

# BULLETIN

UNIVERSITY  
OF CALIFORNIA

## General Catalogue

DEPARTMENTS AT  
LOS ANGELES

Fall and Spring Semester

1960-1961

JULY 1, 1960

PRICE FIFTY CENTS

# BULLETIN

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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 24, California.

Letters of inquiry concerning the University in general should be addressed to the Registrar, University of California, Berkeley 4, California.

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.

# **General Catalogue**

**DEPARTMENTS AT LOS ANGELES**

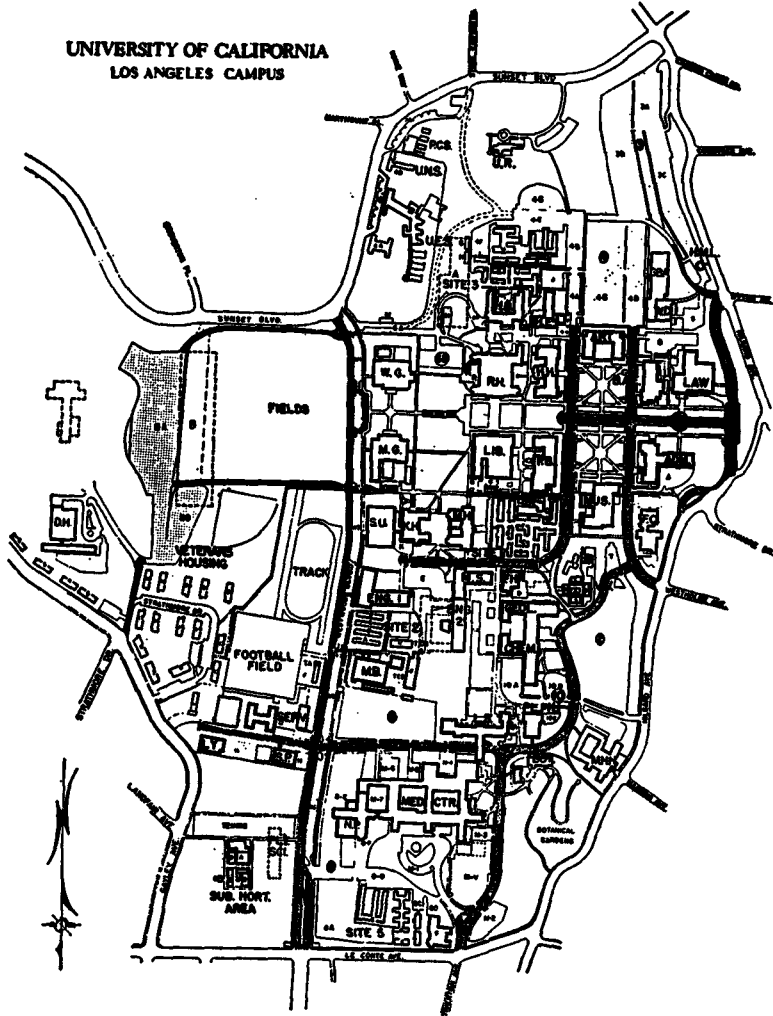
**Fall and Spring Semesters**

**1960-1961**

**JULY 1, 1960**

**UNIVERSITY OF CALIFