisher

435. Mass Communications in Behavioral Change Processes.

Prerequisites: courses 235, 236 or consent of the instructor. Research, principles, and practices in health communication with special reference to the design and implementation of media and their role and effects in planned behavior change.

Mr. Cochran

444A-444B. Health Record Systems.

(Formerly numbered 244A-244B.) Prerequisite: 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.

Mrs. Johnson

450A-450B. Health Services Administration.

(Formerly numbered 200A-200B.) Prerequisite: consent of the instructor. Organized community efforts to improve health and cope with disease problems, including personal health services, environmental health measures, and health education.

Mr. Brealow

453A. Seminar in Medical Care Practice. (½ course)

(Formerly numbered 253A.) Prerequisite: enrollment in course 202A or 202B or consent of the in-

structor. Advanced study of administrative problems in the social and bureaucratic organization of systems of medical care. Mr. Kisch

453B. Seminar in Medical Care Research.
(½ course)

(Formerly numbered 253B.) Prerequisite: consent of the instructor. Analysis of findings of new research on critical problems of medical care organization in different social contexts. Mr. Hopkins

458. Seminar in Social Work in Public Health.
(½ course)

(Formerly numbered 258.) Prerequisite: consent of the instructor. Philosophy, methodology and research bases of social work in organized health service programs. Mr. Katz

467. Principles of Instrumentation for Public Health Laboratories.

Lecture, two hours; laboratory, six hours. Prerequisite: Chemistry 1A, 1B, 1C and 4A, 4B, 4C and consent of the instructor. To familiarize graduate students with medical, electronic, optical and biophysical research instruments currently used in public health laboratories. Lectures and discussions emphasizing principles of design and function. Laboratory work experience in application, operation and maintenance. Mr. Clark, Mr. Lewis

468. Seminar in Health Record Systems. (½ course)

(Formerly numbered 268.) Prerequisite: graduate standing. Advanced study of currently evolving health record systems with emphasis on issues, trends and methodology and their effect on services. Miss Johnson

***474A-474B. Seminar in Occupational Health.**
(½ course each)

(Formerly numbered 274A-274B.) Prerequisite: consent of the instructor. Intended primarily for industrial hygienists and physicians, a study of approximately 10 selected industries covering the materials, processes, techniques, working conditions, health problems, control measures, organization, and administration of health programs appropriate to those industries. Assignment of special problems with each industry studied. The Staff

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

Individual Study and Research

596. Directed Individual Study or Research.
(½ or 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 or 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 or 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 2 courses)

The Staff

Nutritional Sciences

Upper Division Courses

101. Food Analysis.

Lecture, three hours; laboratory, six hours. Prerequisite: Chemistry 1A, 1B, 1C. The application of quantitative methods to the chemical and microbiological assay of foods. Mrs. Alfin-Slater

111. Principles of Food and Nutrition. (½ course)

A survey of the principles of nutrition and their application in normal conditions of growth and development. Food habits in relation to nutritive requirements and health. (For non-majors.) Mrs. McGucken

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

114A. Metabolism. (½ course)

Prerequisite: courses 101, 113; organic chemistry, one year; Biology 1A-1B-1C. The metabolism of lipids, carbohydrates, and proteins; the role of hormones and enzymes in metabolism; acid-base regulation. Mrs. Alfin-Slater

114B. Analytical Methods of Metabolism.
(½ course)

Laboratory, six hours. Prerequisite: courses 101, 113; organic chemistry, one year; Biology 1A-1B-1C. Application of analytical procedures for determining the various constituents of blood and urine. Mr. Clark

115. Nutritional Requirements. (½ course)

Prerequisite: consent of the 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. (½ course)

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. McGucken

* Not to be given, 1969-1970.

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

199. Special Studies in Nutritional Science.

(½ to 1 course)

Prerequisite: senior standing and consent of the instructor. The Staff

Graduate Courses**211A-211B-211C. Advanced Nutrition.**

(½ course each)

(Formerly numbered 253, 254, 255.) 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 Swendseld

212A-212B. Laboratory Techniques in Nutrition.

(½ course each)

Laboratory, six hours. Prerequisite: consent of the instructor. Instrumentation and methodology including animal nutrition experiments. Mr. Clark

251. Seminar in Nutrition. (½ course)

Recent advances in the science of nutrition and in

the dietetic treatment of diseases. (May be repeated for credit.) Mrs. Alfin-Slater, Miss Swendseld

252. Nutritional Diagnosis (½ course)

Prerequisite: course 113, Chemistry 4C and 6C, or Biological Chemistry 101A-101B. Nutrition in the maintenance of health and treatment of disease. Problems in public health nutrition. May be repeated for credit. Mrs. Emerson

256. Nutritional Problems in Developing Areas. (½ course)

Prerequisite: consent of the instructor. Manifestations and dietary treatment of nutritional deficiencies. Mrs. Emerson

Individual Study and Research**596. Directed Individual Study or Research.**

(½ or 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 or 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 or 1 course)

One course (four quarter units) may be counted toward the required graduate course minimum or two courses may be counted if credit has not been received for course 596. The Nutrition Staff

599. Doctoral Dissertation Research.

(½ or 1 course)

The Nutrition Staff

RADIOLOGY

(Department Office, B5-117 Center for the Health Sciences)

Leslie R. Bennett, M.D., *Professor of Radiology.*Andrew H. Dowdy, M.D., D.Sc., *Professor of Radiology.*Moses A. Greenfield, Ph.D., *Professor of Radiology.*William N. Hanafee, M.D., *Professor of Radiology (Chairman of the Department).*Joseph Jorgens, M.D., *Professor of Radiology in Residence.*Raymond L. Libby, Ph.D., *Professor of Radiology.*Norman S. MacDonald, Ph.D., *Professor of Radiology and Biophysics in Residence.*Amos Norman, Ph.D., *Professor of Radiology.*Richard E. Ottoman, M.D., *Professor of Radiology and Anatomy.*Leo G. Rigler, M.D., *Professor of Radiology in Residence.*Justin J. Stein, M.D., *Professor of Radiology and Director, Cancer Research Institute.*George V. Taplin, M.D., *Professor of Radiology in Residence.*Daniel J. Torrance, M.D., *Professor of Radiology.*J. Michael Criley, M.D., *Associate Professor of Radiology and Cardiology in Residence.*Donald T. Desilets, M.D., *Associate Professor of Radiology.*DeLores E. Johnson, M.D., *Associate Professor of Radiology and Medicine in Residence.*Edward A. Langdon, M.D., *Associate Professor of Radiology.*

- Richard F. Riley, Ph.D., *Associate Professor of Radiology.*
 Milo M. Webber, M.D., *Associate Professor of Radiology.*
 W. Bruce Anderson, M.D., *Assistant Professor of Radiology in Residence.*
 James D. Collins, M.D., *Assistant Professor of Radiology.*
 Aaron G. Fingerhut, M.D., *Assistant Professor of Radiology and Biomathematics in Residence.*
 Harvey Frey, M.D., *Assistant Professor of Radiology in Residence.*
 Julius H. Grollman, M.D., *Assistant Professor of Radiology.*
 Michael T. Gyepes, M.D., *Assistant Professor of Radiology.*
 Michael Hayes, M.D., *Assistant Professor of Radiology in Residence.*
 Barbara M. Kadell-Wooton, 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 and Biophysics in Residence.*
 Vaughn C. Payne, M.D., *Assistant Professor of Radiology in Residence.*
 Norman D. Poe, M.D., *Assistant Professor of Radiology in Residence.*
 Peter Spiegler, Ph.D., *Assistant Professor of Radiology in Residence.*
 Richard J. Steckel, M.D., *Assistant Professor of Radiology.*
 Edgar L. Surprenant, M.D., *Assistant Professor of Radiology in Residence.*
 Marvin Weiner, M.D., *Assistant Professor of Radiology.*
 Gabriel H. Wilson, M.D., *Assistant Professor of Radiology.*
 Gerald Hassan, M.D., *Instructor of Radiology in Residence.*
 Gerald B. Iba, M.D., *Instructor of Radiology in Residence.*
 Rabbe R. Lindstrom, M.D., *Instructor of Radiology in Residence.*
 Peter L. Tobin, M.D., *Instructor of Radiology in Residence.*



- Marvin Abrams, M.D., *Assistant Clinical Professor of Radiology.*
 William E. Adolph, M.D., *Assistant Clinical Professor of Radiology.*
 Sol R. Baker, M.D., *Associate Clinical Professor of Radiology.*
 Edwin N. Barnum, M.D., *Clinical Instructor in Radiology.*
 Larry P. Bilodeau, *Assistant Clinical Professor of Radiology.*
 Harry A. Bishop, M.D., *Assistant Clinical Professor of Radiology.*
 Louis J. Bonann, M.D., *Assistant Clinical Professor of Radiology.*
 John D. Buckley, M.D., *Clinical Instructor in Radiology.*
 Albert B. Cole, M.D., *Clinical Instructor in Radiology.*
 Robert L. Cook, M.D., *Clinical Instructor in Radiology.*
 James C. Davis, M.D., *Associate Clinical Professor of Radiology.*
 Harold L. Endlich, M.D., *Assistant Clinical Professor of Radiology.*
 Karl H. Falkenbach, M.D., *Assistant Clinical Professor of Radiology.*
 Bernard H. Feder, *Clinical Professor of Radiology.*
 E. W. L. Fletcher, M.D., *Visiting Assistant Professor of Radiology.*
 Darwood B. Hance, M.D., *Assistant Clinical Professor of Radiology.*
 Richard B. Hanchett, M.D., *Assistant Clinical Professor of Radiology.*
 Oscar Harvey, M.D., *Assistant Clinical Professor of Radiology.*
 Maurice M. Haskell, M.D., *Assistant Clinical Professor of Radiology.*
 Samuel B. Haveson, M.D., *Assistant Clinical Professor of Radiology.*
 John W. Horns, M.D., *Assistant Clinical Professor of Radiology.*
 Joe W. Howland, M.D., *Lecturer in Radiology.*
 Margaret A. Ingram, M.D., *Clinical Instructor in Radiology.*
 John J. Jares, M.D., *Associate Clinical Professor of Radiology.*
 William C. Johnson, M.D., *Assistant Clinical Professor of Radiology.*
 Tom A. Kendig, M.D., *Assistant Clinical Professor of Radiology.*

Ian Langbein, M.D., *Visiting Assistant Professor of Radiology.*
 Robert A. Ledner, M.D., *Assistant Clinical Professor of Radiology.*
 Kenneth W. Lewin, M.D., *Assistant Clinical Professor of Radiology.*
 Joseph F. Linsman, M.D., *Associate Clinical Professor of Radiology.*
 Paul S. Mahoney, M.D., *Assistant Clinical Professor of Radiology.*
 Harry A. Morewitz, Ph.D., *Lecturer in Radiology.*
 Jasper E. Morgan, Ph.D., *Clinical Professor of Radiology.*
 Ronald J. O'Reilly, M.D., *Clinical Instructor in Radiology.*
 Michael W. Ormiston, M.D., *Clinical Instructor in Radiology.*
 Joseph A. Parks, M.D., *Assistant Clinical Professor of Radiology.*
 Harry Pearlman, Ph.D., *Associate Clinical Professor of Radiology.*
 Hyman Peck, M.D., *Assistant Clinical Professor of Radiology.*
 William L. Pogue, M.D., *Assistant Clinical Professor of Radiology.*
 David I. Rabinov, M.D., *Assistant Clinical Professor of Radiology.*
 Burton I. Rein, M.D., *Assistant Clinical Professor of Radiology.*
 Josef Rosch, M.D., *Visiting Professor of Radiology.*
 Joseph E. Scallon, M.D., *Assistant Clinical Professor of Radiology.*
 Arthur F. Schanche, M.D., *Assistant Clinical Professor of Radiology.*
 Alfred L. Schmitz, M.D., *Associate Clinical Professor of Radiology.*
 Daniel H. Simmons, M.D., *Professor of Medicine.*
 Alan B. Skorneck, M.D., *Assistant Clinical Professor of Radiology.*
 Richard L. Smith, M.D., *Clinical Professor of Radiology.*
 Harry T. Vanley, M.D., *Clinical Instructor in Radiology.*
 Henry S. Williams, M.D., *Clinical Instructor in Radiology.*
 Alan C. Zheutlin, 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, radiation chemistry, and nuclear medicine 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-202D. Applications of Medical Physics to Clinical Problems.

Laboratory four hours. Applications to problems in nuclear medicine, diagnostic radiology and radiation therapy.

Mr. Greenfield

204. Introductory Radiation Biology.

Lecture, three hours. Effects of ionizing radiation on chemical and biological systems.

Mr. Riley

206A-206B-206C. Radiological Physics.

(½ course each)

Lecture, one hour. Production and properties of X-rays, interaction of X-rays with a scattering medium, radium and radium dosage, radiation protection, clinical applications.

Mr. Greenfield

207A-207B-207C. Dosimetry and Health Physics.

Lecture, two hours. Prerequisite: consent of the instructor. The dosimetry of ionizing radiations, the interpretation of physical measurements and dosimetric units, and the philosophy of protection design.

Mr. Morewitz

208A-208B. Medical Physics Laboratory.

(½ 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.

(½ course)

Prerequisite: consent of the instructor. Laboratory, four hours. Techniques for quantitative studies on mammalian cells in vitro with applications to radiation biology, genetics and virology.

Mr. Norman

260A-260B-260C. Seminar in Medical Physics.

(½ course each)

(Formerly numbered 260A-260B and 205.) One hour. Joint critical study by students and instructors of the fields of organized knowledge pertaining to radiology. Periodic contributions are made by visiting scientists. Research in progress is discussed.

Mr. Norman

266A-266B-266C. Seminar in Nuclear Medicine.

(½ course each)

(Formerly numbered 260A-260B.) One hour. Topics of current interest in nuclear medicine. Seminar intended for physicians, radiation physicists, and graduate students.

Mr. Webber, Mr. MacDonald

Professional Courses for Residency Training in Radiology

403. Roentgen Diagnostic Conference.

(Formerly numbered 403A-403B.) Presentation of cases to illustrate general problems in X-ray diagnosis.

Mr. Rigler and the Staff

404A-404B-404C. Radiation Therapy Conference.

(½ course each)

Presentation of selected current therapeutic problem cases of general interest.

Mr. Stein and the Staff

405A-405B-405C. Consultative Tumor Board.

(½ course each)

Presentation of tumor cases for diagnosis and appropriate therapy with discussion of differential diagnosis and combinations of theory such as surgery, X-ray, radium therapy, and isotopes.

Mr. Stein

413. Radiation Safety. (½ course)

This course is designed to instruct residents, technicians and others in methods of safely handling and confining radioactive materials.

Mr. Libby and the Staff

439. Forensic Radiology, History and Ethics.

(½ course)

The history of radiology up to the present. Forensic and ethical problems in radiology. Special attention will be given to the radiologist's relations with his patient, his colleagues, and the state.

Mr. Rigler

440A-440B-440C. Radiology Conference.

(½ course each)

Conducted for noncredit for third-year medical students and radiology residents. The diagnosis, treatment and complications of the radiologic treatment of cancer, particularly of the head and neck are considered. Special emphasis is placed upon the fundamental principles involved in the clinical applications of ionizing and penetrating radiation.

Mr. Stein

452. Radiation Therapy. (½ course)

A survey of basic principles of radiobiology, with special attention to reactions of neoplastic and inflammatory processes of ionizing radiation of various types. The distribution and summation of radiation effects and their relationship to the growth of cancer will be intensively studied. The systematic effects of radiation, radiation sickness, and the pharmacological problems posed will be of particular interest.

Mr. Stein

454A-454D. Roentgenoscopy. (½ course each)

Technique and practical application of the fluoroscopic method to the roentgen diagnosis of diseases of thoracic and abdominal organs including image amplification, cine-radiography and television recording.
Mr. Weimer, Mr. Steckel

456A-456D. Applied Roentgen Diagnosis.

(Formerly numbered 456.) Practical procedures in the roentgen examination of patients including X-ray technique, film analysis and interpretation.

Mr. Hanafee and the Staff

458A-458D. Pediatric Radiology.

(Formerly numbered 458A-458B.) Practical application of roentgenoscopy, angiography and other techniques to the diagnosis of diseases of children including roentgen film interpretation.

Mr. Desilets and the Staff

460A-460D. Roentgen Diagnostic Methods and Signs. (½ course each)

(Formerly numbered 460A-460H.) Lectures and demonstrations of the basic elements of roentgen diagnosis of the entire anatomy. Included are methodology, techniques and specific signs in roentgen diagnosis.

Mr. Rigler and the Staff

461A-461D. Neuroradiology Procedures.

(½ course each)

(Formerly numbered 460A-460H.) Practical applications of roentgen techniques, diagnostic procedures and film interpretation of the diseases of the brain and nervous system.

Mr. Wilson and the Staff

462. Roentgen-Pathology Correlations. (½ course)

(Formerly numbered 462A-462B.) Analysis of the relationship of roentgen findings to the pathology exhibited in surgical or autopsy specimens will be presented. The pathogenesis of disease processes as exhibited in the roentgenogram will be reviewed. The identification of factors of error in roentgen diagnosis will be made.

Mr. Rigler and the Staff

463. Neuroradiology Conference. (½ course)

(Formerly numbered 460A-460H.) Case presentations to illustrate problems in the roentgen diagnosis of neurological abnormalities.

Mr. Wilson and the Staff

464A-464B-464C. Roentgen Diagnosis of Cardiovascular Diseases. (½ course each)

(Formerly numbered 460A-460H.) Practical application of roentgenoscopy, including image amplification, cine-radiography and television techniques to the diagnosis of diseases of the heart and blood vessels. Methods of cardiac and vascular catheterization, angiocardiography and angiography will be applied.

Mr. Grollman and the Staff

465. Roentgen Diagnosis in Otolaryngology.

(½ course)

(Formerly numbered 460A-460H.) Roentgen techniques in the diagnosis and management of diseases of the upper respiratory regions with special emphasis on the temporal bone and larynx.

Mr. Hanafee and the Staff

466. Roentgen Diagnosis in Body Joint Abnormality. (½ course)

(Formerly numbered 460A-460H.) Roentgen techniques in joint arthrography in normal and abnormal bony articulations.

Mr. Collins and the Staff

467. Roentgen Diagnosis of the Urinary Tract.

(½ course)

(Formerly numbered 460A-460H.) Practical application of roentgen methods and film interpretation to diseases of the genitourinary tract.

Mr. Lecky and the Staff

468. Neuroradiology—Diagnostic Methods and Film Interpretation. (½ course)

(Formerly numbered 460A-460H.) A comprehensive review of neuroanatomy and neuroradiologic techniques.

Mr. Schmitz

469. Regional Roentgen Diagnosis. (½ course)

(Formerly numbered 460A-460H.) A comprehensive review of roentgen anatomy of those regions not covered in courses 468 and 470.

Mr. Mahoney, Mr. O'Reilly, Mr. Zheutlin

470. Roentgen Diagnosis of Diseases of the Gastrointestinal Tract. (½ course)

(Formerly numbered 460A-460H.) A comprehensive review of roentgen diagnosis in the gastrointestinal tract.

Mr. Ledner and Mr. Linsman

472. Roentgen Diagnostic Seminar. (½ course)

(Formerly numbered 460A-460H.) Presentation of problems in roentgen diagnosis and research programs.

Mr. Rigler and the Staff

474. Conference on Diseases of the Chest.

(½ course)

(Formerly numbered 460A-460H.) Case presentations in the diagnosis, medical and surgical management of diseases of the lungs and mediastinum with emphasis on the role of roentgen diagnosis.

Mr. Rigler, Mr. Simmons

476. Arteriography Conference. (½ course)

The interesting arteriographic studies performed during the previous week are selected by the faculty and house staff performing the procedures and reviewed at this weekly session.

Mr. Wilson

477. Roentgen Diagnosis in Ophthalmology.

Lecture, five hours. Radiologic diagnostic methods for use in ophthalmology will include foreign body localization, bony orbital changes, orbital arteriography, and orbital venography.

Mr. Hanafee

478. Laminography of the Mastoids.

Lecture five hours. Principles of laminography, details of technique, and application of the diagnostic technique to various diseases. Emphasis on tumors and inflammatory diseases of the temporal bone.

Mr. W. Hanafee

Individual Study and Research**596. Research in Medical Physics. (½ to 1 course)**

(Formerly numbered 297.) 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.

May be taken for one quarter only, on a "Satisfactory" (S) or "Unsatisfactory" (U) basis, and is not creditable for the M.S. degree.

The Staff

598. Research for the Preparation of the Master's Thesis.

(Formerly numbered 297.) May be taken any number of times on a "Satisfactory" (S) or "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.) Prerequisite: advancement to candidacy. Research for and preparation of the doctoral dissertation. May be taken any number of times on a "Satisfactory" (S) or "Unsatisfactory" (U) basis. The Staff

Residency Training and Postdoctoral Graduate Work

A four-year residency training program in straight diagnosis or combined diagnosis and therapy is offered in the Department of

Radiology. A three-year residency training program in therapeutic radiology is offered. These programs lead to a certificate awarded by the School of Medicine and the Department of Radiology. Requests for information concerning prerequisites and application for appointment may be addressed to the office of the Chairman, Department of Radiology, University of California, Los Angeles, California 90024.

Research

Investigative activities are encouraged throughout the Department, and other departments are encouraged to make use of the personnel and facilities of the Department of Radiology in research pertaining to radiology.

ROMANCE LANGUAGES AND LITERATURES

Candidates for the degree of Doctor of Philosophy in Romance languages and literatures will be accepted with major fields in the departments of French, Italian, or Spanish and Portuguese. The requirements listed below should be regarded as minimum requirements; guidance committees may supplement those listed.

Minimum Prerequisites for Admission to the Program

1. An M.A. degree at the University of California, or the passing of the Qualifying Examination, Part I, in one of the three participating departments and the recommendation of his Department to enter the program. The candidate with an M.A. from another university can be admitted provisionally, and will be confirmed after two quarters of satisfactory work in the program.

2. At the time of admission, the candidate must have demonstrated a reading knowledge of at least one of the two Romance languages chosen as minors. A reading knowledge of a second language chosen as a minor should be acquired, at the latest, during the first year of studies. To enter the program with emphasis on philology, the student must have Latin 3 or the equivalent.

Minimum Requirements for the Degree

1. The completion of a program of study which will satisfy the general prescriptions of the "Doctor of Philosophy Degree," as set forth on page 143 of this bulletin.

2. Within the general field of Romance Languages and Literatures, specialization is required in either literature or philology.

3. *The program with emphasis on literature* will consist of one major field, and three minor fields of which two, together with the major field, must be concentrated in one period of literature.

4. *The program with emphasis on philology* will comprise one major field, and three minor fields of which at least two must be other Romance languages. The major field will normally coincide with the body of studies represented by the masters degree held by the student.

5. During the first year of graduate study, the student entering the program will be required to pass the standard reading examination in German. Substitution of another language for German will be accepted, if approved by the Guidance Committee, only in the case of students entering the program with emphasis on literature.

RUSSIAN AND EAST EUROPEAN AREA STUDIES

The Certificate Program in Russian and East European Studies is intended to provide a broad interdisciplinary area background to supplement the Master of Arts degree in a discipline. It is for those grad-

uate 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 teach-

ing, 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 certification 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 Euro-

pean 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 Bunche Hall)

Henrik Birnbaum, Ph.D., *Professor of Slavic Languages.*

Thomas Eekman, Ph.D., *Professor of Slavic Languages (Chairman of the Department).*

Kenneth E. Harper, Ph.D., *Professor of Slavic Languages (Vice-Chairman of the Department).*

Alexander V. Isačenko, 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 S. Flier, Ph.D., *Assistant Professor of Slavic Languages.*
 Zlata Meyerstein, Ph.D., *Assistant Professor of Slavic Languages.*
 Michael Shapiro, Ph.D., *Assistant Professor of Slavic Languages.*



Edward Denzler, M.A., *Lecturer in Slavic Languages.*
 Margarita Gisetti, M.A., *Lecturer in Slavic Languages.*
 Peter C. L. Hodgson, M.A., *Acting Assistant Professor of Slavic Languages.*
 *Milka Ivić, Ph.D., *Visiting Professor of Slavic Languages.*
 *Oavle Ivić, Ph.D., *Visiting Professor of Slavic Languages.*
 Halyna Karpiw, Diploma, *Lecturer in Slavic Languages.*
 *Nils A. Nilsson, Ph.D., *Visiting Professor of Slavic Languages.*
 Rochelle Stone, M.A., *Lecturer in Slavic Languages.*
 Reuel Wilson, M.A., *Acting Assistant Professor of Slavic Languages.*

Preparation for the Major

Required courses: Russian 11, 12, 13, 14, 15, 16, Slavic 99. Note: courses Russian 119 and 120A-120B may be taken in the sophomore year.

The Major

Required courses: Russian 101A-101B-101C, 119, 120A-120B, 121, 122, 123 and five courses chosen from Russian 130A-130B, 140A-140B-140C-140D, 150, Polish 152A-152B, Czech 155A-155B, Serbocroatian 154A-154B. Note: not more than one eight-unit course in Polish, Czech or Yugoslav literature may apply toward the major.

Students intending to continue into graduate school should note that several graduate courses (numbered below 220) may be taken by qualified seniors with permission of the instructor and the graduate adviser.

Admission to Graduate Status

The completion of the undergraduate major or its equivalent is required. Students entering from other institutions will be asked to make up any deficiencies before being admitted to most graduate courses and may be required to take a placement examination in Russian language and literature before enrolling in courses.

Requirements for the Master's Degree

1. For the general requirements, see pages 139-143. The Department follows the Comprehensive Examination Plan. The M.A. is

weighted towards either Linguistics or Literature, but all candidates are expected to have a sound general knowledge of both Russian linguistics and Russian literary history.

2. Application for advancement to candidacy may be made when the student has passed the reading examination in French or German. This examination must be passed no later than the end of the quarter preceding the quarter in which the candidate expects to take his examinations.

3. *Course requirements.* Required of all M.A. candidates: Russian 102A-102B-102C, 200, 204, 212, 213 and History 206 (Russian Intellectual History). In addition, candidates for the M.A. (Linguistics) must take Slavic 201 and 202, and candidates for the M.A. (Literature) must take Russian 211 and one other literature course in the Department. Note: most of the courses required for the M.A. are open to qualified seniors with the permission of the instructor and the graduate adviser.

4. A written examination, based on course work and the departmental reading list, will cover either (a) Linguistics, including a thorough knowledge of Russian phonology and grammar and an acquaintance with Comparative Slavic Linguistics, Old Church Slavic, and the history of the Russian literary language; or (b) Literature, including an acquaintance with the entire history of Russian literature from its origins to the present and a thorough knowledge of the major develop-

* In residence fall quarter only, 1969-1970.

* In residence winter quarter only, 1969-1970.

ments and figures of the nineteenth and early twentieth centuries.

5. A final oral examination will test the student in the fields of his major interest and on his general background. Students who have not done well in Russian 200 will be examined in Russian linguistics at the M.A. examinations. The oral examination may be conducted partly in Russian.

6. *Statute of limitations.* The Department does not encourage part-time or non-resident M.A. candidates. The M.A. examinations must be taken within two calendar years from the time of admission to the Graduate Division (time spent in removing deficiencies, to a maximum of one year, does not count toward this two-year period).

7. Students who fail either the written or the oral examination may retake it once, not later than one calendar year after the first attempt.

8. A grade of "High Pass" on the M.A. examinations is one of the conditions for admission to the Department's doctoral program (see below). M.A. candidates who intend to continue toward the Ph.D. should note that courses numbered 220-239, which are required for the Ph.D., may be taken before completion of the M.A.

Requirements for the Doctor's Degree

1. For the general requirements, see pages 143-145. The Department's program envisages specialization in either Linguistics or Literature, with Russian as the principal language and literature respectively. By special arrangement, students can specialize in a language or literature other than Russian.

2. *Admission to the doctoral program.* Students may make formal application to the Department for admission to the doctoral program when they have: (1) passed the UCLA M.A. examinations with a grade of "High Pass"; (2) passed the reading examinations in both German and French; (3) taken one year (or the equivalent) of a second Slavic language. Students who received a grade lower than "High Pass" on the UCLA M.A. examinations, and entering students with an M.A. from other institutions, must (re)take the M.A. examinations within one year as a doctoral screening examination, success in which is required for admission to the doctoral program.

3. *Course requirements.* For candidates in Linguistics: Slavic 222, 223, 224, 240, 241A, 242A-242B, Russian 241, 242, 243A-

243B. For candidates in Literature: Slavic 201, 230A-230B, 250, Russian 251. All candidates, regardless of specialization, are required to take at least one seminar. Recommended preparation: candidates specializing in Linguistics are advised to take or audit courses 100, 110, 120, 150 in the Department of Linguistics; candidates specializing in Literature are advised to acquire a sound general knowledge of the literatures of England, France and Germany in the eighteenth and nineteenth centuries.

4. *Qualifying examinations.* The nature and scope of a series of written qualifying examinations will be prescribed for each candidate. All candidates are expected to have a sound general knowledge of both Slavic philology and Russian literary history, at least equivalent to that required for the M.A. at UCLA. In addition, candidates specializing in Linguistics and Literature, respectively, will be expected to demonstrate a more detailed mastery of either: (a) Linguistics, including Old Church Slavic, Comparative Slavic Linguistics, and the structure, history and dialectology of one major and two minor Slavic languages (one from each of the Eastern, Western and Southern groups), which presupposes a reading knowledge equivalent to one year's study of a third Slavic language (in addition to Russian and the second language presented for admission to the doctoral program); or (b) Literature, including the entire body of Russian literature from its origins to the present, and a basic knowledge of comparative Slavic literary history, which presupposes a knowledge of the major figures and developments in the literature of at least one Slavic country other than Russia.

5. Students who fail either the written or the oral qualifying examination may retake it once, not later than one calendar year after the first attempt.

6. *Statute of limitations.* The qualifying examinations must be taken within two years of the date of admission to the doctoral program. The dissertation must be completed within three calendar years of the date when the qualifying examinations are passed.

Slavic

99. Slavic Peoples and Cultures.

Four hours weekly.

Mr. Birnbaum, Mr. Isačenko, Mr. Worth

199. Special Studies.

No scheduled hours. Prerequisite: senior standing or consent of instructor. The Staff

Graduate Linguistic Courses

201. Introduction to Old Church Slavic.

(Formerly numbered 220A.) Three hours weekly. Introduction to phonology and grammar; readings. Required for the M.A. (Linguistics) and Ph.D. (Linguistics, Literature). Mr. Birnbaum, Mrs. Worth

202. Introduction to Comparative Slavic Linguistics.

(Formerly numbered 222A.) Three hours weekly. Introduction to the comparative phonology and grammar of the Slavic languages. Required for the M.A. (Linguistics) and Ph.D. (Linguistics).

Mr. Birnbaum, Mr. Worth

222. Introduction to Western Slavic Languages.

(Formerly numbered 226A.) Three hours weekly. Prerequisite: course 202. Recommended preparation: Czech 102A-102B-102C or Polish 102A-102B-102C. Introduction to the structure and history of the Western Slavic languages. Required for the Ph.D. (Linguistics). Mr. Birnbaum, Mrs. Meyerstein

223. Introduction to Southern Slavic Languages.

(Formerly numbered 228A.) Three hours weekly. Prerequisite: course 202. Recommended preparation: Serbocroatian 103A-103B-103C. Introduction to the structure and history of the Southern Slavic languages. Required for the Ph.D. (Linguistics).

Mr. Albin

224. Introduction to Ukrainian and Belorussian.

(Formerly numbered 227C.) Three hours weekly. Prerequisite: course 202. Introduction to the history and structure of Ukrainian and Belorussian as contrasted to Russian. Required for the Ph.D. (Linguistics).

Mrs. Worth

225. Typology of Slavic Languages.

(Formerly numbered 222C and same as Linguistics 225C.) Three hours weekly. Introduction to structural typology of Slavic languages; comparison with non-Slavic languages.

Mr. Birnbaum, Mr. Isačenko, Mr. Worth

240. Bibliography and Research Methods (Linguistics).

(Formerly numbered 201.) Three hours weekly. Classes and individual consultation. Required for the Ph.D. (Linguistics). Recommended especially for students who have decided on the general area of their dissertation topic.

The Staff

241A-241B. Advanced Old Church Slavic.

(Formerly numbered 220B.) Three hours weekly. Prerequisite: course 201. 241A. Advanced readings in canonical texts. 241B. East, West and South Slavic recensions of Church Slavic. Course 241A only is required for the Ph.D. (Linguistics).

Mr. Birnbaum, Mrs. Worth

242A-242B. Comparative Slavic Linguistics.

(Formerly numbered 222A-222B.) Three hours weekly. Prerequisite: course 202. 242A. Indo-European to Common Slavic. 242B. Development of Common Slavic and divergence into East, West, and South Slavic groups. Required for the Ph.D. (Linguistics).

Mr. Birnbaum, Mr. Isačenko

261. Slavic Paleography.

(Formerly numbered 220C.) Three hours weekly. Prerequisite: course 201. Introduction to Slavic paleography: inscriptions, birchbark letters, Glagolitic and Cyrillic texts.

Mr. Birnbaum

262A-262B. Western Slavic Linguistics.

(Formerly numbered 226B.) Three hours weekly. Prerequisite: course 222. 262A. Lekhitic. 262B. Czechoslovak, Sorbian Mr. Birnbaum, Mr. Worth

263A-263B. Southern Slavic Linguistics.

(Formerly numbered 228B.) Three hours weekly. Prerequisite: course 223. 263A. Serbocroatian and Slovene. 263B. Bulgarian and Macedonian.

Mr. Albin

261. Seminar in Slavic Linguistics.

(Formerly numbered 260.) Three hours weekly. Selected topics in comparative and historical Slavic linguistics. May be repeated for credit with consent of the instructor and graduate adviser.

Mr. Birnbaum, Mr. Isačenko, Mrs. Worth

262. Seminar in Structural Analysis.

(Formerly numbered 271.) Three hours weekly. Selected topics. May be repeated for credit with consent of the instructor and graduate adviser.

Mr. Isačenko, Mr. Shapiro, Mr. Worth

Graduate Literature Courses

230A-230B. Comparative Slavic Literature.

Three hours weekly. Recommended preparation: upper division courses in Czech, Polish, Russian and Yugoslav literatures. 230A. From the Middle Ages through Classicism. 230B. From Romanticism through the interwar period. Required for the Ph.D. (Literature).

Mr. Birnbaum, Mr. Eekman

250. Bibliography and Research Methods (Literature).

(Formerly numbered 201.) Three hours weekly. Classes and individual consultations. Required for the Ph.D. (Literature). Recommended especially for students who have decided on the general area of their dissertation topics.

The Staff

290. Seminar in Comparative Slavic Literature.

(Formerly numbered 230C.) Three hours weekly. Prerequisites: courses 230A-230B. Selected topics. May be repeated for credit with consent of the instructor and the graduate adviser.

Mr. Eekman

295. Seminar in Literary Analysis.

(Formerly numbered 265.) Three hours weekly. Selected topics.

Mr. Eekman, Mr. Harper, Mr. Markov

Individual Study and Research

597. Preparation for the Comprehensive Examination for the Master's Degree or the Qualifying Examination for the Ph.D. (½ to 2 courses)

Prerequisite: consent of the instructor and the graduate adviser.

The Staff

599. Research for Dissertation. (½ to 2 courses)

The Staff

Russian

Language Courses

Courses 1 through 6 are designed for non-majors; courses 11 through 16 are required of majors.

1. Elementary Russian.

Five hours weekly plus one hour per week in laboratory.
Mr. Denzler in charge

16. Elementary Russian. (No credit)

Five hours weekly. Reading course for graduate students.
Mr. Denzler in charge

2. Elementary Russian.

Five hours weekly plus one hour per week in laboratory.
Mr. Denzler in charge

26. Elementary Russian. (No credit)

Five hours weekly. Reading course for graduate students.
Mr. Denzler in charge

3. Elementary Russian.

Five hours weekly plus one hour per week in laboratory.
Mr. Denzler in charge

4. Intermediate Russian.

Five hours weekly plus one hour per week in laboratory.
Mr. Denzler in charge

5. Intermediate Russian.

Five hours weekly plus one hour per week in laboratory.
Mr. Denzler in charge

6. Intermediate Russian.

Five hours weekly plus one hour per week in laboratory.
Mr. Denzler in charge

11. Elementary Russian (Intensive). (1½ courses)

Nine hours weekly: five conversation drills, two grammar lectures, two laboratory sessions.
Mr. Hodgson in charge

12. Elementary Russian (Intensive). (1½ courses)

Nine hours weekly: five conversation drills, two grammar lectures, two laboratory sessions.
Mr. Hodgson in charge

13. Elementary Russian (Intensive). (1½ courses)

Nine hours weekly: five conversation drills, two grammar lectures, two laboratory sessions.
Mr. Hodgson in charge

14. Intermediate Russian (Intensive). (1½ courses)

Nine hours weekly: five conversation drills, three grammar lectures, one laboratory session.
Mr. Flier in charge

15. Intermediate Russian (Intensive). (1½ courses)

Nine hours weekly: five conversation drills, three grammar lectures, one laboratory session.
Mr. Flier in charge

16. Intermediate Russian (Intensive). (1½ courses)

Nine hours weekly: five conversation drills, three grammar lectures, one laboratory session.
Mr. Flier in charge

101A-101B-101C. Advanced Russian.

Prerequisite: course 16. Three hours of reading and composition; two hours of conversation drill.
Mr. Worth in charge

102A-102B-102C. Russian Composition and Stylistics.

Prerequisite: course 101C. Emphasis on vocabulary building and writing fluency; reading and linguistic *explication de texte* of largely non-fictional material coordinated with English-Russian translation.
Mr. Shapiro in charge

121. Russian Phonology. (½ course)

Prerequisite: course 16. Introduction to articulatory phonetics, phonemics, morphophonemics.
Mr. Flier, Mr. Shapiro, Mr. Worth

122. Russian Morphology. (½ course)

Prerequisite: course 16. Introduction to the flexional and derivational morphology of Russian.
Mr. Flier, Mr. Shapiro, Mr. Worth

123. Historical Commentary to Modern Russian.

(½ course)

Prerequisite: course 16. Historical explanation of the phonological and morphological anomalies of modern Russian.
Mr. Isačenko, Mrs. Worth

Literature Courses**119. Survey of Russian Literature to Pushkin.**

(½ course)

Prerequisite: upper division standing. (Slavic majors should take this course during their sophomore year.) Lectures and readings in English.
Mr. Harper, Mr. Hodgson, Mr. Wilson

120A-120B. Survey of Russian Literature.

Prerequisite: upper division standing. (Slavic majors should take this course during their sophomore year.) Lectures and readings in English. 120A. Nineteenth Century. 120B. Twentieth Century.
Mr. Eekman, Mr. Harper, Mr. Hodgson

124. Dostoevsky.

(Formerly numbered 144.) Four hours weekly. A study of Dostoevsky's principal novels and short stories. Lectures and readings in English.
Mr. Harper, Mr. Hodgson

125. Tolstoy.

(Formerly numbered 145.) Four hours weekly. A study of Tolstoy's principal novels, short stories, and plays. Lectures and readings in English. Mr. Harper

130A-130B. Russian Poetry.

Prerequisite: course 16. Lectures and readings in Russian. 130A. From mid-eighteenth century through precursors of symbolism. 130B. From late nineteenth century through contemporary Soviet verse.
Mr. Markov

140A-140D. Russian Prose.

Four hours weekly. Prerequisite: course 16. Lectures and reading in Russian. 140A. Major writers from Karamzin to Turgenev; 140B. Dostoevsky to Gorky; 140C. Contemporary writers; 140D. Advanced readings in Russian prose.
Mr. Eekman, Mr. Harper, Mr. Markov

150. Russian Folk Literature.

(Formerly numbered 138 and same as Folklore 150.) Four hours weekly. Prerequisite: course 16. Lectures and readings in Russian.
Mr. Markov

199. Special Studies.

No scheduled hours. Prerequisite: senior standing and consent of instructor.
The Staff

Graduate Linguistics Courses**200. Russian Linguistics. (½ course)**

Prerequisites: courses 101A-101B-101C, 121, 122, 123. Review of Russian phonology and grammar for M.A. candidates. Must be taken in quarter in which M.A. examination is to be taken. Required for the M.A. (Linguistics, Literature).
The Staff

203. Higher Course in Russian. (½ course)

Prerequisites: course 102C and consent of the instructor. Comprehensive analysis of selected texts with emphasis on fine points of grammar and usage. May be repeated for credit. Mr. Shapiro in charge

204. Introduction to the History of the Russian Literary Language.

(Formerly numbered 228.) Prerequisites: course 123, Slavic 99. Introductory survey of literary Russian in its cultural and historical setting. Required for the M.A. (Linguistics, Literature).
Mr. Isačenko, Mrs. Worth

241. Russian Phonology.

(Formerly numbered 225A.) Prerequisites: courses 102A-102B-102C, 121. Survey of taxonomic and generative theories of Russian phonology. Required for the Ph.D. (Linguistics).
Mr. Flier, Mr. Shapiro, Mr. Worth

242. Russian Morphology.

(Formerly numbered 225B.) Prerequisites: courses 102A-102B-102C, 122. Advanced study of flexion and derivation. Required for the Ph.D. (Linguistics).
Mr. Flier, Mr. Shapiro, Mr. Worth

243A-243B. Historical Phonology and Morphology of Russian.

(Formerly numbered Slavic 227A-227B.) Required for Ph.D. (Linguistics). Prerequisite: course 123. Credit and grade to be given only upon the completion of 243B. Evolution of the Russian phonological and grammatical systems from the eleventh to the twentieth century. Mr. Isačenko, Mrs. Worth

263. Russian Dialectology.

Three hours weekly. Prerequisites: courses 243A-243B. Introduction to the phonology and grammar of modern Great Russian dialects. Mr. Shapiro

264A-264B. The Evolution of Literary Russian.

(Formerly numbered 229A-229B.) Three hours weekly. Prerequisites: course 204, Slavic 201. Lectures and analysis of texts. 264A. Eleventh to seventeenth century. 264B. Eighteenth to twentieth century.
Mr. Isačenko, Mrs. Worth

265. Russian Syntax.

(Formerly numbered 225C.) Three hours weekly. Prerequisites: courses 102A-102B-102C, 121, 122. Survey of traditional and generative approaches to Russian syntax. Mr. Flier, Mr. Isačenko, Mr. Worth

Graduate Literature Courses**211. Eighteenth Century Russian Literature.**

(Formerly numbered 243.) Three hours weekly. Lectures and readings in major and secondary writers. Required for the M.A. (Literature).
Mr. Markov

212. Nineteenth Century Russian Literature.

(Formerly numbered 241.) Three hours weekly. Lectures and readings in major and secondary writers. Required for the M.A. (Linguistics, Literature).
Mr. Eekman, Mr. Harper, Mr. Markov

213. Twentieth Century Russian Literature.

(Formerly numbered 242.) Three hours weekly. Lectures and readings in major and secondary writers. Required for the M.A. (Linguistics, Literature).
Mr. Eekman, Mr. Harper, Mr. Markov

251. Old Russian Literature.

(Formerly numbered 240A-240B.) Three hours weekly. Lectures and readings, eleventh through seventeenth centuries. Required for the Ph.D. (Literature).
Mr. Birnbaum, Mr. Worth

270. Russian Poetics.

Three hours weekly. Prerequisites: courses 130A-130B. Introduction to the technical study of Russian poetics and versification. Recommended as preparation for course 290.
Mr. Markov

290. Seminar in Russian Poetry.

(Formerly numbered 256.) Three hours weekly. Prerequisites: courses 130A-130B. Recommended preparation: course 270. Selected authors and works. May be repeated for credit with consent of the instructor and the graduate adviser. Mr. Markov

291. Seminar in Old Russian Literature.

(Formerly numbered 240C.) Three hours weekly. Prerequisite: course 251. Mr. Birnbaum, Mr. Worth

292. Seminar in Nineteenth Century Russian Literature.

(Formerly numbered 254.) Three hours weekly. Prerequisite: course 212. Selected authors and works. May be repeated for credit with consent of the instructor and the graduate adviser.
Mr. Eekman, Mr. Harper

293. Seminar in Twentieth Century Russian Literature.

(Formerly numbered 258.) Three hours weekly. Prerequisite: course 213. Selected authors and works. May be repeated for credit with consent of the instructor and the graduate adviser.
Mr. Eekman, Mr. Markov

294. Seminar in Russian Literary Criticism.

(Formerly numbered 252.) Three hours weekly. Prerequisites: courses 211, 212, 213. Selected topics. May be repeated for credit with consent of the instructor and the graduate adviser. Mr. Harper

Individual Study and Research**597. Preparation for the Comprehensive Examination for the Master's Degree or the Qualifying Examination for the Ph.D. (½ to 2 courses)**

Prerequisite: consent of the instructor and the graduate adviser. The Staff

Polish**102A-102B-102C. Elementary Polish.**

(Formerly numbered 101A-101B-101C.) Five hours weekly. Basic course in the Polish language.
Mrs. Stone

102D-102E-102F. Advanced Polish.

(Formerly numbered 101D-101E-101F.) Four hours weekly. Prerequisite: course 102C. Mrs. Stone

152A-152B. Survey of Polish Literature.

(Formerly numbered 150.) Four hours weekly. Lectures and readings in English. 152A. From the Middle Ages to Romanticism. 152B. From Realism to the present.
Mr. Eekman, Mr. Wilson

160. Polish Romanticism.

Three hours weekly. Prerequisite: course 102C or consent of the instructor. Lectures and readings in Polish romantic writers; comparison of Polish Romanticism with that of other Slavic and Western European literatures. *Mr. Wilson*

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)

Prerequisite: consent of the instructor and the graduate adviser. *The Staff*

Czechoslovak**102A-102B-102C. Elementary Czech.**

(Formerly numbered 101A-101B-101C.) Five hours weekly. Basic course in the Czech language. *Mrs. Meyerstein*

102D-102E-102F. Advanced Czech.

(Formerly numbered 101D-101E-101F.) Four hours weekly. Prerequisite: course 102C. *Mrs. Meyerstein*

155A-155B. Survey of Czech Literature.

Four hours weekly. Lectures and reading in English. 155A. From the Middle Ages to Romanticism. 155B. From Realism to the present. *Mrs. Meyerstein*

222. The Structure of Slovak.

Three hours weekly. Prerequisite: Slavic 202; Slavic 222 recommended. Introduction to the phonological and morphological structure of the Slovak language, especially as contrasted with Czech. *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)

Prerequisite: consent of the instructor and the graduate adviser. *The Staff*

Serbocroatian**103A-103B-103C. Elementary Serbocroatian.**

(Formerly numbered 101A-101B-101C.) Five hours weekly. Basic course in the Serbocroatian language. *Mr. Albin*

103D-103E-103F. Advanced Serbocroatian.

(Formerly numbered 101D-101E-101F.) Four hours weekly. Prerequisite: course 103C. *Mr. Albin*

154A-154B. Survey of Yugoslav Literature.

(Formerly numbered 160.) Four hours weekly. Lectures and readings in English. 154A. From the Middle Ages to Romanticism. 154B. From Realism to the present, including folk literature. *Mr. Albin, Mr. Eckman*

199. Special Studies.

No scheduled hours. Prerequisite: senior standing and consent of instructor. *The Staff*

Individual Study and Research

597. Preparation for the Comprehensive Examination for the Master's Degree or the Qualifying Examination for the Ph.D.
(½ to 2 courses)

Prerequisite: consent of the instructor and the graduate adviser. *The Staff*

Related Courses in Other Departments

History 146A-146B-146C; Folklore 126, Linguistics 100, 110, 120, 150, 220B, as well as several of the graduate courses in linguistics.

■ SOCIAL WELFARE

(Department Office, 238 Social Welfare Building)

Nathan E. Cohen, Ph.D., *Professor of Social Welfare (Chairman of the Department).*

Donald S. Howard, Ph.D., L.H.D., *Professor of Social Welfare.*

Alfred H. Katz, *Professor of Social Welfare and Professor of Public Health.*

Elliot T. Studt, D.S.W., *Professor of Social Welfare.*

Eileen Blackey, D.S.W., *Emeritus Professor of Social Welfare.*

Karl de Schweinitz, L.H.D., *Emeritus Professor of Social Welfare.*

Olive M. Stone, Ph.D., *Emeritus Professor of Social Welfare.*

Jerome Cohen, D.S.S., *Associate Professor of Social Welfare.*

Maurice F. Connery, D.S.W., *Associate Professor of Social Welfare.*

Warren Haggstrom, Ph.D., *Associate Professor of Social Welfare.*

Harry H. L. Kitano, Ph.D., *Associate Professor of Social Welfare.*

Roderic Gorney, M.D., *Assistant Professor of Social Welfare and Assistant Professor of Psychiatry in Residence.*

Helen L. Olander, D.S.W., *Assistant Professor of Social Welfare.*
 Mary Margaret Thomes, Ph.D., *Assistant Professor of Social Welfare.*
 Harry Wasserman, D.S.W., *Assistant Professor of Social Welfare.*



Chauncey Alexander, M.S.W., *Lecturer in Social Welfare, Medicine and Public Health.*
 Rosalyn Benitez, M.S.W., *Field Work Consultant.*
 Ester Bentley, M.S.W., *Field Work Consultant.*
 Robert Brockman, M.S.W., *Field Work Consultant.*
 Jane Bullions, M.S.W., *Field Work Consultant.*
 William Clarke, M.S.W., *Field Work Consultant.*
 Elsie Giorgi, M.D., *Lecturer in Human Behavior.*
 Douglas G. Glasgow, Ph.D., *Acting Associate Professor of Social Welfare.*
 Florence Goldy, M.S.W., *Field Work Consultant.*
 Katherine M. Kolodziejski, M.S.W., *Field Work Consultant.*
 Myra Koplin, M.S.W., *Field Work Consultant.*
 June W. Moore, M.S.W., *Field Work Consultant.*
 Peter Sandi, M.S.W., Jur.D., *Field Work Consultant.*
 Doris Seder, Ph.D., *Acting Associate Professor of Social Welfare.*
 Winifred E. Smith, M.S.W., *Lecturer in Social Welfare and Director of Field Instruction.*
 Laura S. Wiltz, M.S., *Field Work Consultant.*
 ———, *Lecturer in Social Welfare.*
 ———, *Lecturer in Social Welfare.*
 ———, *Field Work Consultant.*

Graduate Courses

201A–201B–201C. Dynamics of Human Behavior I, II, III. (½ course each)

Lecture, two hours; laboratory, one hour. Credit to be given at the completion of the sequence 201A–201B; 201C will be graded separately. Biopsychosocial factors associated with individual and group behavior and development as applicable in the social functioning of individuals and groups. Emphasis is on theoretical issues and research evidence which contribute to a unified theory of human development. Mr. J. Cohen, Mr. Connery, Miss Giorgi

202A–202B. Dynamics of Human Behavior: Deviance IV, V. (½ course each)

Prerequisite: courses 201A–201B–201C. Credit to be given only at the completion of the sequence. This course deals with deviations and pathologies or stresses in the physical, emotional and social areas of human functioning as those problems relate to the role and function of the social worker. Mr. J. Cohen, Miss Seder, Mr. Wasserman and Staff

203. Integrative Theory and Research in Human and Social Behavior. (½ course)

An integrative course which brings together the preceding courses in the human behavior and the social environment series, by examination at an advanced level of the major theoretical strands and the identification of problem areas requiring further research. The Staff

204A. Social Systems in Social Welfare. (½ course)

The application of social system theory to the problems of social welfare and social work. Analysis of the network of community relationships, values, stratification, institutions and subcultures as related to the premises and services of social work. Miss Thomes

204B. Small Groups in Social Welfare. (½ course)

Application of theory and knowledge of small group functioning to problems of working with groups in social work settings. Analysis of group formation, structure of interaction and communication patterns, and of leadership and morale problems. Application to family, peer and special-purpose groups. Miss Thomes

205. Group Conflict and Change. (½ course)

Study of the phenomena of group conflict and change as they appear in the social welfare matrix of groups, communities and social institutions; relationship between conflict and social and cultural change; major research contributions in understanding of these phenomena. The Staff

220. History and Philosophy of Social Welfare. (½ course)

The history of social work as a field: body of knowledge, method and process, and point of view analyzed within the context of the economic, political, social, philosophical and scientific climate of the period. Mr. N. Cohen, Mr. Wasserman

221A. Social Welfare Policy and Services I.

(½ course)

Nature, roles and history of welfare institutions in different societies; applicable social system theory with special reference to values as seen by different components of the welfare system; theory and research about needs met and not met, about various welfare policies and organizational forms, and about social change to prevent needs. Mr. Howard

221B. Social Welfare Policy and Services II.

(½ course)

Prerequisite: consent of the instructor. Study of income-maintenance policy and services. Introduces theory and research about selected levels of living, regularity and source of income, and their relevance for family and social well-being; analysis of various income-maintenance policies and services; causes and nature of poverty. Current antipoverty legislation. Mr. Howard

222. Social Welfare Administration. (½ course)

Study of methods by which welfare policies are formulated and translated into action; the nature of organizational and research process involved in welfare administration; role of welfare agency personnel in policy formulation, implementation and evaluation. Mr. Howard and Staff

223. Seminar on the Social Work Profession.

(½ course)

The nature and role of social work in contemporary society; relationships with other professions; probable future trends in the profession; social work ethics, professional organizations, certification licensing; professional responsibility for continued self-criticism and improvement of the profession. The Staff

230A-230B-230C. Theory of Social Work Method

(Individuals and Small Groups) I, II, III.

(½ course each)

Credit to be given only at the completion of the sequence. Concurrent social work practicum is required. An introduction to the theory of social work with individuals and small groups and to the principles of practice which are derivative of this and related theory. Miss Olander, Mr. Wasserman

231A-231B. Advanced Theory of Social Work

Method (Individuals and Small Groups) IV, V.

(½ course each)

Credit to be given only at the completion of the sequence. Required: Concurrent social work practicum. Advanced-level, critical analysis of theories, concepts and principles underlying social casework practice. Specific attention to deviation and stress as conditions affecting functioning of individuals and groups; and to diagnostic knowledge and competence required in rehabilitation and prevention. Mr. Connery and Staff

240A-240B-240C. Theory of Social Work Method

(Community Organization) I, II, III.

(½ course each)

Credit to be given only at the completion of the full sequence. Concurrent practicum in social work required. Covers historical and theoretical develop-

ments in community organization; understanding the community as a social system; role of the practitioner in identification, analysis and evaluation of needs, existing programs, policies, structure and strategies of intervention. Mr. Haggstrom

241A-241B. Advanced Theory of Social Work

Method (Community Organization) IV, V.

(½ course each)

Credit to be given only at the completion of the sequence. Concurrent practicum in social work required. Emphasis on various patterns of community action for attaining social welfare objectives; research and field experience directed toward study of social problems within the context of community planning; emerging patterns of physical, economic and social planning within the framework of social change theory. Mr. N. Cohen, Mr. Haggstrom

280. Social Welfare Research. (½ course)

Sources, nature and uses of social work theory and research-based knowledge and of broader social data relevant to social welfare activities. Critical analysis of major methods of developing scientific knowledge. The Research Staff

281A-281B-281C. Advanced Social Welfare

Research. (½ course each)

Credit to be given only at the completion of the sequence. Group research projects requiring intensive examination and analysis of a social problem area directed toward the development of research knowledge and techniques for social work practice. The Research Staff

290A-290B-290C. Seminar in Social Work.

(½ course each)

A series of seminars dealing with trends in social work and social welfare, with the focus on current social problems affecting individuals, groups, and communities and new patterns of intervention based on recent demonstrations and research. The Staff

Professional Courses

401A-401B-401C. Practicum in Social Work.

Credit to be given only at the completion of the full sequence. Educationally directed practicum conducted in selected health, welfare and educational facilities. The major objective is to provide opportunities for the student to test his theoretical knowledge and to acquire a disciplined practice foundation in his profession. The Field Instruction Staff

402A-402B-402C. Advanced Practicum in Social

Work. (1 ½ courses each)

Credit to be given only at the completion of the full sequence. Practicum in social work is arranged for the student in keeping with his major field of study. The Field Instruction Staff

Individual Study and Research

598. Special Study and Research for M.A. Degree

Candidates (½, 1 and 1 ½ courses)

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.*
 Oscar Grusky, Ph.D., *Professor of Sociology.*
 Leo J. Kuper, Ph.D., *Professor of Sociology.*
 Richard T. Morris, Ph.D., *Professor of Sociology (Chairman of the Department).*
 Leo G. Reeder, Ph.D., *Professor of Sociology and Public Health.*
 Svend Riemer, Ph.D., *Professor of Sociology.*
 Georges Sabagh, Ph.D., *Professor of Sociology.*
 Melvin Seeman, Ph.D., *Professor of Sociology.*
 Ralph H. Turner, Ph.D., *Professor of Sociology and Anthropology.*
 Charles R. Wright, Ph.D., *Professor of Sociology.*
 Eshref Shevky, Ph.D., *Emeritus Professor of Sociology and Anthropology.*
 John E. Horton, Ph.D., *Associate Professor of Sociology.*
 Gene N. Levine, Ph.D., *Associate Professor of Sociology.*
 Samuel J. Surace, Ph.D., *Associate Professor of Sociology.*
 Kenneth D. Bailey, Ph.D., *Assistant Professor of Sociology.*
 Phillip Bonacich, Ph.D., *Assistant Professor of Sociology.*
 Richard P. Boyle, Ph.D., *Assistant Professor of Sociology.*
 Howard Elinson, Ph.D., *Assistant Professor of Sociology.*
 Robert M. Emerson, Ph.D., *Assistant Professor of Sociology.*
 George A. Miller, Ph.D., *Assistant Professor of Sociology (Vice-Chairman of the Department).*
 Jerome Rabow, Ph.D., *Assistant Professor of Sociology.*
 Gerald T. Slatin, Ph.D., *Assistant Professor of Sociology.*
 Warren D. TenHouten, Ph.D., *Assistant Professor of Sociology.*
 Andrea Tyree, Ph.D., *Assistant Professor of Sociology.*
 ———, *Assistant Professor of Sociology.*
 ———, *Assistant Professor of Sociology.*
 ———, *Assistant Professor of Sociology.*



- Samuel Farber, M.A., *Acting Assistant Professor of Sociology.*
 Samuel R. Friedman, M.A., *Acting Assistant Professor of Sociology.*
 Ivan H. Light, M.A., *Acting Assistant Professor of Sociology.*
 David O'Shea, Ph.D., *Acting Assistant Professor of Sociology and Education.*
 Melvin Pollner, M.A., *Acting Assistant Professor of Sociology.*
 Michael J. Schwartz, B.A., *Acting Assistant Professor of Sociology.*
 Basil J. Sherlock, Ph.D., *Assistant Research Sociologist.*

Preparation for the Major

Required: courses 1 or 101, 17, 18, and 19, and fulfillment of the general requirements of the University and the College of Letters and Science. Mathematics 50, Economics 140, Psychology 141, or Public Health 160A may be substituted for Sociology 18. Transfer students who have two or more quarters of introductory level courses

in sociology at the time of transfer will not be required to take Sociology 1 or 17. Recommended: Anthropology 1A or 11, and 22 or 5A-5B-5C; Economics 1 and 2; English 2; Geography 1A-1B; Mathematics 2A-2B-2C, and 12A, or Mathematics 100; Philosophy 6 and 7, or 20 and 21; Political Science 1 and 2; Psychology 10. The student should consult a detailed statement of requirements

and recommendations available at the 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 not including course 101 and four outside, are required for the major. The 14 courses must include the following: (1) at least two courses in each of three core areas; (2) course 111, 112, or 113, which may also be counted as one of the courses in core area I; (3) four courses chosen from one or more of the following fields: anthropology, economics, geography, history, political science, psychology.

Social Welfare

A student whose primary interest is in social welfare may either fulfill the requirements of the major in sociology or of the curriculum in presocial welfare. (See page 78). Students planning for graduate training in social welfare at this University should consult the UCLA ANNOUNCEMENT OF THE SCHOOL OF SOCIAL WELFARE.

Requirements for the Master's Degree

For the M.A. degree in sociology, the student is required (1) to complete an acceptable program of a minimum of nine upper division and graduate level courses (the equivalent of 4 quarter units each) of which at least six courses must be graduate level (200 series) in sociology; (2) to pass two departmental examinations in statistics or complete courses 110A-110B with grades of C or better; (3) to complete one of the two-quarter methodology sequences in the series numbered 211-218; and (4) to pass a written comprehensive examination. Those students who plan to seek the Ph.D. are advised to pass the foreign language examination some time during their first year of graduate study. The M.A. degree is especially intended to qualify students who plan to become junior college teachers. Students are encouraged to plan their programs so as to fulfill the requirements for the junior college or secondary teaching credentials. Details on credential matters may be obtained from the Credentials Counselor in the School of Education.

Requirements for the Ph.D. Degree

Candidates for the doctor's degree must conform to the general requirements set by the Graduate Division for the Ph.D. degree. *It should be emphasized that the granting of the doctor's degree does not depend alone*

upon the satisfactory completion of a specified number of courses. The candidate must demonstrate his competence as a research scholar and his ability to give instruction in his field.

In addition to the general requirements set by the Graduate Division, every prospective candidate for the doctor's degree must: (1) pass a reading examination in French, German, Spanish, Italian, Russian, or other language approved by the Department; (2) pass two departmental examinations in statistics or complete courses 110A-110B with grades of C or better; (3) complete two of the two-quarter methodology sequences in the series numbered 211-218; (4) pass a written comprehensive examination; (5) pass written examinations in two special fields; (6) pass a qualifying oral examination; (7) prepare a satisfactory doctoral dissertation embodying the results of original research; (8) pass a final oral examination. Details of these requirements are described in a syllabus which may be secured from the office of the Department.

The dissertation and the final oral examination will be in accordance with the requirements of the Graduate Division. Before the dissertation is begun, the subject must be approved in writing by the student's graduate advisers.

Requirements for the Ph.D. in Anthropology-Sociology (Interdepartmental)

The Ph.D. in Anthropology-Sociology is awarded upon demonstration of an integrated command of the two disciplines and completion of a dissertation that demonstrates research competence relevant to both. For admission to this program, the student must have completed the Bachelor's degree with an undergraduate major in either Anthropology or Sociology (or equivalent work) and must be acceptable for graduate standing in both departments. Upon admission to the program, the student is assigned a guidance committee consisting of two members from Anthropology and two from Sociology, to be appointed by the interdepartmental degree committee. This committee, in consultation with the student, formulates the program of work which will be submitted to both departments for approval. Candidates will conform to the general requirements for the Ph.D. set forth by the Graduate Division. The student may follow the language requirement of either department.

The student must demonstrate his competence in theory, methods of research, and

a special field for both disciplines. (1) Competence must be demonstrated in ethnological theory by satisfactory completion of Anthropology 202 and a special essay in this area, and in sociological theory by passing the General Theory section of the Department's Comprehensive Examination at the level required for the Ph.D. in Sociology. (2) The student must satisfactorily complete the graduate methods course and supervised field training in Anthropology, Sociology 18 (or its equivalent), Sociology 110A, and any one of the two-quarter sequences in the Sociology 211-218 series. The student may be exempted from Sociology 18, 110A, or both on the basis of the examination. (3) A special field in Anthropology and a special field in Sociology will be established for each student so as to form a coherent unit. The student must pass an examination in each field.

Lower Division Courses

1. Introductory Sociology.

No credit will be given for this course to students who have completed Sociology 101. Survey of the characteristics of social life, the processes of social interaction, and the tools of sociological investigation. The Staff

17. Sociological Analysis.

(Formerly numbered 1B.) Prerequisite: course 1 or 101. Required of majors. Development and application of the basic tools and concepts of course 1 by means of an examination of selected monographic works. The Staff

18. Interpretation of Quantitative Data.

Prerequisite: course 1 or 101, or may be taken concurrently. Satisfies the statistics requirement for the major in sociology. The interpretation of statistical measures, tables, and graphs of the types most frequently encountered in sociological literature. Mr. Slatin, Mr. TenHouten

19. Introduction to Sociological Research Methods.

(Formerly numbered 117.) A systematic treatment of the logic of qualitative and semiquantitative skills of use in sociological research, e.g., classification, questionnaire and schedule design, content analysis, critical analysis of studies, conceptual analysis of case material. Mr. Bailey, Mr. TenHouten

Upper Division Courses

Course 1 or 101, or the equivalent, and upper division standing are prerequisite to all upper division courses in sociology unless otherwise stated.

101. Principles of Sociology.

No credit will be given for this course if course 1 has been completed. For upper division students who have not taken Sociology 1. A more intensive introduction to sociology than is given in course 1. May not be counted as fulfilling the requirements of the field of concentration. The Staff

CORE AREA I: THEORY AND METHOD

110A. Intermediate Quantitative Methods I.

(Numbered 110 in 1966-67.) Prerequisite: courses 17 and 19, and course 18, Mathematics 50, or some other courses in statistics approved by the Department. Required for the M.A. and Ph.D. degrees in sociology. A brief systematic course in the logic and practice of statistical methods of use to sociologists. Mr. Bonacich, Mr. TenHouten

110B. Intermediate Quantitative Methods II.

(Numbered 210 in 1966-67.) Prerequisite: course 110A and consent of the instructor. Required for the M.A. and Ph.D. degrees in sociology. A continuation of 110A. Analysis of variance, correlation, regression analysis, non-parametric methods. Mr. Boyle, Mr. TenHouten

111. Backgrounds of Sociological Thought.

(Formerly numbered 170.) Survey of attempts, from early literate societies to the twentieth century, to understand the nature of man and society; the social origins of this intellectual background; the course of these ideas in the development of sociological theory. Mr. Dalton

112. Development of Sociological Theory.

(Formerly numbered 171.) A comparative survey of basic concepts and theories in sociology, 1850-1920; the codification of analytic schemes; a critical analysis of trends in theory construction. Mr. Horton, Mr. Morris

113. Contemporary Sociological Theory.

(Formerly numbered 172.) A critical examination of significant theoretical formulations, 1920 to the present; an analysis of the relation between theoretical development and current research emphasis. Mr. Morris

CORE AREA II: SOCIAL STRUCTURE AND CHANGE

120. Social Change.

(Formerly numbered 122.) A study of patterns of social change, resistance to change, and change-producing agencies and processes. Mr. Schwartz

121. Formal Organizations.

(Formerly numbered 128.) Sociological analysis of organizations. An introduction to basic theories, concepts, methods and research in this field of study. Mr. Grusky, Mr. Miller, 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. 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. Elinson, Mr. Farber, Mr. Kuper

125. Urban Sociology.

(Formerly numbered 143.) Urban and rural cultures, the characteristics of cities in Western civilization, with emphasis on the American metropolis.

Mr. Bailey, Mr. Riemer

126. Population Problems.

(Formerly numbered 186.) Implications for social organization and social policy of population size and composition, birth and death rates. Consideration of social problems related to population increase, population redistribution, and other trends.

Mr. Sabagh, Miss Tyree

127. Language and Society: Introduction to Sociolinguistics.

(Same as Linguistics 170.) Prerequisites: course 1 or 101 or Anthropology 5A or 22. Study of the patterned covariation of language and society; social dialects and social styles in language; problems of multilingual societies.

Mr. Bright

CORE AREA III: COMPARATIVE SOCIETIES**130. Social Processes in Africa.**

(Formerly numbered 191A.) A course in comparative sociology. A study of selected processes in African societies, primarily in the fields of urban sociology, social structure and social change, involving an interdisciplinary approach.

Mr. Kuper

131. Latin American Societies.

(Formerly numbered 150 and same as Anthropology 121.) A descriptive survey of the major Latin American societies, emphasizing their historical backgrounds and their emergent characteristics, with special attention to the relations between rural and urban life.

Mr. Beals

132. Population and Society in the Middle East.

(Formerly numbered 166.) Prerequisite: upper division standing and consent of the instructor. A survey of the Middle Eastern societies; their historic and environmental bases; the contemporary demographic and cultural situation.

Mr. Sabagh

133. Comparative Sociology of the Middle East.

Prerequisite: upper division standing and consent of the instructor. A review of the unity of Middle Eastern societies in Islam and their diversity exemplified by such nomadic peoples as the Bedouin, countries in process of rapid modernization such as Turkey and Israel, colonial situations as in Algeria and Morocco, and underdeveloped areas as Iran and the Arabian countries.

Mr. Sabagh

135. West European Society.

Comparative study of social structure and major institutions of selected Western European nations.

Mr. Seeman, Mr. Turner

CORE AREA IV: INSTITUTIONS**140. Political Sociology.**

(Formerly numbered 187.) The contributions of sociology to the study of politics including the analysis of political aspects of social systems, the social context of action, and the social bases of power.

Mr. Friedman, Mr. Surace

141. Industry and Society.

(Formerly numbered 131.) A sociological analysis of industry. Attention given to factors in the status group awareness and occupational role-learning of workers and managers; interaction between technological and social system; the interplay between official and unofficial action, and between industry and community.

Mr. Dalton, Mr. Light

142. Sociology of the Family.

Theory and research dealing with the modern family, its structure and functions, including historical changes, variant family patterns, family as an institution, and the influence of the contemporary society on the family.

Mr. Riemer

143. Sociology of Education.

(Formerly numbered 180 and same as Education 108.) Studies of social processes and interaction patterns in educational organizations, the relationships of such organizations to aspects of society, social class and power, social relations within the school, formal and informal groups, school culture, roles of teachers, students, and administrators.

Mr. Gordon

144. Social Aspects of Housing and City Planning.

(Formerly numbered 147.) Prerequisite: course 125. Implications for family and urban social relationships of housing floor plans and plans for neighborhoods and cities.

Mr. Riemer

145. Sociology of Deviant Behavior.

(Formerly numbered 120.) An examination of the leading sociological approaches to the study of deviation and a general survey of the major types of deviation in American society.

Mr. Horton, Mr. Rabow, Mr. Slatin

146. Criminology.

(Formerly numbered 182.) Theories of the genesis of crime; factors in the organization of criminal behavior from the points of view of the person and group; criminal behavior systems.

Mr. Rabow

147. Control of Crime.

(Formerly numbered 184.) Theories of punishment; methods of dealing with convicts; social organization of police, courts, prisons, probation, and parole.

Mr. Rabow

148. Normal Environments.

(Formerly numbered 178.) Structural interpretation of the concerted production, management, and alteration of preceivedly normal interpersonal environments.

Mr. Garfinkel, Mr. Pollner

149. A Study of Norms.

(Formerly numbered 179.) Properties of norms, of normatively governed conduct, of lay and professional methods for describing, producing, using, and validating norms in contrasting settings of socially organized activities; relevance of these properties for the programmatic problems of analytic sociology.

Mr. Garfinkel, Mr. Pollner

CORE AREA V: SOCIAL PSYCHOLOGY

150. Collective Behavior.

(Formerly numbered 124.) Characteristics of crowds, mobs, publics, social movements, and revolutions. Their relation to social unrest and their role in developing and changing social organization.

Mr. Seeman, Mr. Turner

151. Culture and Personality.

(Formerly numbered 126.) Theories of the relation of variations in personality to culture and group life, in primitive and modern societies, and the influence of social role on behavior.

Mr. Turner

152. Group Processes.

(Formerly numbered 161.) Systematic study of the formation, structure, and functioning of groups; analysis of group processes and group products from a variety of theoretical viewpoints; implications of various research techniques.

Mr. Bonacich, Mr. Morris

153. Process and Socialization in the Family.

(Formerly numbered 162.) Examination of the processes of interaction, decision-making, role differentiation, conflict, integration, and socialization within the family and their interrelations with society.

Mr. Turner

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. Schwartz, Mr. Seeman

Advanced Studies

198. Special Courses. (½ to 2 courses)

Prerequisite: upper division standing, special requirements necessary for the field selected, and consent of the instructor. Special topics or problems to be offered to the extent justified by student demand.

The Staff

199. Special Studies. (½ to 2 courses)

Prerequisite: senior standing and consent of the instructor. A course of independent study designed for graduate or senior undergraduate students who (a) desire a more advanced or specialized treatment of an area covered in the regular course list and who present that course as a prerequisite; or (b) desire work in an area of sociological analysis currently not covered by an upper division course.

The Staff

Graduate Courses

201A-201B. 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

213A-213B. Techniques of Demographic and Ecological Analysis.

Prerequisite: course 110A or equivalent. Procedures and techniques for the collection, evaluation, and analysis of demographic and ecological data; models of population and ecological structure and change; applications to the study of social structure and social change.

Mr. Sabagh

214A-214B. The Measurement of Sociological Variables.

Prerequisite: courses 110A-110B and consent of the instructor. Theory and technique of measurement in sociology and social psychology; construction, application, and evaluation of measurement techniques, especially the forms of scaling.

Mr. Miller

215A-215B. Experimental Sociology.

Prerequisite: course 110A or equivalent and consent of the instructor. A course designed to provide students with the basic fundamentals of the experimental method, particularly as it is used in social psychology.

Mr. Grusky, Mr. Rabow, Mr. Slatin

216A-216B. Survey Research Methods.

(Formerly numbered 216 and 217.) Course in methodology and techniques: formulation of research problem; study design; hypotheses; sampling; measurement; questionnaire and schedule construction; interviewing and data collection; processing and tabulation; analysis and interpretation; presentation of findings; cross-national, replicative, panel and other complex survey designs. Students participate in survey research project.

Mr. Levine

216A-216B. Ethnomethodological Methods.

Prerequisite: consent of the instructor. Examination of techniques used in ethnomethodological research, practice in the critical evaluation of research, and directed experience in the conduct of an extended investigation employing ethnomethodological procedures.

Mr. Garfinkel

219. Theory of Sociological Inquiry.

Prerequisite: course 110A and consent of the instructor. A general review of procedures followed by social scientists in attempts to achieve valid theoretical knowledge. Focuses on inductive inference and theory testing; control and randomization, experimental and nonexperimental research designs, association and causality, models, measurement theory, sampling theory.

Mr. TenHouten

220. Role Theory.

Prerequisite: graduate status and consent of the instructor. A review of theories and research dealing with social roles, with special emphasis on roles in social interaction and in formation of the social self.

Mr. Turner

222. The Sociology of Adolescence.

Prerequisite: graduate status and consent of the instructor. An examination of the historical development of adolescent subcultures in primitive, 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.

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

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.

249A. Sociocultural Aspects of Health and Illness.

(½ course)

(Same as Public Health 249A.) Prerequisites: courses in upper division social sciences, including sociology, anthropology and psychology. Social and community aspects of health, health behavior and health organizations. Mr. Reeder and the Staff

249B. Sociocultural Aspects of Health and Illness.

(½ course)

(Same as Public Health 249B.) Prerequisites: course 249A or consent of the instructor. Theoretical and conceptual approaches in the behavioral sciences contributing to an understanding of various health conditions and health behavior.

Mr. Reeder and the Staff

Seminars**250. Methodological Problems.**

Mr. Boyle, Mr. Seeman

251. Topics in the Problems of Social Order.

Mr. Garfinkel

252. Criminology.**253. Quantitative Methods in Sociology.**

Mr. Bonacich, Mr. Levine

254. Penology.**255A-255B. Systematic Sociological Theory.**

Course 255A is prerequisite to 255B.

Mr. Boyle, Mr. Kuper

256. Demography.

Mr. Sabagh

257. Sociology of the Arts.

Mr. Horton

258. Sociology of Religion.

Mr. Kuper

259. Social Structure and Economic Change: Historical and Comparative Perspectives.

Mr. Surace

260. Industry and Society.

Mr. Dalton

261. Ethnic Minorities.

Mr. Seeman

262. Selected Problems in Urban Sociology.

Mr. Riemer

263. Social Stratification.

Mr. Morris

264. Professions in the American Society.**265. Problems in Organization Theory.**

Mr. Grusky

267. Selected Problems in Communication.

Mr. Wright

268. Historical and Interpretive Sociology.

Mr. Dalton

269. Collective Behavior.

Mr. Turner

270. Selected Problems in Socialization.

Mr. Turner

271. Ethnomethodology.

Mr. Garfinkel

272. Sociology of Political Movements.

Mr. Elinson, Mr. Kuper

273. Attitudes and Social Structure.

Mr. Seeman

275. Seminar in Comparative Social Structure: Developed Societies.

The comparison of social structures among developed societies, including the comparative analysis of

the main institutional features, social class arrangements, social mobility characteristics, and the like. Comparisons will involve the U. S. and developed countries in Western Europe, Asia and Oceania.

The Staff

277. Sociology of Science. Mr. Miller

278. Sociolinguistics.
(Same as Linguistics 265B.) Prerequisite: Linguistics 170. Mr. Bright

281. Selected Problems in Mathematical Sociology.
Prerequisite: Mathematics 2C or consent of the instructor. An exploration of some mathematical models of sociological processes. Possible topics include models of small groups, social mobility, kinship relations, organizations, social interaction. Mr. Bonacich

291A-291B-291C. Critical Studies. The Staff

292A-292B-292C. Research Development. The Staff

293A-293B-293C. Advanced Research. The Staff

Individual Study and Research

596. Special Problems in Sociology.
(½ to 1 course) 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. (1 to 2 courses) The Staff

■ SPANISH AND PORTUGUESE

(Department Office, 5303 Humanities Building)

José R. Barcia, Lic. F. y L., *Professor of Spanish (Chairman of the Department).*

William E. Bull, Ph.D., *Professor of Spanish.*

John A. Crow, Ph.D., *Professor of Spanish.*

Alberto Machado da Rosa, Ph.D., *Professor of Spanish and Portuguese.*

John E. Englekirk, Ph.D., *Professor of Spanish.*

Donald F. Fogelquist, Ph.D., *Professor of Spanish (Vice-Chairman of the Department).*

Stanley L. Robe, Ph.D., *Professor of Spanish.*

Anibal Sánchez-Reulet, Ph.D., *Professor of Spanish.*

Walter Starkie, Ph.D., *Professor of Spanish in Residence.*

Hermenegildo Corbató, Ph.D., *Emeritus Professor of Spanish.*

Manuel Pedro González, Ph.D., *Emeritus Professor of Spanish American Literature.*

Marion Albert Zeitlin, Ph.D., *Emeritus Professor of Spanish and Portuguese.*

Claude L. Hulet, Ph.D., *Associate Professor of Spanish and Portuguese.*

C. P. Otero, Ph.D., *Associate Professor of Spanish.*

Julio Rodríguez-Puértolas, Ph.D., *Associate Professor of Spanish.*

Shirley L. Arora, Ph.D., *Assistant Professor of Spanish.*

Edward J. Dudley, Ph.D., *Assistant Professor of Spanish.*

Herschel Frey, Ph.D., *Assistant Professor of Spanish.*

Carroll B. Johnson, Ph.D., *Assistant Professor of Spanish.*

Richard M. Reeve, Ph.D., *Assistant Professor of Spanish.*

Jack Roberts, Jr., Ph.D., *Assistant Professor of Spanish.*

Robert S. Rudder, 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.*



Guillermo Araya, Ph.D., *Visiting Lecturer in Spanish.*

Rubén Angel Benítez, Ph.D., *Lecturer in Spanish.*

Enrique G. Cortés, M.A., *Lecturer in Spanish.*

E. Mayone Dias, Lic.F.G., *Lecturer in Spanish and Portuguese.*

Pedro Duelo, Doctor en Leyes, *Associate in Spanish.*

Mariano González, Lic. en Fil., *Associate in Spanish.*

Raul N. Gutiérrez, Ed.D., *Lecturer in Spanish.*
 Isabel L. Herwig, M.A., *Lecturer in Spanish and Portuguese.*
 Josefina M. Méndez, Ed.D., *Lecturer in Spanish.*
 José M. Cruz Salvadores, *Lecturer in Spanish.*
 Carmen Sadek, M.A., *Associate in Spanish.*
 George L. Voyt, J.D., *Lecturer in Spanish.*

Spanish

Preparation for the Major

Courses 5, 25, 42, and 44, or their equivalents.

The Major

Fifteen upper division courses distributed as follows: eight required courses: 100 or 103, 105 or 109, 115 or 118, 120A-120B, 121A-121B and 127; seven elective courses: one in language, one in Spanish literature, one in Spanish American literature, and four selected from other Department offerings not including 160A-160B and 162.

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 139. The Department favors the Comprehensive Examination Plan, but, with departmental approval, the Thesis Plan may be followed. See page 142.

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, of which one must be a seminar. With the approval of the graduate adviser, a maximum of two courses may be taken at the graduate level in closely related fields. (3)

The Comprehensive Examination: two three-hour written examinations to be given the next-to-the-last week preceding the final examination period of the Fall and Spring quarters. In the first of these examinations the student will be expected to show a general knowledge of the history and structure of the Spanish language and of Spanish and Spanish American literatures. In the second of these examinations the student will be expected to show a thorough acquaintance with the authors, works and movements of either (a) Spanish literature or (b) Spanish American literature. Reading lists which will constitute the basis for this second examination will be available to the student. Only those students who pass these examinations with distinction will be encouraged to proceed to candidacy for the Ph.D.

Departmental Requirements—Thesis Plan. (1) Guidance Committee: the preparation and examination of each candidate will be the responsibility of a guidance committee composed of three members of the Department. The chairman of the committee will be the instructor under whom the candidate proposes to write his thesis. The other two members will be appointed by the chairman of the Department after consultation with the candidate and the chairman of the committee. The committee members shall be appointed to represent three different fields of interest within the Department. No committee shall be appointed before a candidate has completed one full quarter of work in graduate standing, including no less than two courses in the Department, of which at least one must be in the 200 series. (2) Foreign Language Requirement: the same as the Comprehensive Examination Plan. (3) Course Requirement: nine courses of which a minimum of six must be in the 200 series. With the approval of the guidance committee a maximum of two courses may be taken at the graduate level in closely related fields. (4) Thesis and Examination: the subject and general plan of investigation for the thesis must be approved by the department and the instructor concerned before a guidance com-

mittee can be appointed. After completion of the thesis, the candidate must pass a three-hour oral examination testing his knowledge of the field of his thesis and his general competence. A reading list which will constitute the basis for part of this examination will be available to the student. Only those students who pass these examinations with distinction will be encouraged to proceed to candidacy for the Ph.D.

Ph.D. Degree in Hispanic Languages and Literatures

General Requirements. See page 143.

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; (i) Spanish and Luso-Brazilian Folklore. 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 deter-

mined by the candidate's guidance committee. The minimum course requirement for a minor field is one graduate course (series 200-249) followed by a corresponding seminar (series 253-286) or the equivalent.

Course Requirements. Three upper division courses in Luso-Brazilian literature and a minimum, after the B.A., of 18 graduate courses and seminars, including Spanish 200, 201, 203, and one additional graduate course in one of the above fields of specialization not chosen as a major or minor. Those students who choose philology and linguistics as their major fields must also include Portuguese 203, and have a specific knowledge of Classical and Vulgar Latin and of Old French or Old Italian.

Qualifying Examinations. The qualifying examinations will be given during the fifth and sixth weeks of the Fall, Winter, and Spring quarters and will consist of: (a) a three-hour written examination in the candidate's major fields; (b) four one-hour written examinations in the minor fields; and (c) a two-hour oral examination. The qualifying examinations are normally taken no later than nine quarters after the B.A. and six quarters after receiving the M.A.

The Dissertation. The dissertation may be on any subject within the general area of Spanish and Portuguese languages and literatures. After the acceptance of the dissertation in its final form, the candidate is required to pass an oral examination which will cover principally the field within which the dissertation falls. If five years have elapsed since any of the requirements have been taken, these requirements must be revalidated by the department.

Lower Division Courses

1. Elementary Spanish.

Meets six hours weekly, including one hour in laboratory. This course corresponds to the first year of high school Spanish. The Staff

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

2G. Reading Course for Graduate Students.

(No credit)

Meets five hours weekly. Prerequisite: course 1G 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.

(Same as Portuguese 42.) A background course for the study of Peninsular literature.

Mr. Cruz-Salvadores

44. Civilization of Spanish America and Brazil.

(Same as Portuguese 44.) A background course for the study of Spanish American and Brazilian literatures.

Mrs. Arora

Upper Division Courses

The basic prerequisite to all upper division courses except 160A-160B and 162 is Spanish 25 or the equivalent.

100. Phonetics and Phonemics.

(Formerly numbered 117.) Meets four hours weekly, including one hour laboratory. Analysis of the phonetic and phonemic systems of Spanish with special emphasis on the correlation between the phonemic and graphemic systems. Exercises and drills directed toward individual needs.

Mr. Cruz-Salvadores, Mr. Otero

103. Morphology and Syntax.

(Formerly numbered 100.) A review of the patterns of the Spanish language: the verb system, syntax of preposition, word structure and word distribution.

Mr. Frey, Mr. Otero

105. Intermediate Composition.

(Formerly numbered 101.) Concentration on idiomatic expressions, paraphrasing, summarizing, and transformational systems.

Mr. Gutiérrez, Mr. Voyt

109. Advanced Composition.

(Formerly numbered 114.) Correction of student's original compositions and analysis of basic stylistic elements.

Mrs. Baños, Mr. Cortés

115. Applied Linguistics.

Meets three hours weekly. The formulation of the problems faced by the teacher of Spanish in view of general linguistic theory.

Mr. Bull, Mr. Frey

118. History of the Spanish and Portuguese Languages.

(Same as Portuguese 118.) Meets three hours weekly. Major features of the development of the Spanish and Portuguese languages from the origins in Vulgar Latin to modern times. Contributions of other languages to the formation of Spanish and Portuguese.

Mr. Otero, Mr. Smith

120A-120B. Survey of Spanish Literature.

Beginning each quarter. An introduction to the principal authors, works and movements of Spanish literature.

Mr. Araya, Mr. Rudder

121A-121B. Survey of Spanish American Literature.

Beginning each quarter. An introduction to the principal authors, works, and movements of Spanish American literature.

Mrs. Arora, Mr. Reeve

122. Medieval and Renaissance Literature.

The main genres of Medieval and Renaissance Spanish literature with emphasis on at least one representative work for each.

Mr. Rodríguez-Fuértolas

124. The Golden Age.

The main genres of the Golden Age with emphasis on at least one representative work for each.

Mr. Johnson

127. Don Quijote.

Directed reading and intensive study of the novel.

Mr. Dudley

128. Neoclassicism and Romanticism in Spain.

The main manifestations of thought and literature from 1700 to 1850 with emphasis on representative works.

Mr. Benítez

130. Spanish Literature from 1850 to 1898.

The development of post-Romantic literature with emphasis on representative works.

Mr. Smith

132. Spanish Literature in the 20th Century.

Spanish poetry, theater, essay and novel since 1898 with emphasis on at least one representative work for each genre.

Mr. Benítez

137. The Literature of Colonial Spanish America.

A study of the most important authors and movements in the various regions of Spanish America to 1810.

Mr. Fogelquist

139. 19th Century Spanish American Literature.

A detailed study of the important writers and movements from 1810 to 1860.

Mrs. Arora

143. Spanish American Literature in the 20th Century.

A detailed study of the important writers and movements since 1880.

Mr. Crow

147. Literary Analysis.

An introduction to the study of literary devices, figures of speech and the differentiation of literary genres.

Mr. Benítez

149. Folk Literature of the Hispanic World.

(Same as Folklore 149.) A study of the history and present dissemination of the main principal forms of folk literature throughout the Hispanic countries. Mr. Robe

151. Folk Song in Spain and Spanish America.

(½ course)

(Formerly numbered 108.) Meets three hours weekly. A study of the origins and development of Spanish folk music and of the different types of folk songs and folk poetry peculiar to the various regions of Spain and Spanish America. Mrs. Méndez

160A-160B. Hispanic Literatures in Translation.

(Formerly numbered 150A-150B.) Class readings and analysis of selected works in translation from the literatures of Spain and Portugal (160A-W) and of Spanish America and Brazil (160B-F.) Mr. Hulet, Mr. Johnson

162. Cervantes in Translation.

Class readings and analysis of selections from *Don Quixote* and other major works by Cervantes. Mr. Starkie

170A. Honer Course in Spanish.

Meets three hours weekly. Prerequisite: a minimum of six of the courses required for the major with a 3.25 average. Intensive study of a special topic chosen from a list proposed by the instructor in charge. Discussion, oral and written reports. Mr. Englekirk

170B. Honors Course in Spanish.

Prerequisite: course 170A. No regularly scheduled class meetings. Supervised preparation of an honors essay on a selected special topic. The Staff

199. Special Studies. (½ to 1 course)

Prerequisite: consent of adviser and instructor. A maximum of two full courses may count toward the major. The Staff

Graduate Courses**200. Bibliography.**

(Formerly numbered 201A.) Meets three hours weekly. Identification and analysis of bibliographical sources for work by doctoral candidates in their fields of specialization. Mr. Benítez, Mr. Rodríguez-Puértolas

201. Literary Criticism.

(Formerly numbered 201B.) Meets three hours weekly. Definition and discussion of methods of literary criticism. Mr. Benítez, Mr. Machado

203. The Development of Spanish Language.

Prerequisite: course 118 or equivalent. Intensive study of the historical development of the Spanish language, in its phonology, morphology, syntax, and vocabulary. Mr. Otero

206. Linguistics.

Meets three hours weekly. Prerequisite: course 115 or equivalent. A study of the theoretical synchronic linguistics as applied to Spanish. Mr. Ball

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. Rodríguez-Puértolas

223. Medieval and Renaissance Prose.

Meets three hours weekly. Readings and lectures on Spanish prose from the beginnings to 1550. Mr. Dudley

224. The Poetry of the Golden Age.

Meets three hours weekly. Readings and lectures on the main poets and poetic movements of the Golden Age. Mr. Johnson

225. The Drama of the Golden Age.

Meets three hours weekly. Readings and lectures on the "comedia." Mr. Barcia

226. Prose of the Golden Age.

Meets three hours weekly. Readings and lectures on fictional, didactic, religious, and historical writings. Mr. Rodríguez-Puértolas

227. Cervantes.

Meets three hours weekly. Readings and lectures on the works of Cervantes. Mr. Dudley

230. Neoclassic and Romantic Poetry and Drama.

Meets three hours weekly. Readings and lectures on representative works of the two genres for the period. Mr. Benítez

231. The 19th Century Novel.

Meets three hours weekly. Readings and lectures on the novel of the 19th century. Mr. Machado da Rosa

232. The Generation of 1698.

Meets three hours weekly. Readings and lectures on representative works of the generation. Mr. Barcia

233. Contemporary Spanish Drama.

Meets three hours weekly. Readings and lectures on the theater since 1898. Mr. Barcia

234. Contemporary Spanish Poetry.

Meets three hours weekly. Readings and lectures on poetry since 1898. Mr. Barcia

235. Contemporary Spanish Prose.

Meets three hours weekly. Readings and lectures on the novel, the short story, and the essay since 1898. Mr. Barcia

237. Chroniclers of the Americas.

Meets three hours weekly. Readings and lectures on the "Cronistas de Indias." Mr. Robe

239. Neoclassic and Romantic Prose and Poetry in Spanish America.

Meets three hours weekly. Intensive study of Neoclassicism and Romanticism in Spanish America. Mr. Sánchez-Reulet

240. The Modernist Movement.

Meets three hours weekly. An intensive study of the important writers of this movement during the period 1880-1916. Mr. Englekirk

243. Contemporary Spanish American Poetry.

Meets three hours weekly. Intensive study of the important poets of Spanish America since 1916. Mr. Fogelquist

244. Contemporary Spanish American Novel and Short Story.

Meets three hours weekly. A study of the important novelists and short story writers from Modernism to the present. Mr. Crow

245. Contemporary Spanish American Essay.

Meets three hours weekly. Intensive study of the important essayists of the 20th century. Mr. Sánchez-Reulet

249. Hispanic Folk Literature.

(Same as Folklore 249.) Meets three hours weekly. An intensive study of folk literature as represented in a) ballad and poetry; b) narrative and drama; c) speech. Mr. Robe

Seminars**253. Studies in Medieval Spanish and Portuguese.**

Meets two hours weekly. Prerequisite: course 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. Rodriguez-Puertolas

262B. Epic Poetry.

Meets two hours weekly. Prerequisite: course 222. Mr. Rodriguez-Puertolas

262C. Prose Writers.

Meets two hours weekly. Prerequisite: course 223. Mr. Dudley

264A-264D. Studies in the Golden Age.

264A. Poetry.

Meets two hours weekly. Prerequisite: course 224. Mr. Johnson

264B. The "Comedia."

Meets two hours weekly. Prerequisite: course 225. Mr. Barcia

264C. The Picaresque Novel.

Meets two hours weekly. Prerequisite: course 226. Mr. Rodriguez-Puertolas

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. Bénitez

270B. The Novel.

Meets two hours weekly. Prerequisite: course 231. Mr. Machado da Rosa

272A-272D. Studies in 20th Century Spanish Literature.

272A. The Novel.

Meets two hours weekly. Prerequisite: course 232 or 235. Mr. Barcia

272B. The Theater.

Meets two hours weekly. Prerequisite: course 233. Mr. Barcia

272C. Poetry.

Meets two hours weekly. Prerequisite: course 234. Mr. Barcia

272D. The Essay.

Meets two hours weekly. Prerequisite: course 235. Mr. Barcia

277. Studies in Colonial Spanish American Literature.

Meets two hours weekly. Prerequisite: course 237. Mr. Robe

278. Studies in 19th Century Spanish American Literature.

Meets two hours weekly. Prerequisite: course 239. Mr. Sánchez-Reulet

280A-280D. Studies in Contemporary Spanish American Literature.

280A. Modernist Poetry.

Meets two hours weekly. Prerequisite: course 240. Mr. Englekirk

280B. Post-Modernist Poetry.

Meets two hours weekly. Prerequisite: course 243. Mr. Fogelquist

280C. Novel and Short Story.

Meets two hours weekly. Prerequisite: course 244. Mr. Crow

280D. The Essay

Meets two hours weekly. Prerequisite: course 245. Mr. Sánchez-Reulet

286A-286B-286C. Studies in Hispanic Folk Literature.

(Same as Folklore 286A-286B-286C.)

286A. The Romancero.

Meets two hours weekly. Prerequisite: course 222. Mr. Rodriguez-Puertolas

286B. Narrative and Drama.

Meets two hours weekly. Prerequisite: course 239 or 249. Mrs. Arora, Mr. Robe

286C. Ballad, Poetry and Speech.

Meets two hours weekly. Prerequisite: course 249. Mr. Robe

Professional Courses**310. The Teaching of Spanish in the Elementary School.**

Meets three hours weekly. Prerequisite: course 115. Mr. Frey

370. The Teaching of Spanish in the Secondary School.

Meets three hours weekly. Prerequisite: course 115. Mr. Bull

372. The Language Laboratory. (½ course)

Meets three hours weekly. Preparation of materials. Equipment, techniques, and problems related to the operation of the language laboratory. Mr. Otero

Individual Study and Research**586. Directed Individual Studies.**

(½ to 1 course)

Prerequisites: graduate status and consent of the graduate adviser. Limited to a maximum of two full courses in any graduate program. Studies on subjects not offered as regular courses. The Staff (F, W, Sp, Sum)

597. Directed Individual Preparation for Graduate Degrees. (½ to 1 course)

Prerequisite: official acceptance of candidacy by the department. May be taken only once. Individual preparation for the comprehensive examination for the master's degree or the qualifying examinations for the Ph.D. degree. The Staff (F, W, Sp, Sum)

588. Research on Master's Thesis.

(½ to 1½ courses)

Prerequisite: consent of the guidance committee. Research in preparation of the master's thesis. The Staff (F, W, Sp, Sum)

589. Research on Dissertation. (½ to 2 courses)

Restricted to those who have passed the qualifying examinations for the doctor's degree. Research for and preparation of the doctoral dissertation. The Staff (F, W, Sp, Sum)

Portuguese**Preparation for the Major**

Courses 3, 25, 42 and 44, or their equivalent.

The Major

Thirteen upper division courses distributed as follows: Six required courses: 100 or 103, 101A or 101B, 120A-120B, 121A-121B; three elective courses from other Portuguese offerings in the department; four courses selected by the student and approved by the Department, in history, philosophy, or another language or literature, and for which the student has the necessary prerequisites or the equivalent.

Lower Division Courses**1. Elementary Portuguese.**

Meets six hours weekly, including one hour in laboratory. The Staff (F,W,Sp)

2. Elementary Portuguese.

Meets six hours weekly, including one hour in laboratory. Prerequisite: Course 1 or equivalent. The Staff (F,W,Sp)

3. Intermediate Portuguese.

Meets six hours weekly, including one hour in laboratory. Prerequisite: Course 2 or equivalent. The Staff (F,W,Sp)

25. Advanced Portuguese.

Meets four hours weekly. Prerequisite: Course 3 or equivalent. The Staff (W,Sp)

42. Civilization of Spain and Portugal.

(Same as Spanish 42.) A background course for the study of Peninsular literature. Mr. Cruz-Salvadores

44. Civilization of Spanish America and Brazil.

(Same as Spanish 44.) A background course for the study of Spanish American and Brazilian literatures. Mrs. Arora

Upper Division Courses**100. Phonetics and Phonemics.**

Meets four hours weekly, including one hour in laboratory. Analysis of the phonetic and phonemic systems of Portuguese with special emphasis on the correlation between the phonemic and graphemic systems. Exercises and drills directed toward individual needs. Mr. Dias

101A. Advanced Reading and Conversation.

Meets three hours weekly. Reading and discussion of writings by modern Brazilian and Portuguese authors. Mr. Hulet

101B. Advanced Composition and Style.

Meets three hours weekly. Correction of student's composition and analysis of basic stylistic elements. Mr. Hulet

103. Morphology and Syntax.

Meets four hours weekly. A review of the patterns of the Portuguese language: the verb system, syntax of preposition, word pattern and word distribution. Mr. Dias (W)

118. History of the Spanish and Portuguese Languages.

(Same as Spanish 118.) Meets three hours weekly. Major features of the development of the Spanish and Portuguese languages from their origins in Vulgar Latin to modern times. Contributions of other languages to the formation of Spanish and Portuguese. Mr. Otero, Mr. Smith (F,W,Sp)

120A. Survey of Portuguese Literature.

Meets four hours weekly. First half of an introduction to the principal movements, authors, and works of Portuguese Literature. Mr. Dias (F)

120B. Survey of Portuguese Literature.

Meets four hours weekly. Second half of an introduction to the principal movements, authors, and works of Portuguese Literature. Mr. Machado (W)

121A. Survey of Brazilian Literature.

Meets four hours weekly. First half of an introduction to the principal movements, authors and works of Brazilian Literature. Mr. Hulet

121B. Survey of Brazilian Literature.

Meets four hours weekly. Second half of an introduction to the principal movements, authors, and works of Brazilian Literature. Mr. Hulet (W)

130. The Portuguese Novel.

Meets four hours weekly. A study of the most representative currents, authors, and works of Portuguese fiction. Mr. Machado (F)

131. The Brazilian Novel.

Meets four hours weekly. A study of the most representative currents, authors, and works of Brazilian fiction. Mr. Hulet (Sp)

132. Portuguese Poetry.

Meets four hours weekly. A study of the most representative currents, authors, and works of Portuguese poetry from the Middle Ages to the present. Mr. Dias (W)

133. Brazilian Poetry.

Meets four hours weekly. A study of the most representative currents, authors, and works of Brazilian poetry from Colonial times to the present. Mr. Hulet

199. Special Studies. (½ to 1 course)

Prerequisite: Senior standing and consent of adviser and instructor. The Staff (F,W,Sp)

Graduate Courses**203. The Development of Portuguese Language.**

Meets four hours weekly. The development of the Portuguese Language from its origin in Vulgar-Latin to the present. Phonology, Morphology, syntax, and lexicography. Mr. Dias (Sp)

222. Camões.

Meets three hours weekly. An intensive study of the works of Camões, especially the *Lusiads* and the lyric poetry. Mr. Machado (F)

■ SPEECH

(Department Office, 4303 Humanities Building)

Charles Wyatt Lomas, Ph.D., *Professor of Speech.*

Waldo Woodson Phelps, Ph.D., *Professor of Speech (Chairman of Department).*

Donald Erwin Hargis, Ph.D., *Associate Professor of Speech.*

Ralph Richardson, Ph.D., *Associate Professor of Speech.*

Daniel Vandraegen, Ph.D., *Associate Professor of Speech.*

Dale Gordon Leathers, Ph.D., *Assistant Professor of Speech.*

Prentice Avery Meador, Jr., Ph.D., *Assistant Professor of Speech.*

Paul Irwin Rosenthal, Ph.D., *Assistant Professor of Speech (Vice-Chairman of Department).*

Ned Alan Shearer, Ph.D., *Assistant Professor of Speech.*

Andrea Louise Rich, Ph.D., *Assistant Professor of Speech.*

Arthur Lee Smith, Ph.D., *Assistant Professor of Speech.*



Victoria Alexandria Fromkin, Ph.D., *Assistant Professor of Linguistics.*

Patricia Bellamy Long, M.A., *Lecturer in Speech.*

235. Modern Portuguese Novel.

Meets three hours weekly. Reading and discussion of the outstanding novels of the XIXth and XXth Century with emphasis on *Eça de Queiroz*. Mr. Machado (Sp)

236. Modern Brazilian Novel.

Meets three hours weekly. Reading and discussion of the outstanding novels of the XIXth and XXth centuries with emphasis on Machado de Assis. Mr. Hulet (F)

253A-253B. Studies in Luso-Brazilian Literature.**253A. Portuguese Authors.**

Meets two hours weekly. Prerequisite: course 222 or 235. Study of outstanding Portuguese authors with emphasis on their relationships to other literatures. Mr. Machado

253B. Brazilian Authors.

Meets two hours weekly. Prerequisite: course 236. Study of outstanding Brazilian authors with emphasis on their relationships to other literatures. Mr. Hulet

Individual Study and Research**596. Directed Individual Studies. (½ to 1 course)**

Prerequisites: graduate status and consent of the graduate adviser. Limited to a maximum of two full courses in any graduate program. Studies on subjects not offered as regular courses. The Staff (F, W, Sp, Sum)

597. Directed Individual Preparation for Graduate Degrees. (½ to 1 course)

Prerequisite: official acceptance of candidacy by the department. May be taken only once. Individual preparation for the comprehensive examination for the master's degree or the qualifying examination for the Ph.D. degree. The Staff (F, W, Sp, Sum)

599. Research on Dissertation. (½ to 2 courses)

Restricted to those who have passed the Qualifying examinations for the doctor's degree. Research for and preparation of the doctoral dissertation. The Staff (F, W, Sp, Sum)

The major in speech studies the process of verbal communication from the formation and perception of speech sounds to the development of complex ideas intended to influence attitudes, beliefs, and actions of others. Lower division courses are designed to provide the student with the basic information and skills relevant to oral communication. Upper division courses are designed to provide students with an understanding of the theory and to develop critical skills. The major provides for both breadth and depth. All students are required to study the communication process both in terms of scientific knowledge and in terms of its significance as a social tool. In addition, each student emphasizes one of the two aspects included in the discipline, and supplements this emphasis with courses in allied disciplines.

Preparation for the Major

Speech 1, 2 (lower division); or 101 (upper division), with an average grade of C or higher. Students should note that upper division courses in the allied fields used to complete requirements for the major may have prerequisites. In some cases, these may be combined with the breadth requirements of the College of Letters and Science.

The Major

In Speech: Ten upper division courses, including: 102, 104, 107, 111, and 133; three additional courses from the group selected for specialization; and two additional elective courses from the group other than the one selected for specialization.

Group I. Rhetorical Criticism and Public Address: nature of criticism, uses of criticism in evaluating speeches as instruments of decision making in an historical setting, history of public address. 134, 135, 137A, 137B, 138, 197.

Group II. Persuasion and the Group Process: logical structure of discourse, interaction of audience and speaker, group interaction, decision making through debate and discussion. 106, 108, 109.

In Allied Fields. Six upper division courses in allied fields related to the above group specialization selected from the following lists in consultation with the departmental adviser.

Group I. Rhetorical Criticism and Public Address: English 103, 116, 140, any course from 153, 154, 155, 160, 161, 163, 165, 170, 171, 172, 174; History, any course

from 150A-150H, 171A through 188; Political Science 141, 142, 145, 152, 172A, 172B, 180; Psychology 135, 136, 137A, 137B; Sociology 122, 150, 152, 155; Journalism 183, 191.

Group II. Persuasion and the Group Process: Linguistics 100; Philosophy 192; Political Science 141, 148, 172A, 172B; Psychology 135, 137A, 137B, 149; Sociology 122, 148, 150, 152, 154; Journalism 183, 191.

The following additional courses, ordinarily taken in the graduate year, complete the speech requirement for the general secondary credential: Speech 370 and three upper division or graduate courses in Speech.

The minor in speech for the general elementary credential will consist of the following courses: Speech 1 and 2, or 101; 104; 106; 111; two courses from Speech 102, 107, 112A, or 112B.

The minor in speech for the general secondary credential will consist of the following courses: Speech 1 and 2, or 101; 102; 106; 111; two courses from Speech 104, 107, 112A, 112B, 133, 190A-190B; Speech 370.

The minor in speech for the junior college credential will consist of the following courses: Speech 1 and 2, or 101; 102; 106; 111; 133; 370; one upper division elective.

Requirements for Admission to Graduate Courses

A bachelor's degree with a major consisting of at least nine upper division quarter courses (or equivalent) in speech. With departmental approval, up to three courses in closely related disciplines may be accepted in lieu of speech courses. This requirement is prerequisite to the nine-course program for the master's degree. If the candidate is deficient in the prerequisite, he must fulfill it by work undertaken as a graduate student. Graduate students in other disciplines may be admitted to graduate speech courses by permission of the instructor.

Requirements for the Master's Degree

For the general requirements, see page 139. The Department follows the Comprehensive Examination Plan, as described on page 142.

The departmental requirements are as follows: (a) In either upper division or graduate status, the program must include the following courses or their equivalents: two courses from each of the following groups: (1) courses 106, 107, 108, 109; (2) courses 133, 134, 135, 137A, 137B, 138; and one course from each of the following groups: (1) courses 102, 104; (2) courses 111, 112A, 112B. (b) Speech 200, Speech 238, one grad-

uate seminar, and at least one course from each of the following groups: (1) 202, 206, 207; (2) 211, 234, 235, 236, 237. (c) Four elective courses in Speech, either graduate or upper division. (d) The student must pass a comprehensive written examination normally given toward the end of each quarter.

Requirements for the Doctor's Degree

For the general Graduate Division requirements, see page 143.

Departmental requirements: (a) The Department requires a reading knowledge of one foreign language for the doctoral degree. In consultation with the student, the Department will select the language best suited to his needs; preparation for the language examination begins upon entry into the program. No student will be permitted to take Part II of the qualifying examination until the language requirement 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

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, Mrs. Rich

103. Phonetics of English.

A study of the physical production and acoustic characteristics of the sounds of American English. Mrs. Fromkin

104. Science of Speech.

(Formerly numbered 122 and same as Linguistics 105.) Prerequisite: Linguistics 100. An introduction to the anatomy and neuro-physiology of the speech organs in relation to the acoustic characteristics of the speech signal. Mrs. Fromkin

106. Principles and Types of Public Discussion.

Prerequisite: course 1 or 101. Analysis of the purposes, principles, and types of public discussion. Practice in organizing group discussion. Mr. Leathers, Mrs. Rich

107. Principles of Argumentation.

Prerequisite: course 1 or 101. 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.

Mrs. Long, 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 1 or 101. Theory of audience analysis and adaptation. Preparation and delivery of the occasional speech.

Mr. Phelps, Mr. Shearer

111. The Oral Tradition in Literature.

Historical and theoretical foundations of oral interpretation from the rhapsodists of ancient Greece to contemporary poets and their interpreters.

Mr. Hargis, Mr. Vandraegen

112A-112B. Oral Interpretation of Literature.

Prerequisite: course 1 or 101. A study of the literary, aesthetic, and oral bases for the analysis of communication of (112A.) prose and (112B.) poetry.

Mr. Hargis, Mr. 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, Mr. Rosenthal

134. Classical Public Address.

Prerequisite: background in classics or ancient history. A critical study of speeches by leading Greek and Roman orators.

Mr. Meador

135. British Public Address.

Prerequisite: 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: upper division courses in American history. Critical study of speeches by leading American orators. Relationships of speakers to issues and social movements of their day.

137A. Colonial period to 1865; 137B. 1865-1930.

Mr. Lomas, Mr. Rosenthal, Mr. Shearer

138. Contemporary British and American Public Address.

Critical study of speeches from 1930 to the present, with special emphasis on F. D. Roosevelt and Winston Churchill.

Mr. Phelps, Mr. Shearer

190A-190B. Forensics. (½ course each)

Prerequisite: consent of the instructor. May be repeated once for credit.

Mrs. Long

191. Analysis and Briefing. (½ course)

Prerequisite: consent of the instructor. Intensive study of selected political or social issues; preparation of bibliography; analysis and evaluation of issues and arguments.

Mrs. Long

197. Proseminar in Rhetoric.

Intensive study of the speaking associated with a single major issue. Lectures, discussions, oral

reports, and papers. Limited to seniors and graduate students with credit for at least three upper division courses in speech, including at least one course in the history and criticism of public address. The Staff

199. Special Studies. (½ to 1 course)

Prerequisite: senior standing and consent of instructor.

The Staff

Graduate Courses**200. Bibliography and Methods of Research.**

Mr. Hargis, Mr. Shearer

202. Theory Testing in Human Communication.

Mr. Leathers

206. Backgrounds and Theories of Discussion.

Mr. Leathers, Mrs. Rich

207. Forms and Methods of Argumentation.

Mr. Rosenthal

211. Theory of Delivery. Mr. Hargis, Mr. Vandraegen**234. Classical Rhetorical Theory.**

Mr. Meador

235. Medieval Rhetorical Theory.

Mr. Meador

236. Renaissance and Early Modern Rhetorical Theory: 1500-1850.

Mr. Shearer

237. Modern Rhetorical Theory: 1850 to the Present.

Mr. Phelps

238. Rhetorical Criticism.

The Staff

260A-260B. Seminar in the Criticism of Public Address.

260A. Historical and Social Settings. Mr. Lomas

260B. Rhetorical Criticism. Mr. Lomas

266. Seminar in Critical Analysis of Discussion.

Mr. Leathers

267. Seminar in Critical Analysis of Argumentation.

Mr. Rosenthal

268. Seminar in Rhetorical Theory.

Mr. Meador, Mr. Shearer

Professional Course in Methods**370. The Teaching of Speech.**

Required of candidates for the general secondary credential with the major or minor in speech.

Mr. Phelps, Mrs. Rich

Individual Study and Research**596. Directed Individual Study or Research.**

(½ to 1 course)

The Staff

596X. Directed Individual Study or Research.

(½ to 1 course)

Preparation for language examination. The Staff

597. Preparation for the Comprehensive Examination for the Master's Degree or for the Qualifying Examination for the Ph.D.

(½ to 1 course)

The Staff

599. Research for and Preparation of the Doctoral Dissertation. (¼ to 2 courses)

The Staff

■ STATISTICS

Studies in statistics and related areas are possible in various academic departments. Detailed information may be found in the announcements of the individual departments listed below.

Anthropology

Course in statistical methods.

Biomathematics

Stochastic models in biology.

Business Administration

Master of Science and Ph.D. degree programs with specialization in business statistics offered by the Quantitative Methods Division.

Economics

Upper division and graduate offerings in econometrics.

Education

Graduate offerings in experimental design and in measurement.

Engineering

Upper division and graduate offerings in statistics and probability.

Mathematics

Probability and statistics available as a field in the Ph.D. program in mathematics and the applied mathematics program.

Pharmacology

Bioassay.

Political Science

Upper division course in quantitative methods.

Psychology

Course work in statistics, factor analysis, scaling.

Public Health

Master of Science and Ph.D. programs in biostatistics.

Sociology

Offerings in statistics, measurement, demography.

■ SUBJECT A: ENGLISH COMPOSITION

(Department Office, 306 Royce Hall)

Philip Durham, Ph.D., *Chairman, Committee on Subject A.*

Everett L. Jones, M.A., *Supervisor of Instruction in Subject A.*

Ella O. Hutchins, M.A., *Lecturer in Subject A.*

Cathleen H. Wheat, Ph.D., *Lecturer in Subject A.*

Subject A. (No credit)

Fee, \$45.00. Four hours weekly for one quarter. Although this course yields no credit, it displaces 4 units on the student's program. Every student who does not satisfy the Subject A requirement by presenting transfer credit or by passing an acceptable examination is required to take, in the quarter im-

mediately following his admission to the University, the course in Subject A. Sections are limited to thirty students. For further details, see page 38 of this bulletin. Training in correct writing, including drill in sentence and paragraph construction, diction, punctuation, usage, and spelling. Weekly compositions and written tests on the text. **The Staff**

■ THEATER ARTS

(Department Office, 2310 Macgowan Hall)

Marvin S. Borowsky, B.A., *Professor of Theater Arts.*

Walden P. Boyle, Ph.D., *Professor of Theater Arts.*

^aArthur B. Friedman, Ph.D., *Professor of Theater Arts.*

Henry Goodman, Ph.D., *Professor of Theater Arts.*

Edward Hearn, M.A., *Professor of Theater Arts.*

John H. Jones, M.A., *Professor of Theater Arts.*

^aWalter K. Kingson, Ed.D., *Professor of Theater Arts.*

^a Absent on leave, fall quarter, 1969-1970.

- George M. Savage, Ph.D., *Professor of Theater Arts.*
 Colin Young, M.A., *Professor of Theater Arts (Chairman of the Department).*
 Ralph Freud, *Emeritus Professor of Theater Arts.*
 §Hugh J. Gray, Ph.D., *Emeritus Professor of Theater Arts.*
 William W. Melnitz, Ph.D., *Emeritus Professor of Theater Arts.*
 Samuel Selden, Litt.D., *Emeritus Professor of Theater Arts.*
 William B. Adams, M.A., *Associate Professor of Theater Arts.*
²⁰Robert F. Corrigan, M.A., *Associate Professor of Theater Arts.*
 Richard C. Hawkins, M.A., *Associate Professor of Theater Arts.*
 Melvyn B. Helstien, Ph.D., *Associate Professor of Theater Arts.*
 Robert H. Hethmon, Ph.D., *Associate Professor of Theater Arts.*
 James Kerans, Ph.D., *Associate Professor of Theater Arts.*
 Darrell E. Ross, M.F.A., *Associate Professor of Theater Arts.*
 Louis C. Stoumen, B.A., *Associate Professor of Theater Arts.*
 Abe V. Wollock, Ph.D., *Associate Professor of Theater Arts.*
 John R. Cauble, M.A., *Assistant Professor of Theater Arts.*
 Donald B. Crabs, M.A., *Assistant Professor of Theater Arts.*
 †William E. Crocken, *Assistant Professor of Theater Arts.*
 Frank D. LaTourette, M.Litt., *Assistant Professor of Theater Arts.*
 Mark McCarty, M.A., *Assistant Professor of Theater Arts.*
 William H. Menger, M.A., *Assistant Professor of Theater Arts.*
 Carl R. Mueller, Ph.D., *Assistant Professor of Theater Arts.*
 Howard Suber, Ph.D., *Assistant Professor of Theater Arts.*
 Elyseo J. Taylor, B.A., *Assistant Professor of Theater Arts.*
 ———, *Assistant Professor of Theater Arts.*
 ———, *Assistant Professor of Theater Arts.*



- Theodore Apstein, Ph.D., *Lecturer in Theater Arts.*
 Robert G. Barrows, M.A., *Lecturer in Theater Arts.*
 John D. Boehm, M.A., *Lecturer in Theater Arts.*
 Edgar Brokaw, B.A., *Lecturer in Theater Arts.*
 Robert F. 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.*
 Ruth C. Lane, *Lecturer in Theater Arts.*
 Diana M. Maddox, *Lecturer in Theater Arts.*
 Paul A. Magistretti, M.A., *Acting Assistant Professor of Theater Arts.*
 Ralph Sargent, M.A., *Lecturer in Theater Arts.*
 J. Palmer Schoppe, *Lecturer in Theater Arts.*
 Ruth E. Schwartz, Ph.D., *Lecturer in Theater Arts.*
 William M. Shull, *Senior Lecturer in Theater Arts.*
 Larry Thor, *Lecturer in Theater Arts.*
 Lyne S. Trimble, M.S., *Lecturer in Theater Arts.*
 John W. Young, M.S., *Lecturer in Theater Arts.*

§ Recalled to active service.

²⁰ Absent on leave, fall and winter quarters, 1969-70.

† Absent on leave, 1969-1970.

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 86), 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 (5A must be taken before 5B)–5C, 20A, 40, 41, 42.

Secondary Teaching Credential Specialization. Courses 5A–5B–5C, 20A, 40, 41, 42, 160A, and Humanities 1A–1B–1C, or English 10A–10B–10C.

Motion Picture Specialization. Students electing to specialize in motion pictures for their B.A. degree are expected to complete the general University and College requirements before entering the motion picture program, although this would not prevent students from taking lower division film courses or film history courses coincident with their general studies.

Television-Radio Specialization. Courses 5C, 20A. Students electing to specialize in television-radio for their B.A. degree must complete the general University and College requirements before entering the Television-Radio program.

The Major

Theater Specialization. Courses 105, 130A, 140A, 141A, 142A, 143A, 160A, 170, 172A–172B, Classics 142, English 103, 167 and five courses or 20 units of approved electives in theater arts, for a total of 15½ courses or 62 units. All students during each quarter of residence are responsible for completing specific production assignments related to production activity of the Theater Division.

Special Programs in Theater. In addition to the standard major, the Theater Division provides for three special programs: (1) Acting; (2) Playwriting; and (3) Design/Technical. Students intending to follow one of these programs must follow the usual preparation for the major with the following exceptions: (a) course 43 is required of both Play-

writing and Design/Technical specialists; (b) Art 30B is required of Design/Technical specialists; and (c) Acting specialists are not required to course 5C, but do take courses 21A–21E, Dance 20, and Music 3A.

Specialists in all three programs must take the following core of courses: 105, 172A, 172B, Classics 142, English 103, English 167, and one additional course to be selected by the student's adviser. To this core of courses are added the following:

Special Program in Acting. Courses 21A–21E, 122, 124A, 124B, 121A–121F, Dance 20, Music 3A. Total units in this program: 86. Lower Division: 32; Upper Division: 54.

Special Program in Playwriting. Courses 130A, 130B, 130C, 160A, 170, 106A and 8 units of Dramatic Literature as recommended by the student's adviser. Total units in the program: 80. Lower Division: 24; Upper Division: 56.

Special Program in Design/Technical Theater. Courses 130A, 148A–148B–148C, 149A–149B–149C, 160A, 170 and an elective chosen from the following list to bring the total of upper division units to 62 in the major: 140B, 141B, 142B, 143A, 143B, 145, 146A, 146B, 190A–190B, Art 150A–150B–150C (Students in Design/Technical may choose between English 103 and English 167, but need not take both). Total units in this program: 90. Lower Division: 28; Upper Division: 62.

Admission to each of the Special Programs in Theater is by application to the Head of the Theater Division, and continuance in the Programs is by consent of the faculty, subject to review. Admission to the Acting Program is controlled through 20A, or audition, or both. Admission to the Playwriting Program is by consultation with the faculty in that area. Admission to the Design/Technical Program follows completion of course 43 and such other demonstration of competence and promise as the faculty of that area require. In the case of the specialist in Design/Technical, the student enters the program as a junior, having completed the preparation for the major. The course of study is arranged by consultation of the student with his adviser. Within the specialization it is possible to concentrate on set design, costume design, lighting design or technical fields by the nature of the course work or project undertaken in courses 148A–148B–148C and 149A–149B–149C.

Secondary Teaching Credential Specialization. Courses 105, 130A, 140A, 141A, 142A,

143A, 160B or 161, 170, 172A-172B, 370, Classics 142, English 103 and 167, and Theater Arts electives to bring unit total to 62.

The Department provides a specialization leading to a General Secondary Teaching Credential. In addition to the above program, the student must interview a credential adviser in the Graduate School of Education concerning required courses in education, a teaching minor and the year of graduate work.

Motion Picture Specialization. (21 courses.)

(a) *Required Courses* (8 courses): 5B (or 105), 5C, 106A, 106B, 108, 134A and 179A.

(b) *Electives* (3 courses): Three upper division courses in the Department as selected in consultation with an adviser.

(c) *General Requirements* (10 courses): Nine upper division courses, selected in consultation with an adviser, in the following areas—*The Arts, Literature, Social Studies, and Theory and Criticism*. A minimum of three areas must be selected and two courses taken in each area chosen: the remaining three required courses may be in any of the areas. A list of recommended courses in each area is filed with each Departmental adviser and with College of Fine Arts counselors. Copies can be obtained from the Department secretary.

In addition, each student must enroll in 195 (Senior Seminar) the last term of his undergraduate residence. (The requirement of the course is the preparation of a paper on some aspect of contemporary cinema.)

(d) *Specialized Major Requirements* (10 courses): If the student is selected for a specialized major in film production or writing, he may substitute any of the following courses for the General Requirements listed in (c) above: Production—151, 152, 153A, 153C, 154, 164, 179B, 181A-181B-181C; Writing—134B, 135A, 135B, 135C, 130A, 130B, 130C, 132, 136A, 136B, 136C, 136D, 137 or English 135A-135B-135C.

In addition, any student selected for the Honors Class in film history (109) may substitute it for any one course of the requirements in (c) above.

Notes on Specialized Majors and Honors Classes. The following courses are considered, in effect, entrance examinations to the specialized majors: 106A or 106B, 134A and 179A. Doing well in these courses allows the student to be selected to make a presentation before the Production Faculty for further film projects, or be selected by the Writing

Faculty for 134B or 135A-135B-135C, or be invited by a member of the History Faculty to propose a research project for 109, whichever area is of primary interest to the individual student. Continuation in these programs requires maintaining a high level of imaginative thought and work. Those in production are required to perform assignments on each other's projects. Continuation in film production, including all technical and technique courses, depends upon an evaluation of the first film project in comparison with all other such projects of the quarter, as well as an acceptable proposal for Project 2. To equalize this comparison, all motion picture students, graduate and undergraduate, are required to take Project 1 no matter their previous film experience.

The Department of Theater Arts, Motion Picture Division, reserves the right to hold for its own purposes, examples of any work done in classes and to retain for distribution such examples as may be selected.

Television-Radio Specialization. The undergraduate curriculum is designed to provide a broad general spectrum of television as a *communicative art of social responsibility*. It offers three area majors: *General, Writing, and Direction-Production*.

All television majors are required to take courses 5C, 20A, 105, 106A, 108, 110, 136A, 136B, 136C, 153B, 166, and 185A. These required courses offer a program with (1) a strong emphasis on the historical background of theater, motion pictures, and television; (2) three courses (12 units) in non-dramatic and dramatic writing, and (3) a year (12 units) in production, which emphasizes the origination of programs within the framework of socially responsible broadcasting concepts.

General Major: In addition to the courses above, the *general major* student must satisfactorily complete course 196 and a minimum of eight (8) approved electives chosen from a broad list of courses throughout the Department and the University, to bring the total number of upper division units in the major, required and elective, to 76.

Course 196, *Senior Seminar in Television Programming*, is designed as a culminating course. It is taken during the student's last quarter of residence and requires the preparation of a correlating paper on a significant aspect of television programming.

Specialized Majors: Direction-Production and Writing Area Majors: In order to qualify for either of these specializations, the student

must (1) complete the courses required of all television majors, as listed above, (2) maintain a B average or better in the major, and (3) be recommended, upon a review of his record, for entry into either the *writing* or the *direction-production* specializations.

Students accepted in the specialization program take courses 185B, 185C, and 185D in *direction-production*, or courses 136D, 136E, and 136F in *writing*; plus a minimum of six (6) approved electives chosen from related courses in the Department or from an approved list of courses outside the Department to bring the total number of upper division units to 76.

All junior and senior students may be obligated to fulfill specific production assignments as a contribution to the creative program 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 or motion pictures must complete the requirement of one foreign language before advancement to candidacy. There is no language requirement in Television-Radio. 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 except in Television-Radio (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. Course 200 and four of the following courses are required: 206A, 206C, 208A, 208B, 209A, 209B, 209C, or 291. It is recommended that course 200 be taken in the quarter preceding their advancement to candidacy.

Television-Radio. The required courses are 200 and 210. The student will choose the remaining seven courses after consultation with his adviser.

Master of Fine Arts Degree

The Department offers a two-year program leading towards an M.F.A. degree in theater, motion pictures and television-radio. It requires the completion of 36 units (nine courses). (See below for requirements by subject area.) In addition the student must complete certain projects in writing, direction, acting, design or technical supervision.

For admission to the program a student must have completed the UCLA undergraduate program in theater arts in the area of his proposed specialization, or its equivalent, and submit evidence of creative ability and professional intent. However, students may be admitted to the program with deficiencies when an undergraduate degree has been completed in some field other than theater arts, or when an undergraduate degree in theater arts has had different requirements. In such cases the student can anticipate spending some time in limited status while removing the deficiencies.

Theater. The M.F.A. projects may be in writing, direction, theater design, costume design, acting, or technical supervision, and a candidate will be advised to arrange a program of courses which best prepares him for the successful completion of his project series.

Motion Pictures. The M.F.A. in motion pictures can be taken in either film making or writing. Course requirements will be arranged with a graduate adviser.

1. Film making. The base of this program is a B.A. with successful completion of the animation sequence (181A-181B-181C) or Film Projects 1 and 2 (179A-179B). Course work is intended to provide an opportunity to generalize upon the experience of the undergraduate projects, and to experiment further before embarking on the final film project for the M.F.A.

2. Writing. The base of this program is successful completion of an undergraduate program in writing (see UCLA requirements under description of undergraduate curriculum). The thesis project will be a feature-length script, or an equivalent amount of writing, in fictional or documentary forms.

Television. The M.F.A. in television can be taken in either *production-direction* or *writing*. Course requirements will be arranged with a graduate adviser. Students will be admitted to the M.F.A. Program only after: (1) Completing two quarters of graduate residency and (2) Qualifying for admittance by written application and approval of faculty.

1. Production-Direction. The base of this program is the B.A. in television at UCLA or its equivalent, (see undergraduate concentration above) and the television sequence (185B-185C-185D). Students entering television graduate studies from other disciplines or other institutions may be required to take make-up courses in deficient areas. Additional courses will be determined in consultation with a graduate adviser. The end projects at the graduate level will be one or more major productions, demonstrating originality and the creative ability of the student, as well as his professional mastery of the medium.

2. Writing. The base of this program is the successful completion of the writing area concentration for the B.A. at UCLA (see above). Additional courses will be determined in consultation with a graduate adviser. The end project at the graduate level will be one or more original scripts, which may be conceived for fictional, documentary, or educational television.

Doctor of Philosophy Degree in Theater History

In addition to the general University regulations for the doctor of philosophy degree, including the dissertation and final examinations (see page 143), 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 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 except television. The history of the influence of different cultures, traditions, and technologies on the development of theater as a social institution.

5C. History of Motion Pictures and Broadcasting.

Lecture, four hours; laboratory, two hours. Required of theater arts majors except those in the acting specializations. The history of the development of motion pictures and broadcasting from their beginnings to the present day.

Mr. Stoumen

20A. Acting Fundamentals.

Required of theater arts majors with specialization in theater, secondary teaching credential, television-radio. An introduction to the interpretation of drama through the art of the actor. Development of individual insights, skills, and disciplines in the presentation of dramatic material to an audience.

Mr. Cauble, Mrs. Fitzgerald

20B. Acting Fundamentals. (½ course)

Lecture-laboratory, four hours. Prerequisite: course 20A or the consent of the instructor. Intensive application of acting techniques through study and performance of selected scenes from stage, motion pictures and television scripts.

20C. Acting Fundamentals. (½ course)

Lecture-laboratory, four hours. Prerequisites: courses 20A-20B, or the consent of the instructor. Study and performance involving problems of style in a wide range of dramatic material.

21A. Intermediate Acting. (½ course)

Lecture, four hours; laboratory, three hours. Prerequisites: course 20A or equivalent and consent of the instructor. Intensive application of acting techniques through study and performance and the learning of basic exercises for the actor.

21B. Intermediate Acting. (½ course)

Lecture, four hours; laboratory, three hours. Study and performance involving problems in a wide range of dramatic material.

21C-21D-21E. Intermediate Acting. (½ course each)

Lecture, four hours; laboratory, three hours. Individual studies and exercises designed to develop freedom and imagination in the preparation of dramatic material.

40. Fundamentals of Stage Scenery. (½ course)

Lecture, two hours; laboratory, two hours. (Courses 40, 41, 42 may be taken in any sequence, but not concurrently.) Required of theater arts majors with specialization in theater or general secondary teaching credential. The planning and execution of stage scenery; the consideration of design, materials, construction methods, shop procedures and budgeting. Mr. Crabs

41. Fundamentals of Stage Lighting and Sound. (½ course)

Lecture, two hours; laboratory, two hours. (Courses 40, 41, 42 may be taken in any sequence, but not concurrently.) Required of theater arts majors with specialization in theater or general secondary teaching credential. A basic study of stage lighting with emphasis on the study of instruments, control, color, and procedure. Procedures and techniques related to audio-recording and reproduction for the stage. Mr. Crabs

42. Fundamentals of Stage Costuming. (½ course)

Lecture, two hours; laboratory, two hours. (Courses 40, 41, 42 may be taken in any sequence, but not concurrently.) Required of theater arts majors with specialization in theater or general secondary teaching credential. Costume analysis and construction techniques. Laboratory practice in the making of a costume from design to performance. 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 playwrighting.

Upper Division Courses

THEATER AND GENERAL SECONDARY CREDENTIAL AREAS**101. Introduction to the Theater Arts. (½ course)**

Not open for credit to theater arts majors. A survey of theater, motion pictures, television and

radio, together with critical analysis of their roles in contemporary culture, leading to an appreciation and understanding of the theater arts. A non-technical presentation for the general student.

The 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.

102D. History of the European Theater.

Lecture, three hours. Prerequisites: courses 5A and 5B or consent of the instructor. A survey of the development of the theater, from the Greeks to the present day. May not be taken for credit by students who have had 102A or 102B. Mr. Mueller

104. History of the American Theater.

Lecture, three hours. The history of the American theater from the Revolutionary War to the present.

105. Main Currents in Theater.

Lecture, three hours. Required of theater arts majors with specialization in theater or secondary teaching credential. Critical examination of the leading theories of theater from 1887 to the present. Study and discussion of modern styles of production. Mr. Goodman

117A. The Puppet Theater. (½ course)

Lecture, two hours; laboratory, four hours. Prerequisite: course 40 or consent of the instructor. Study of the history and practice of the art of puppetry. An examination of the materials and methods of construction. Staging of puppet and marionette productions as laboratory practice. Mr. Helstien

117B. The Puppet Theater. (½ course)

Lecture, two hours; laboratory, four hours. Prerequisite: course 40 or consent of the instructor. Advanced study in the art of puppetry. Mr. Helstien

117C. The Puppet Theater. (½ course)

Lecture, two hours; laboratory, four hours. Prerequisite: course 40 or consent of the instructor. Advanced study in the staging of puppet and marionette productions. Mr. Helstien

118A. Creative Dramatics.

Studies of the principles and procedures of the informal approach to children's drama through creative interpretations of literature. Mrs. Fitzgerald

118B. Creative Dramatics. (½ course)

Lecture, one hour; laboratory, two hours. Prerequisite: course 118A or consent of the instructor. Advanced theory and practice in the art of drama for children. Mrs. Fitzgerald

119. Theater for the Child Audience.

Lecture, three hours. Theories and principles of production in the formal theater arts for children. Analysis and evaluation of appropriate theatrical forms. Mr. Helstien

120A. Advanced Acting for the Stage.

Prerequisite: course 20A or consent of the instructor. Advanced study and practice in the art of acting.

120B. Advanced Acting for the Stage.

Prerequisite: consent of the instructor. Advanced problems in acting for the stage.

121A-121B-121C. Advanced Problems in Acting.

Lecture, six hours; laboratory, six hours. Study and development of characters from the classic plays through the body of contemporary literature.

121D-121E-121F. Advanced Problems in Acting.

Lecture, six hours; laboratory, six hours. Advanced problems in acting.

122. Make-up for the Stage. (½ course)

The art of make-up and its relation to the production as a whole. History, aesthetics, materials, and procedures of make-up. Mr. Jones

124A-124B. Voice for the Stage. (½ course each)

Lecture, two hours; laboratory, two hours. Development of the techniques of voice production for the theater.

130A. Fundamentals of Playwriting I.

Lecture, three hours. Required of Theater Arts majors with a specialization in theater or secondary teacher's credential. Course designed to stimulate the student's critical and creative faculties through the preparation of original material for the theater. Guidance in the completion of a one-act play. Mr. Barrows, Mr. Savage

130B. Fundamentals of Playwriting II.

Lecture, three hours. Prerequisite: course 130A. Study in original material for the theater, its preparation and its development. Course is designed to give further insight into critical aspects of the one-act form. Guidance in the completion of a one-act play. Mr. Barrows, Mr. Savage

130C. Intermediate Playwriting.

Lecture, three hours. Prerequisites: courses 130A, 130B, and consent of the instructor. 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

130D. Intermediate Playwriting.

Lecture, three hours. Prerequisites: courses 130A, 130B, 130C and consent of the instructor. Continued study in original material for the theater. Preparation and development of a play. Guidance in completion of original material. Mr. Magistretti, Mr. Savage

132. Manuscript Evaluation for Theater.

Lecture, three hours. Prerequisite: course 130A and consent of the instructor. May be repeated for a maximum of two courses credit. Principles and practices in the evaluation of manuscripts for theater. Mr. Savage

137. Play Analysis.

Lecture, four hours. Theory of action as it relates to drama. Study of the determinants of conflict, motive, and action, and of the critical vocabulary appropriate to such a study.

140A. Scenic Techniques for the Stage. (½ course)

Lecture, two hours; laboratory, two hours. Prerequisite: course 40 or approved equivalent. (Courses 140A, 141A, 142A may be taken in any sequence, but not concurrently.) Required of theater arts majors with specialization in theater or secondary teaching credential. An intensive study in the techniques of scenic construction, with emphasis given to dimensional scenic structures. Mr. Crocken

140B. Advanced Scenery for the Stage.

Lecture, three hours; laboratory, two hours. Prerequisite: course 140A. Advanced study of technical problems in staging theater productions, including design analysis and planning related to rigging, shifting and construction techniques. Mr. Crocken

141A. Lighting Techniques for the Stage.

(½ course)

Lecture, two hours; laboratory, two hours. Prerequisite: course 41 or approved equivalent. (Courses 140A, 141A, 142A may be taken in any sequence, but not concurrently.) Required of theater arts majors with specialization in theater or secondary teaching credential. The study of stage lighting techniques with emphasis given to lighting plots, instrument schedules, hanging sections, and sequential cue relationships. Mr. Crocken

141B. Advanced Lighting for the Stage.

Lecture, three hours; laboratory, two hours. Prerequisite: course 141A. The detailed study of stage lighting as an art, with emphasis given to design concepts. The interpretation of a script or score through the control of light and color in relation to actor and audience. Mr. Crocken

142A. Costuming Techniques for the Stage.

(½ course)

Lecture, two hours; laboratory, two hours. Prerequisite: course 42 or consent of the instructor. Required of theater arts majors with specialization in theater or secondary teaching credential. Advanced study of historical costume and the interpretation of theatrical costume design through the use of patterns, fabrics, and related costume techniques. Mrs. Hungerland

142B. Advanced Costuming for the Stage.

Lecture, two hours; laboratory, three hours. Prerequisite: course 142A or consent of the instructor. Special problems in the procuring, designing, construction and management of costumes used in theatrical productions. Mrs. Hungerland

143A. Scenic Design for the Theater.

Lecture, two hours; laboratory, two hours. Prerequisites: courses 40, 41, 42. Required of theater arts majors with specialization in theater or secondary teaching credential. Basic principles of design as applied to the interpretation and presentation of the visual aspects of dramaturgy. Study of styles, techniques and methods of design for the theater arts. The translation of ideas into visual forms. Mr. Jones

143B. Advanced Scenic Design for the Theater.

Lecture, two hours; laboratory, two hours. Prerequisites: course 143A and consent of the instructor. Further study of the design of scenery for the theater, and translation of the design into actual visual form. Solving design problems for the complicated play. Consideration of experimental ideas, and the investigation of new materials. Mr. Corrigan

145. Costume Design for the Theater.

Prerequisite: course 42 or consent of the instructor. Design of costumes for theatrical presentations. The study of the use of silhouette, fabrics, color, and decoration as related to theatrical characterizations.

Mr. Jones

146A. Drafting for the Theater Arts.

Lecture, one hour; laboratory, three hours. Prerequisite: course 143A or consent of the instructor. A practical course in the technical sketching and drafting of working drawings essential in the development of the design of sets and properties for theater, television and motion picture productions.

Mr. Corrigan

146B. Scene Painting Techniques. (½ course)

Laboratory, two hours. Prerequisite: course 40. The study of scenic painting techniques and materials, and their relation to the realization of color design and elevations.

Mr. Corrigan

148A-148B-148C. Special Courses in Design and Technical Theater.

Hours to be arranged. Prerequisite: consent of the instructor. Group study of selected subjects in design and technical theater for students in the Design/Technical Theater specialization. 148A is offered in the fall, 148B is offered in the winter, and 148C is offered in the spring.

The Staff

160A. Fundamentals of Play Direction.

Two two-hour meetings, with outside hours to be arranged. Prerequisite: course 130. Required of theater arts majors with specialization in theater or secondary teaching credential. Basic theories of play direction and their application through the preparation of scenes under rehearsal conditions.

Mr. Helstien, Mr. Hethmon, Mr. Kerans

160B. Fundamentals of Play Direction. (½ course)

Three hours on Saturday morning, with outside hours to be arranged. Prerequisite: course 160A and consent of the instructor. Required of theater arts majors with specialization in the secondary teaching credential. A course in the application of stage direction techniques to the one-act play. Each student will direct a one-act play to be performed under rehearsal conditions. Material will be drawn from published sources.

161. Advanced Play Direction.

Lecture, four hours; laboratory, as required by one-act program. Prerequisites: course 160A and consent of the instructor. May be substituted for 160B by a theater arts major with specialization in the secondary teaching credential. Special problems in the direction of original one-act plays under production conditions.

Mr. Hearn

170. Theater Laboratory.

Lecture, four hours; laboratory, as required by one-act program. Prerequisites: courses 40, 41, 42, 143A. (May not be taken concurrently with courses 140A, 141A, 142A, 172A or 172B.) Required of theater arts majors with specialization in theater or secondary teaching credential. Laboratory in theater production, under supervision. The translation of ideas and concepts into the dramatic form.

Mr. Crabs

171A. Advanced Theater Laboratory.

(½ to 1 course)

Hours to be arranged. Prerequisite: consent of the instructor. May be taken for a maximum of one

course. Creative participation as an actor or stage manager in the public presentation of departmental productions.

The Staff

171B. Advanced Theater Laboratory.

(½ to 1 course)

Hours to be arranged. Prerequisite: consent of the instructor. May be taken for a maximum of one course. Creative participation in the realization of production elements related to the public presentation of department productions.

The Staff

172A-172B. Technical Theater Laboratory.

(½ course each)

Hours to be arranged. Prerequisites: courses 40, 41, 42. (May not be taken concurrently with courses 140A, 141A, 142A or 170.) Required of theater arts majors with specialization in theater or secondary teaching credential.

The Staff

190A-190B. The Role of Management in Theater.

(½ course each)

Lecture, two hours; laboratory hours to be arranged. A study of the artistic, social and economic criteria for decision-making in theater administration, and the processes for carrying out those decisions. Considerations governing decisions affecting management of the various producing bodies in the theater arts. 190A is offered in the fall and winter quarters and 190B is offered in the winter and spring quarters. Courses must be taken in sequence.

Mr. Canble

MOTION PICTURE AND TELEVISION-RADIO AREAS**106A. History of the American Motion Picture.**

Lecture, four hours; laboratory, two hours; tutorial, one hour. Prerequisite: consent of the instructor. An historical and critical survey, with examples, of the American motion picture both as a developing art form and as a medium of mass communication.

Mr. Suber

106B. History of the European Motion Picture.

Lecture, four hours; laboratory, two hours; tutorial, one hour. Prerequisite: consent of the instructor. An historical and critical survey, with examples, of the European motion picture both as a developing art form and as a medium of mass communication.

Mr. Gray

108. History of Documentary Film.

Lecture, four hours; laboratory, two hours. Prerequisite: consent of the instructor. Required of motion picture and television specializations. The philosophy of the documentary approach in the motion picture. The development of critical standards, and an examination of the techniques of teaching and persuasion used in selected documentary, educational, and propaganda films.

Mr. Suber

109. Directed Studies in Film History.

Hours to be arranged. Prerequisites: courses 5C, 106A-106B, 108. Required of all students specializing in the area of motion picture history. Individual studies in motion picture history, under faculty supervision. May be repeated for a maximum of three courses credit.

Mr. Gray, Mr. Suber

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. Con-

sideration of the social responsibilities and educational implications of broadcasting. Mr. Kingson

128A. 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

128B. Broadcast Speech.

Laboratory six hours. Intensive study of effective speech for the actor, commentator and announcer in television and radio. Audio and video tape recording of selected acting exercises and readings. Mr. Kingson

134A. Film Writing.

Lecture, three hours; tutorial, one hour. Required of all students of motion pictures. The course is designed to stimulate the student's critical and creative faculties through the analysis of basic dramatic forms and the preparation of original material. May be repeated for a maximum of two courses credit. Mr. McCarty, Mr. Suber, Mr. Thor

134B. Film Writing.

Seminar, three hours; tutorial, one hour. Prerequisite: courses 179A, 134A and/or consent of the instructor. The preparation and analysis of short scripts for motion pictures. May be repeated for a maximum of two courses credit. Mr. Adams, Mr. Menger

135A-135B-135C. Advanced Film Writing.

(1, 1½ or 2 courses)

Lecture, three hours; plus additional hours to be arranged. Prerequisites: consent of the instructor. The preparation and analysis of the full-length script for motion pictures. The A, B and C sections may be taken in any order.

Mr. Borowsky, Mr. Menger, Mr. Thor

136A. Writing for Television.

Seminar, three hours; tutorial, one hour. Required of all television majors. The course is designed to familiarize the student with all basic forms of non-dramatic writing for television. May be repeated for credit for a total of no more than eight (8) units. Mr. Friedman

136B. Manuscript Evaluation for Television.

(Formerly a section of course 132.) Seminar, three hours; tutorial, one hour. Prerequisite: course 136A. Required of all television majors. Principles and practices in the evaluation of manuscripts with emphasis on dramatic structure from the standpoint of the producer, director, and writer. May be repeated for credit for a total of no more than eight (8) units. Mr. LaTourette

136C. Fundamentals of Dramatic Writing for Television.

Seminar, three hours; tutorial, one hour. Prerequisites: courses 136A and 136B. Required of all television majors. An introduction to the principles of dramatic writing designed to stimulate the student's critical and creative faculties through the analysis of basic dramatic forms and the preparation of original scripts. May be repeated for credit for a total of no more than eight (8) units. Mr. Friedman

136D-136E-136F. Advanced Writing for Television.

Lecture, three hours; plus additional hours to be arranged. Prerequisites: courses 136A, 136B, 136C, and consent of the instructor. Course 136D is prerequisite to 136E; 136E is prerequisite to 136F. The conception and preparation of dramatic and documentary scripts for television with emphasis on the original, experimental, and innovative.

151. Design for Motion Pictures and Television.

(½ to 1 course)

Hours to be arranged. Prerequisites: Film Project 1 (179A) and consent of the project faculty. 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 consent of the project faculty. 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 consent of the project faculty. 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 project faculty. 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 consent of the project faculty. 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 picture specialization. May be repeated once for credit, by consent of the faculty. Repetition may be required before admission to Film Project 2 (179B). The completion of a first film, including its writing, production and editing. Mr. Adams in charge

179B. Film Project 2. (1 to 2 courses)

Hours to be arranged. Prerequisites: Film Project 1 (course 179A) and consent of the project faculty. May be repeated for maximum credit of four courses. The completion of a second film, including its writing, production and editing.

The Project Faculty, Motion Pictures

181A. Animation Design in Theater Arts.

Lecture, three hours; laboratory, three hours. Prerequisite: consent of the instructor. History and use of speech, rhythm, and graphic design to form effective communication on film.

Mr. Shall

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. Shall

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. Shall

185A. Television Production.

Laboratory, eight hours, plus additional hours to be arranged. Prerequisites: courses 153B and 166. Required of all television majors. Beginning instruction in the creation and production of television programs. May be repeated for a maximum of eight (8) units.

Mr. LaTourette

185B-185C-185D. Advanced Television Production.

Hours to be arranged. Prerequisites: course 185A and consent of the instructor. Course 185B is prerequisite to 185C; 185C is prerequisite to 185D. The creation, preparation and production of advanced television programs.

Mr. Ross and the Staff

195. Senior Seminar in Motion Pictures.

Lecture, three hours. Prerequisite: senior standing. The preparation of a paper on some aspect of contemporary cinema.

The Staff

198. Senior Seminar in Television Programming.

Lecture, three hours. Prerequisites: course 185A and senior standing. Required of all television general majors. A course designed to bring together the various aspects of his study in a terminal essay on a creative aspect of contemporary television. May be repeated for no more than a maximum of eight (8) units.

The Staff

SPECIAL STUDIES FOR ALL SPECIALIZATIONS**198A-198H. Special Courses in Theater Arts—Theater. (½ to 1 course)**

Hours to be arranged. Prerequisites: upper division major in Theater Arts or consent of the instructor. Group study of selected theater arts subjects. Maximum of 2 courses in 198A-198Z will apply on the major requirement.

The Staff

198J-198R. Special Courses in Theater Arts—Motion Picture. (½ to 1 course)

Hours to be arranged. Prerequisites: upper division major in Theater Arts or consent of the instructor. Group study of selected theater arts subjects. Maximum of 2 courses in 198A-198Z will apply on the major requirement.

The Staff

198S-198Z. Special Courses in Theater Arts—**Television. (½ to 1 course)**

Hours to be arranged. Prerequisites: upper division major in Theater Arts or consent of the instructor. Group study of selected theater arts subjects. Maximum of 2 courses in 198A-198Z will apply on the major requirement.

The Staff

199. Special Studies in Theater Arts.**(½ to 2 courses)**

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

Certain graduate courses concerned with individual student projects may be repeated for credit upon recommendation of the departmental graduate adviser.

200. Bibliography and Methods of Research in Theater Arts.

Section 1. Theater. Section 2. Motion Pictures. Section 3. Television-Radio.

Mr. Hethmon, Mrs. Schwartz, 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. 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. Gray

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.

209B. Seminar in Fictional Film.

Prerequisite: consent of the instructor. Film as fiction and its relation to contemporary culture.

209C. Seminar in Ethnographic Film.

(Same as Anthropology 270A.) Lecture: three hours; laboratory: three hours. The ethnographic film as a form of realist cinema and its relations to cultural anthropology. Offered in the fall quarter. Mr. Hawkins, Mr. C. Young

210. Seminar in Radio and Television History.

(Formerly numbered 277.) Advanced study of world-wide developments and concepts in broadcasting from early wireless communications to international television. Mr. Kingson

215. Teaching Secondary School Drama.

Study of current methods and problems of production as related to teaching on the secondary level. Restricted to candidates for teaching certificates and approved theater arts majors.

220A-220B-220C. Problems in Acting.

Study of the principal theories of acting and their application in studio exercises and laboratory productions. Mr. Goodman

230A-230B-230C. Advanced Playwriting.

Prerequisite: course 130A, and consent of instructor. Guided completion of a full-length play, or study and preparation for the writing of a thesis play. Mr. Savage

240. The Contemporary Playhouse.

Advanced study of the concept, form and function of the contemporary playhouse and its equipment. Mr. Hearn

241. Research in Technical Theater.

Laboratory research in technical processes and equipment in theater. Mr. Hearn

243A-243B-243C. Advanced Problems in Design for the Theater.

Study and practice in the design of stage productions. Determination of approach and style in setting and costume; solution of engineering problems in multiscene production; coordination of all design elements, including lighting. Mr. Corrigan

245A-245B. Production Planning in Theater.

(½ course each)

Lecture, two hours. 245A is offered in the fall and winter quarters and 245B is offered in the winter and spring quarters. The courses must be taken in sequence. Mr. Corrigan and Staff

247. Production Planning in Television-Radio.

Seminar, three hours; plus field studies in professional motion picture and television studios.

Mr. Ross in charge

251. Advanced Design for Motion Pictures. (½ to 1 course)

Hours to be arranged. Prerequisites: course 151 and/or consent of the instructor. May be repeated for a maximum of three courses credit. Advanced study and practice of techniques and methods of design for motion pictures. Art direction for advanced workshop productions in the project sequence. Mr. Schoppe

260A-260B-260C. Problems in Stage Direction.

Special problems in the direction of the full-length play. Mr. Boyle

265A-265B. Ethnographic Film Direction.

(1 to 2 courses)

(Same as Anthropology 270B-270C.) Hours to be arranged. Prerequisites: course 209C and consent of the instructor. Advanced study of problems in the production of ethnographic films. 265A is offered in the winter quarter and 265B is offered in the spring quarter. Mr. Hawkins, Mr. C. Young

288. Workshop in Educational Television-Radio.

Study of educational and instructional television in the United States. Analysis of international educational television. Field observation at local educational television centers. Problems of writing and production of seminar projects in educational television and radio. Mr. Kingson

291. The Role of Management in Motion Pictures.

Lecture, three hours; quiz, one hour. A study of the artistic, social, and economic criteria for decision-making in the production and distribution of motion pictures. Mr. Grauel in charge

Professional Courses**370. The Teaching of Theater.**

Lecture, three hours. Prerequisites: courses 160A-160B or consent of the instructor. Required of theater arts majors in secondary teaching credential specialization. A study of class management, organization of teaching material, and method of subject matter presentation and play production in secondary schools. Mr. Ingle

420A. Advanced Techniques in Acting.

(1 to 2 courses)

Prerequisite: consent of the instructor. Class exercises in acting, voice, and movement. Preparation and presentation of scenes under supervision of faculty and student directors. Restricted to M.F.A. candidates. Offered in the fall quarter.

420B. Advanced Techniques in Acting.

(1 to 2 courses)

Prerequisite: consent of the instructor. Class exercises in acting, voice, and movement. Preparation

and presentation of scenes under supervision of faculty and student directors. Restricted to M.F.A. candidates. Offered in the winter quarter.

420C. Advanced Techniques in Acting.
(1 to 2 courses)

Prerequisite: consent of the instructor. Class exercises in acting, voice, and movement. Preparations and presentation of scenes under supervision of faculty and student directors. Restricted to M.F.A. candidates. Offered in the spring quarter.

421A. Advanced Projects in Acting.
(1 to 3 courses)

Prerequisite: consent of the instructor. Class exercises in acting, voice, and movement. Preparation and presentation of major role under performance conditions. Restricted to M.F.A. students. Offered in the fall quarter.

421B. Advanced Projects in Acting.
(1 to 3 courses)

Prerequisite: consent of the instructor. Class exercises in acting, voice and movement. Preparation and presentation of major role under performance conditions. Restricted to M.F.A. students. Offered in the winter quarter.

421C. Advanced Projects in Acting.
(1 to 3 courses)

Prerequisite: consent of the instructor. Class exercises in acting, voice and movement. Preparation and presentation of major role under performance conditions. Restricted to M.F.A. students. Offered in the spring quarter.

434. Advanced Film Writing. (1 to 2 courses)

Lecture, three hours; laboratory to be arranged. Prerequisites: courses 135A-135B-135C, 179A and/or consent of the instructor. Advanced problems in the writing of feature-length scripts. May be repeated for a maximum of six courses.

Mr. Borowsky, Mr. Menger, Mr. Thor

436A-436B. Advanced Television Writing.

Prerequisites: courses 136D-136F and/or consent of the instructor. Advanced problems in writing for television.

437. Nondramatic Writing for Television.

Advanced problems in the field of documentary and special feature programs with emphasis on research and pre-production.

Mr. LaTourette

443. Advanced Problems in Design.

Prerequisite: consent of the instructor. Study and practice in the design of stage productions. Determination of approach and style in setting and costume; solution of engineering problems in multiscene production; coordination of all design elements, including lighting. May be repeated for a total of three courses. Restricted to M.F.A. candidates.

Mr. Corrigan

446. Production Planning in Motion Pictures.
(½ or 1 course)

Lecture, 3 hours; laboratory to be arranged. Prerequisite: consent of the instructor.

Mr. Grauel

457. Design for Television.

Prerequisite: consent of the instructor. Study and practice in design of television productions. Consideration of style as it relates to all elements of design in live and recorded television programs.

Mr. Wollock

460A. Problems in Advanced Direction for the Stage.

Prerequisite: consent of the instructor. Preparation and presentation of a series of scenes and a one-act play or its equivalent. Discussion and critique of work in progress. Restricted to M.F.A. candidates. Offered in the fall quarter.

Mr. Kerans

460B. Problems in Advanced Direction for the Stage.

Prerequisite: consent of the instructor. Preparation and presentation of a full length play under rehearsal conditions. Discussion and critique of work in progress. Restricted to M.F.A. candidates. Offered in the winter quarter.

Mr. Kerans

460C. Problems in Advanced Direction for the Stage.

Prerequisite: consent of the instructor. Preparation and presentation of a full length original play under rehearsal conditions. Discussion and critique of work in progress. Restricted to M.F.A. candidates. Offered in the spring quarter.

Mr. Kerans

462. Production Project in Direction for the Stage.

Prerequisite: consent of the instructor. Preparation and presentation of an original play under minimal production conditions. Discussion and critique of work in progress. Restricted to M.F.A. students. Offered in the winter quarter.

Mr. Kerans

463. Production Project in Direction for the Stage.
(2 courses)

Prerequisite: consent of the instructor. Preparation and presentation of play under fully produced theater conditions. Restricted to M.F.A. students.

Mr. Kerans

464A-464B. Motion Picture Direction.
(1 or 2 courses)

Prerequisite: consent of the instructor. Special problems in the direction of fictional and documentary motion pictures.

Mr. J. Young in charge

466A-466B. Advanced Television Direction.
(1 or 2 courses)

Prerequisite: consent of the instructor. Special problems in the direction of dramatic and documentary television programs.

Mr. Wollock

472. The Master of Fine Arts Company. (½ course)

Prerequisite: admission to M.F.A. program. Required each quarter for the M.F.A. in Theater. May be repeated for credit.

Mr. Helstien

479A-479B-479C. Film Project 3. (1, 2 or 3 courses)

Hours to be arranged. Prerequisite: consent of the project faculty. The completion of a third film, including its writing, design, production and editing.

Mr. J. Young in charge

482A-482B. Advanced Animation Workshop.
(1 or 2 courses)

Lecture, three hours; laboratory to be arranged. Prerequisites: courses 181A-181B-181C and consent of the instructor. Organization and integration of various creative arts used in animation, resulting in the production of a complete animated film. Mr. Shull

485. Production of Nondramatic Television.

Prerequisite: course 437. The student will originate, plan, and direct a major documentary production under laboratory conditions. Mr. LaTourette

Individual Study and Research

596A. Directed Individual Studies: Research.

(½ to 3 courses)

Prerequisite: graduate standing. May be repeated by consent of the instructor. The Staff

596B. Directed Individual Studies: Writing.

(½ to 3 courses)

Prerequisite: graduate standing. May be repeated by consent of the instructor. The Staff

596C. Directed Individual Studies: Directing.

(½ to 3 courses)

Prerequisite: graduate standing. May be repeated by consent of the instructor. The Staff

596D. Directed Individual Studies: Design.

(½ to 3 courses)

Prerequisite: graduate standing. May be repeated by consent of the instructor. The Staff

596E. Directed Individual Studies: Acting.

(½ to 3 courses)

Prerequisite: graduate standing. May be repeated by consent of the instructor. The Staff

596F. Directed Individual Studies: Production.

(½ to 3 courses)

Prerequisite: graduate standing. May be repeated by consent of the instructor. The Staff

597. Preparation for the Qualifying Examination for the Ph.D. in Theater History. (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 History. (½ to 2 courses)

Research and writing for the doctoral dissertation. Limited to students who have been advanced to candidacy. May be repeated for a total of three courses.

The Staff

Required Courses in Other Departments in Theater and/or Secondary Teaching Credential Specializations

Classics 142. Ancient Drama.

English 103. Shakespeare. 167. The Drama, 1842 to the Present.

Humanities 1A-1G. World Literature. or English 10A-10B-10C.

Related Courses in Another Department

Dance 20. Movement for the Stage.

121. Movement for the Stage.

152A-152B. Organization of Dance Performances.

English 112. Children's Literature.

135A-135B-135C. Creative Writing: Drama.

Integrated Arts 1A-1B-1C.

Music 70L. Opera Workshop.

135A-135B-135C. History of Opera.

136. Music for the Legitimate Drama and Dramatic Motion Pictures.

170L. Opera Workshop.

Philosophy 160. Philosophy of Art.

■ ZOOLOGY

(Department Office, 2203 Life Sciences Building)

Albert A. Barber, Ph.D., *Professor of Zoology (Chairman of the Department).*

George A. Bartholomew, Ph.D., *Professor of Zoology.*

John M. Belkin, Ph.D., *Professor of Zoology.*

Nicholas E. Collias, Ph.D., *Professor of Zoology.*

Frederick Crescitelli, Ph.D., *Professor of Zoology.*

Roger O. Eckert, Ph.D., *Professor of Zoology.*

Herbert Friedmann, Ph.D., *Professor of Zoology in Residence.*

Malcolm S. Gordon, 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.*

J. Lee Kavanau, Ph.D., *Professor of Zoology.*

Kenneth S. Norris, Ph.D., *Professor of Zoology.*
 Everett C. Olson, Ph.D., *Professor of Zoology.*
 Richard W. Siegel, Ph.D., *Professor of Zoology.*
 Fritiof S. Sjöstrand, M.D., Ph.D., *Professor of Zoology.*
 Clara M. Szego (Mrs. Sidney Roberts), Ph.D., *Professor of Zoology.*
 Peter P. Vaughn, Ph.D., *Professor of Zoology.*
 Boyd W. Walker, Ph.D., *Professor of Zoology (Vice-Chairman of the Department).*
 Gordon H. Ball, Ph.D., *Emeritus Professor of Zoology.*
 Raymond B. Cowles, Ph.D., *Emeritus Professor of Zoology.*
 Waldo H. Furgason, Ph.D., *Emeritus Professor of Zoology.*
 Edgar L. Lazier, Ph.D., *Emeritus Professor of Zoology.*
 Loye Holmes Miller, Ph.D., *Emeritus Professor of Biology.*
 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.*
 Alan D. Grinnell, Ph.D., *Associate Professor of Zoology.*
 Robert C. Lasiewski, Ph.D., *Associate Professor of Zoology.*
 Leonard Muscatine, Ph.D., *Associate Professor of Zoology.*
 Luciano Barajas, M.D., *Associate Professor of Zoology.*
 Richard K. Orkand, Ph.D., *Associate Professor of Zoology.*
 Vladimir Walters, Ph.D., *Associate Professor of Zoology.*
 Sarah R. Atsatt, Ph.D., *Associate Professor of Zoology, Emeritus.*
 James H. Brown, Ph.D., *Assistant Professor of Zoology.*
 Clifford F. Brunk, Ph.D., *Assistant Professor of Zoology.*
 Martin L. Cody, Ph.D., *Assistant Professor of Zoology.*
 Paul C. Denny, Ph.D., *Assistant Professor of Zoology.*
 Donald Landenberger, Ph.D., *Assistant Professor of Zoology.*
 Austin J. MacInnis, Ph.D., *Assistant Professor of Zoology.*
 John R. Merriam, Ph.D., *Assistant Professor of Zoology.*
 John D. O'Connor, Ph.D., *Assistant Professor of Zoology.*
 Dan S. Ray, Ph.D., *Assistant Professor of Molecular Biology in Zoology.*
 Winston A. Salsler, Ph.D., *Assistant Professor of Molecular Biology in Zoology.*
 Larry Simpson, Ph.D., *Assistant Professor of Zoology.*



John E. Bleck, B.S., *Museum Scientist, Ichthyology.*
 James Miller, *Senior Museum Scientist, Ornithology and Mammalogy (Dickey Collection).*
 Jowett C. Chao, Ph.D., *Research Zoologist.*
 Walter Ebeling, Ph.D., *Professor of Entomology.*
 Wilbur T. Ebersold, Ph.D., *Associate Professor of Botany.*
 Charles L. Hogue, Ph.D., *Research Associate.*
 Alexander Kolin, Ph.D., *Professor of Biophysics.*
 David R. Krieg, Ph.D., *Associate Professor of Bacteriology.*
 F. Harlan Lewis, Ph.D., *Professor of Botany.*
 John B. Loefer, Ph.D., *Research Associate.*
 Roy J. Pence, *Specialist (Entomology).*
 Bernard O. Phinney, Ph.D., *Professor of Botany.*
 William R. Romig, Ph.D., *Professor of Bacteriology.*
 Robert Schick, Ph.D., *Assistant Research Zoologist.*
 Henry J. Thompson, Ph.D., *Professor of Botany.*
 Bernard Weinstein, M.S., *Associate in Zoology.*

Preparation for the Major

Required: Biology 1A-1B; 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 7A-7B-7C-7D.

Requirements for the Major

The core curriculum consisting of Zoology 101, 103, 105, 107, 108, 109, 111, 115, and at least three elective courses which may be chosen from among the courses numbered higher than 115 in the zoology list. One of the three elective courses for the zoology major may be an upper division bacteriology, botany, chemistry, mathematics (except Mathematics 100), or physics course.

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, cell biology, comparative physiology, developmental

biology and embryology, cytology, electron microscopy and ultrastructure, endocrinology, entomology, general physiology, genetics, herpetology, history of biology, ichthyology, insect physiology, invertebrate zoology, mammalogy, molecular biology, neuroanatomy, neurophysiology and sense organ physiology, ornithology, parasitology and physiology of parasitism, physiological ecology, population and community ecology, protozoology and protozoan physiology, radiation biology, vertebrate paleontology and vertebrate morphology, and vertebrate physiology.

Requirements for the General Secondary Credential

Consult the UCLA ANNOUNCEMENT OF THE GRADUATE SCHOOL OF EDUCATION.

Requirements for the Master's Degree

In addition to the general requirements of the Graduate Division, the Department of Zoology requires oral and/or written examinations of any candidate for the master's degree. Although there is no formal foreign language requirement for the master's degree in zoology, a reading knowledge of a foreign language is a prerequisite for admission to certain seminars and advanced courses.

Requirements for the Doctor's Degree

In addition to the general requirements of the Graduate Division, every candidate for the Ph.D. degree is required to pass departmental examinations and to serve as a teaching assistant for at least one year. The language requirements for the Ph.D. degree in zoology are usually met by examinations in one of the following: French, German, or Russian. Preparation in the languages before application to graduate school is strongly recommended.

Upper Division Courses**101. Vertebrate Morphology.**

(Formerly numbered 106.) Lecture, three hours, laboratory, six hours. Prerequisite: Biology 1A-1B, or the equivalent. A study of vertebrate morphology and evolution from the viewpoint of: comparative anatomy of adult forms, developmental anatomy, and paleontology. Laboratory study of selected vertebrates. Mr. Vaughn, Mr. Walters

103. The Natural History of Animals.

(Formerly numbered 112 and 134.) Lecture, three hours; laboratory, four hours. Prerequisite: Biology 1A-1B, or the equivalent. Distribution, functional morphology, behavior, and physiological ecology of invertebrate and vertebrate animals, including feeding, locomotor, orienting, reproductive, cyclic, symbiotic, and sensory adaptations. The Staff

105. Ecology and Evolution.

(Same as Botany 105.) Lecture, three hours; laboratory, three hours. Prerequisite: Biology 1A-1B, or the equivalent. Introduction to the study of mechanisms that control the structure, distribution, and evolution of populations. The Staff

107. Comparative Genetics.

(Formerly numbered 136 and same as Bacteriology 107 and Botany 107.) Lecture, three hours. Prerequisite: Biology 1A-1B, or the equivalent. Mendelian principles; the gene: its structure, function, and chemistry, with emphasis on mutation, coding regulation, and transmission. The Staff

108. General and Cell Physiology.

(Formerly numbered 113.) Lecture, two hours; laboratory, six hours. Prerequisite: Biology 1A-1B, 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

109. Animal Physiology.

(Formerly numbered 104A.) Lecture and lecture-discussion, three hours; laboratory, four hours. Prerequisite: Biology 1A-1B, Chemistry 4A-4B-4C and 6A-6B-6C or the equivalent. Normally to be taken after Zoology 108. An introduction to physiological principles with emphasis on organ systems and intact organisms. The Staff

111. Functional Ultrastructure of Cells.

(Formerly numbered 107.) Lecture, three hours. Prerequisite: Biology 1A-1B, 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

115. Developmental Biology.

(Formerly numbered 100.) Lecture, three hours; laboratory, three hours. Prerequisite: course 107. Developmental processes in animals and other organisms; includes an analysis of structural and chemical differentiation. Mr. Denny

116. Advanced Developmental Biology.

(Formerly numbered 209.) Lecture, four hours. Prerequisite: course 115. Advanced discussion of cellular problems in development. Mr. Denny

117. Invertebrate Zoology.

(Formerly numbered 112.) Lecture, three hours; laboratory, six hours. Prerequisite: course 103, or the equivalent, or consent of the instructor. Limited enrollment. Systematics, morphology, natural history, physiology, and biochemistry of invertebrates. Emphasis on independent laboratory and field investigations. Mr. Muscatine

118. Introduction to Molecular Biology.

Lecture, three hours; discussion one hour. Prerequisite: Chemistry 6A-6B-6C, Mathematics 3A-3B-3C or consent of the instructor. A course in molecular biology emphasizing the synthesis, structure, function and interactions of biological macromolecules. The Staff

118A. Molecular Biology Laboratory. (½ course)

Laboratory, six hours. Prerequisite: consent of the instructor. A course in experimental molecular biology to be taken concurrently with course 118. (Course 118 may be taken without 118A.) The Staff

119. Protozoology.

(Formerly numbered 110.) Lecture, three hours; laboratory, six hours. Prerequisite: Biology 1A-1B, or the equivalent. A survey of the main groups of the protozoa: morphology, physiology, genetics, and ecology.

121. Parasitology and Symbiosis.

(Formerly numbered 111 and 111C.) Lecture, three hours; laboratory, six hours. Prerequisite: Biology 1A-1B, or the equivalent. An introduction to the principles, biology, and evolution of infectiousness, symbiosis, and parasitism, emphasizing protozoan, helminth, and arthropod parasites, including those of man. Mr. Belkin, Mr. MacInnis

122. Entomology.

Lecture, three hours; laboratory, six hours; several field trips. Prerequisite: course 103 or consent of the instructor. An introduction to the morphology, ecology, and classification of insects. Mr. Belkin

123. Terrestrial Arthropods.

Lecture, three hours; laboratory, six hours; several field trips. Prerequisite: course 122 or consent of the instructor. Systematics, distribution, and biometrics of hexapods and arachnids. Mr. Belkin

124. Insect Physiology.

Lecture, two hours; laboratory, six hours. Prerequisite: course 108 or 109 or the equivalent. Survey of the physiology of insects with emphasis on functional adaptations. Mr. Engelmann

125. Ichthyology.

(Formerly numbered 135.) Lecture, two hours; laboratory, six hours; field trips. Prerequisite: courses 101 and 103. The systematics, ecology, and behavior of fishes, with special emphasis on local marine forms. Mr. Walker

127. Herpetology.

(Formerly numbered 133.) Lecture, two hours; laboratory and field trips, six hours. Prerequisite: course 103. Limited enrollment. The systematics, distribution, physiology, and ecology of amphibians and reptiles.

129. Ornithology.

(Formerly numbered 141.) Lecture, two hours; laboratory, discussion, field trips, six hours. Prerequisite: course 103 and consent of the instructor. Limited enrollment. The systematics, distribution, physiology, behavior, and ecology of birds. Mr. Howell

130. Mammalogy.

Lecture, two hours; laboratory and field trips, six hours. Prerequisites: course 103 or the equivalent and consent of the instructor. The evolution, ecology, behavior, and physiology of mammals. Mr. Brown

133. Experimental Parasitology.

Laboratory, eight hours. Prerequisite: consent of the instructor. Introduction to use of parasites in experiments concerning basic biological problems and to problems concerning parasitism. Mr. MacInnis

139. Analysis of Ecological Data.

Lecture, three hours; laboratory, three hours. Prerequisite: consent of the instructor. Theory of experimental design and falsifiable hypotheses as applied to field ecology. Numerical and graphical methods of data reduction, with special emphasis on nonparametric procedures. Mr. Landenberger

140. Field Ecology.

Lecture: two hours; laboratory, six hours plus weekend field trips. Prerequisite: course 105 and consent of the instructor. Field and laboratory research in ecology; the collection, analysis and write up of numerical data. Mr. Cody

141. Physiology of Growth.

(Formerly numbered 225.) Lecture, two hours; discussion, one hour. Prerequisite: course 108. Principles and theories of growth on the molecular and cellular level, with special emphasis on control of cell growth and cell division.

143. Comparative Physiology.

(Formerly numbered 109.) Lecture, three hours; laboratory, four hours; discussion, one hour. Prerequisite: courses 108 and 109. A detailed analysis of selected aspects of invertebrate and vertebrate physiology. Mr. Gordon

145. General Physiology.

(Formerly numbered 101.) Lecture, three hours; Prerequisite: Biology 1A-1B, or the equivalent, and a course in organic chemistry. Discussion of certain fundamental principles of living matter, including origin of life, properties of viruses, organization of living matter, nature and properties of cell membranes, cellular mechanisms of secretion and molecular transfer. Mr. Crescitelli

151. General Endocrinology.

(Formerly numbered 118.) Lecture, three hours. Prerequisite: biochemistry; course 108 or 109 or the equivalent. Principles of chemical integration in biological systems. Miss Szego

153. Isotopic Tracers in Biology.

(Formerly numbered 119.) Lecture, three hours; laboratory, three hours. Prerequisite: course 108 or equivalent, or consent of the instructor. The use of isotopic tracers in the study of biological processes, including methods, problems investigated, interpretation of data. Mr. Barber

155. Topics in Physical Chemistry for Molecular Biology. (½ course)

Lecture, two hours. Prerequisite: consent of the instructor; the course is planned to complement Chemistry 113B or equivalent. The application of physical chemistry to specific problems in molecular biology. Mr. Fessler

157A. Introduction to the Nervous System.

(Formerly numbered 122.) Lecture, three hours; discussion, one hour. Prerequisite: course 109, or consent of the instructor. Structural and functional principles of the nervous system as a general biological phenomenon. Consideration of nervous elements and processes and of organized systems as communication and control systems. Survey of principal types of organization in invertebrates and vertebrates. Mr. Grinnell

157B. Introductory Laboratory in Neurophysiology.

Laboratory, eight hours. Prerequisite: course 157A or consent of the instructor. Limited enrollment. Laboratory investigation of the function of central and peripheral nervous systems in invertebrates and vertebrates. Emphasis will be on electrophysiological approaches to basic neurophysiological problems. Mr. Eckert, Mr. Grinnell, Mr. Orkand

159. Anatomy and Physiology of Sense Organs.

Lecture, three hours; discussion, one hour. Prerequisite: course 157A, or the equivalent. The anatomy and physiology of the sense organs. Comparative aspects will be emphasized. Mr. Grinnell

160. Analytical Microscopy and Cytology. (½ course)

(Formerly numbered 239.) Lecture, two hours; demonstration, two hours. Prerequisite: general physics. A course designed for students in the biological sciences to acquaint them with quantitative cytology with emphasis on bright field, dark field, phase contrast, interference, and polarization analysis. Mr. James

163. Cytogenetics.

(Same as Botany 163.) Lecture, two hours; laboratory, six hours. Prerequisite: course 107. The fundamentals of cytogenetics. Heredity as related to cytogenetical phenomena.

164. The Behavior of Animals.

(Formerly numbered 217.) Lecture, four hours. 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

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

167. Marine Invertebrate Zoology. (2 courses)

Lecture, ten hours; laboratory, 34 hours. Prerequisite: upper division standing or consent of the instructor. Offered at the Catalina Island Marine Station. Systematics, functional morphology, and natural history of all major and most minor groups; emphasis on living animals and their habitats. The Staff

169. Marine Ecology. (2 courses)

Lecture, ten hours; laboratory, 34 hours. Prerequisite: upper division standing or consent of the instructor. Offered at the Catalina Island Marine Station. Structure, diversity, and energetics of marine communities; behavior, population dynamics, and biogeography of component species; associated oceanography and geology. The Staff

190. Honors Research in Zoology. (½ to 1 course)

Prerequisite: senior standing and permission of the departmental honors committee. Individual research designed to broaden and deepen the student's knowledge of some phase of zoology. The Staff

199. Special Studies. (½ course)

Prerequisite: senior standing and consent of instructor. May be repeated for a total of one course credit toward the bachelor's degree. The Staff

Graduate Courses

The consent of the instructor is required for admission to all graduate courses. Any additional prerequisites are stated in the course descriptions.

201. Comparative Genetics Laboratory.

(Formerly numbered 136C and same as Botany 201.) Laboratory, nine hours. Prerequisite: course 107 (may be taken concurrently). Experimental techniques demonstrating recombination, mutagenesis, biochemical pathways, complementation, and cytogenetics of plants, animals, and microorganisms.

The Staff

202. Gene Structure and Function.

(Formerly numbered 222 and same as Microbiology 202 and Botany 202.) Lecture and discussion, three hours. Prerequisites: course 107 and Chemistry 153 or consent of the instructor. The genetic coding of information and its transfer from DNA through RNA to protein; the operon model and other aspects of regulatory genetics, mutations and genetic fine structure.

Mr. Krieg, Mr. Romig, Mr. Siegel

203. Chromosome Structure and Replication.

(Formerly numbered 207 and same as Microbiology 203 and Botany 203.) Prerequisites: course 107, Chemistry 153, Physics 7A-7B-7C-7D or consent of the instructor. A survey of biochemical and biophysical investigations of the structure and replication of chromosomal nucleic acids with emphasis on bacterial and viral systems.

Mr. Ray

204. Evolution and Population Genetics.

(Formerly numbered 224 and same as Botany 204.) Lecture, two hours; individual study. Prerequisite: courses 105 and 107. Genetic mechanisms of evolutionary change.

Mr. Lewis

205A-205F. Topics in Genetics.

(Formerly numbered 225 and same as Botany 205A-205F.) Lecture. Prerequisite: course 107. Intensive study of selected topics.

The Staff

206A-206F. Advanced Genetics Laboratory.

(Formerly numbered 226.) Laboratory, nine hours. Prerequisite: course 107. A course designed to give the student a working knowledge of a particular group of organisms or concepts.

The Staff

208. Structural Macromolecules.

Lecture, three hours; discussion, one hour. The comprehensive molecular biology of selected structural proteins and polysaccharides, including cellular synthesis, structure and physical properties, and integrated biological functions.

Mr. Feasler

209. Molecular Biology Laboratory.

Lecture, two hours; laboratory, eight hours. Selected experimental approaches in molecular biology. The current emphasis is on the study of protein synthesis in cell free systems, determination of the genetic code, and the study of repressor molecules.

Mr. Salsler

210. Biochemical Analysis of Development.

Lecture-discussion. Prerequisite: course 115 and Chemistry 4C and 6C or its equivalent. A discussion of current topics and problems in the biochemical analysis of developmental phenomena.

Mr. Denny

211. Advanced Laboratory in Developmental Biology. (½ course)

Laboratory, six hours. Prerequisite: course 115 or 210 and Chemistry 4C and 6C or its equivalent. Laboratory problems in developmental biology.

Mr. Denny

212. Advanced Ichthyology.

Lecture, two hours; laboratory, six hours. Prerequisite: course 125 or consent of the instructor. The higher classification and functional morphology of fishes, from an evolutionary point of view.

Mr. Walton

213. Principles of Animal Taxonomy.

(Formerly numbered 152.) Lecture. Prerequisite: course 103. Taxonomic concepts, principles, and methods.

Mr. Belkin

214. Vertebrate Paleontology.

(Formerly numbered 137 and same as Geology 214.) Lecture, three hours; laboratory, three hours. Prerequisite: course 101; recommended, a course in general geology. Limited enrollment. Study of the fossil record of the evolution of the vertebrates.

Mr. Vaughan

215. Conceptual Models in Ecology.

Prerequisites: course 105 or equivalent; year of calculus. Classical and current models of spatial distribution, birth and death processes, regulation of numbers, predator-prey and host-parasite relationships, interspecific competition and community structures with emphasis on stochastic processes in ecological systems.

Mr. Landenberger

216. Selected Topics in Population Ecology.

Prerequisite: course 105.

Mr. Cody, Mr. Landenberger

218. Physiological Ecology. (½ course)

Lecture. Prerequisites: courses 103, 105, 109. A detailed consideration of the role of physiology and behavior in the autecology of organisms in natural environments.

Mr. Bartholomew, Mr. Lasiewski

219. Advanced General Physiology.

(Formerly numbered 202A-202B-202C.) Lecture, three hours. Prerequisite: course 108 or 145. Discussion of specific topics such as excitation, conduction, physiology of blood, muscle contraction, etc. Students will participate in giving reports.

Mr. Crescitelli

221A. Advanced Cell Physiology. (½ course)

(Formerly numbered 201.) Lecture, two hours. Prerequisite: course 108. The physiology of the cell membrane, including permeability, electrical, optical, and mechanical properties, and selective cytoplasmic accumulation of nonelectrolytes and ions.

Mr. Jahn

221B. Advanced Cell Physiology. (½ course)

(Formerly numbered 201.) Lecture, two hours. Prerequisite: course 221A. Theories of the origin of bioelectromotive force, including active transport of ions; effects of polarizing currents.

Mr. Jahn

222. Experimental Cell Biology.

(Formerly numbered 205.) Lecture, two hours; laboratory, six hours. Prerequisite: courses 108 and 111. The physiology of control mechanisms and the integration of metabolic systems at the cellular level. Individual experiments will be encouraged.

Mr. James

223A. Physiology of the Protozoa. (½ course)

(Formerly numbered 210.) Lecture, two hours. Recommended: course 119. Protoplasmic structure, locomotion, and behavior, and the mechanisms of environmental effects (light, electricity, ions, etc.) thereon. Mr. Jahn

223B. Physiology of the Protozoa. (½ course)

(Formerly numbered 210.) Lecture. Recommended: course 119. Respiration, excretion, metabolism, growth, and nutrition, especially as compared with other groups of organisms.

224. Function and Biogenesis of Subcellular Organelles.

Lecture, three hours. Prerequisites: courses 108 and 111, Chemistry 153 or consent of the instructor. Origin, maintenance and function of highly organized subcellular entities such as mitochondria, chloroplasts, centrioles and flagella. Mr. Simpson

226. Advanced Insect Physiology.

Prerequisite: course 124 or consent of the instructor. A detailed discussion of current problems in insect physiology. Advanced laboratory. Mr. Engelmann

227. The Vertebrate Eye.

(Formerly numbered 208.) Lecture, three hours. Prerequisite: Biology 1A-1B, 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

229. Physiology of Circulation.

(Formerly numbered 240.) Lecture, four hours. Discussion of the dynamics of blood flow, the regulation and control of the circulation, and the physiology of arteries, veins, and capillaries. Mr. Cascarano

233. Biochemistry of Parasitism.

Lecture, two hours; laboratory, six hours. Biochemical and physiological aspects of parasite-host relationships. Laboratory emphasis on individual research projects. Offered in alternate years. Mr. MacInnis

235. Topics in Neurobiology.

Lecture, three hours. Prerequisite: course 157A or the equivalent and consent of the instructor. Selected current problems in neurobiology will be discussed in depth, with emphasis on analysis of original papers. May be repeated for credit. Mr. Eckert, Mr. Grinnell, Mr. Orkand

236. Photobiology.

Lecture, three hours; outside reading. Prerequisite: Physics 7C or the equivalent and consent of the instructor. A survey of the effects of light on biological systems; photophysiology, ultraviolet photoproducts, photoreactivation excision-repair, ionizing radiation effects, not including photosynthesis. Mr. Brunk

237. Laboratory in Advanced Electrophysiology. (2 courses)

Laboratory, twelve hours. Total involvement in individual research projects under staff guidance. Approximately two projects each quarter. Course may be repeated twice. The Staff

238. Studies of Animal Behavior.

Discussion, two hours; laboratory, six to eight

hours. Prerequisite: course 164 and consent of the instructor. Field and laboratory studies of selected problems in animal behavior. Mr. Collins

241A-241B-241C. Electron Microscopy in Molecular Biology.

(Formerly numbered 234A.) Lecture, two hours; laboratory, ten hours. Prerequisite: courses 111 (can be taken concurrently), 160, and Chemistry 153 and 113A or their equivalents, or consent of the instructor. Students registering will be required to supplement their laboratory with course 596. 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

244. The Biology of Aquatic Mammals.

Lecture, three hours; weekend field trips. Enrollment limited to twenty students. A course in the ecology, systematics, distribution, behavior, physiology and anatomy of marine mammals. Mr. Norris

Seminar Courses

250. Seminar in Current Topics in Molecular Biology. (½ course) The Staff

251. Seminar in Genetics. (½ course) Mr. Siegel
(Formerly numbered 253A-253B.)

252. Seminar in Developmental Biology. (½ course) Mr. Denny

253. Seminar in Invertebrate Zoology. (½ course) Mr. Muscatine
(Formerly numbered 268.)

254. Seminar in Entomology. (½ course) Mr. Belkin
(Formerly numbered 271A-271B.)

255. Seminar in Parasitology. (½ course) Mr. MacInnis
(Formerly numbered 255A-255B.)

256. Seminar in Ichthyology. (½ course) Mr. Walker, Mr. Walters
(Formerly numbered 260A.)

257. Seminar in Biology of Reptiles and Amphibians. (½ course) Mr. Bartholomew, Mr. Howell
(Formerly numbered 251A-251B.)

258. Seminar in Biology of Birds and Mammals. (½ course) Mr. Bartholomew, Mr. Howell

259. Seminar on Aquatic Mammals. (½ course) Mr. Bartholomew, Mr. Howell

260. Seminar in Vertebrate Paleontology. (½ course) Mr. Vaughn
(Formerly numbered 266.)

261. Seminar in Population Biology. (½ course) Mr. Brown, Mr. Cody, Mr. Landenberger
(Formerly numbered 274.)

262. Seminar in Environmental Physiology. (½ course) Mr. Lasiewski

263. Seminar in Marine Biology. (½ course) Mr. Gordon, Mr. Muscatine

- 264. Seminar on Animal Behavior. (½ course)**
(Formerly numbered 269.) Mr. Collias
- 265. Seminar on Behavior Research Problems.**
Lecture, three hours; laboratory, two hours. Pre-requisite: course 165. Mr. Kavanau
- 266. Seminar in Comparative Physiology. (½ course)**
(Formerly numbered 257.) Mr. Gordon
- 267. Seminar in Physiology of Microorganisms. (½ course)**
(Formerly numbered 263.) Mr. Jahn
- 268. Seminar in Cell Physiology. (½ course)**
(Formerly numbered 261.) Mr. Jahn
- 269. Seminar in the Physiology of Growth. (½ course)**
(Formerly numbered 270.)
- 270. Seminar in Insect Physiology. (½ course)**
(Formerly numbered 259.) Mr. Engelmann
- 271. Seminar in Endocrinology. (½ course)**
(Formerly numbered 252A-252B.) Miss Szego
- 273. Seminar in Neurophysiology. (½ course)**
Mr. Eckert, Mr. Grinnell, Mr. Orkand
- 274. Seminar in Comparative Cell Physiology. (½ course)**
Mr. Barber, Mr. James
- 275. Seminar in Cardiovascular Problems. (½ course)**
Mr. Cascarano
- 276. Seminar in Molecular Biology. (½ course)**
(Formerly numbered 278.) Mr. Sjöstrand
- 277. Seminar on Extranuclear DNA. (½ course)**
Mr. Brunk, Mr. Simpson
Individual Study and Research
- 596. Directed Individual (or Tutorial) Studies. (½ to 2 courses)**
The Staff
- 596F. Directed Individual or (Tutorial) Studies. (½ to 2 courses)**
Directed individual (or tutorial) studies at the Catalina Island Marine Station. 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)**
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- 599. Doctoral Dissertation Research and Writing. (½ to 2 courses)**
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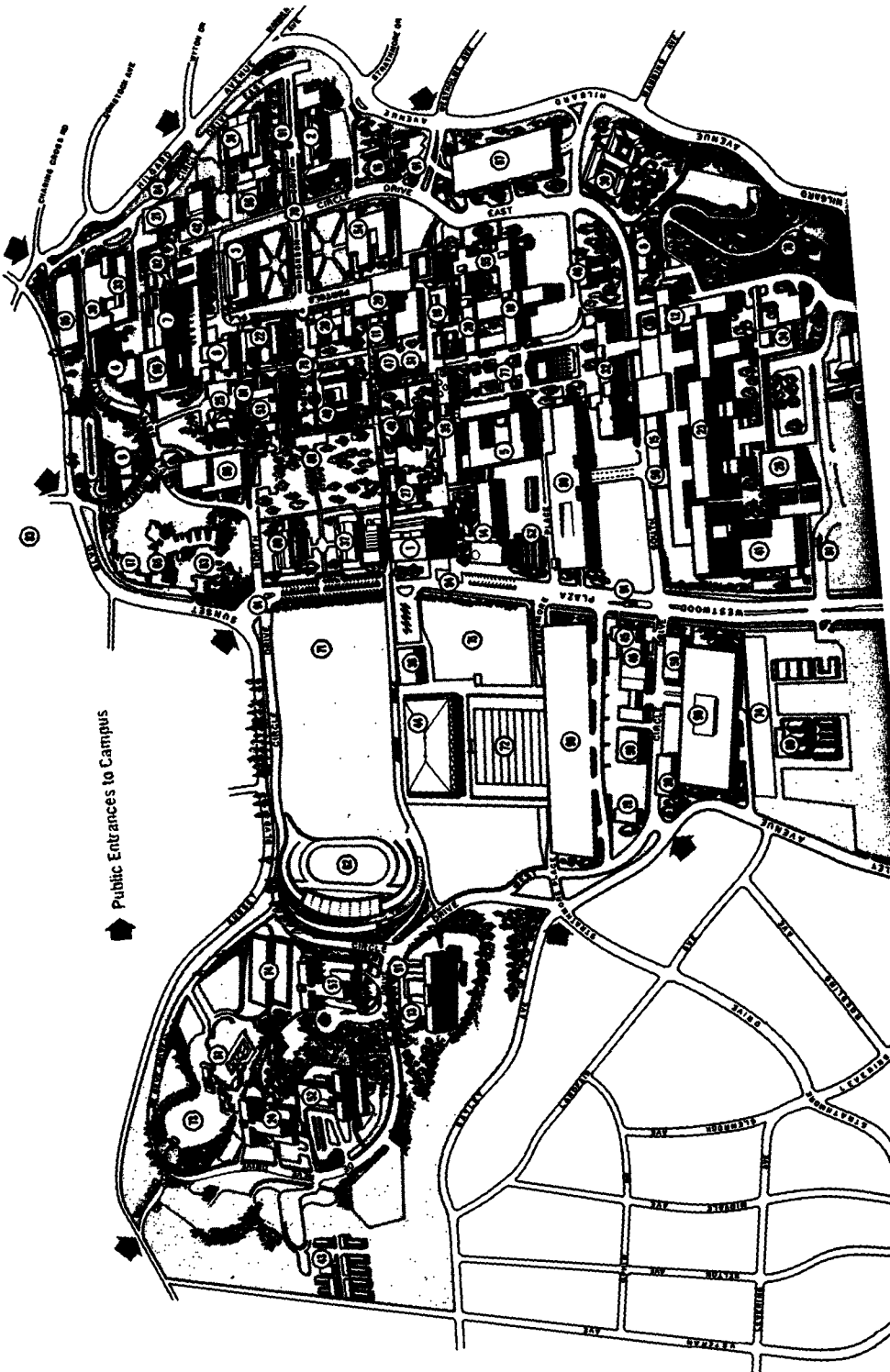
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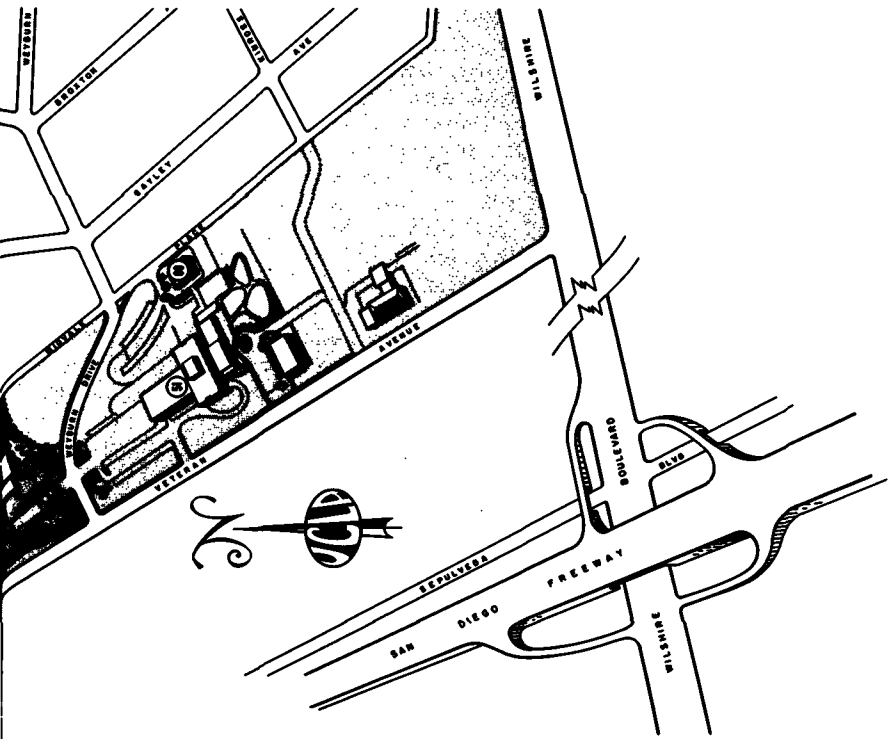
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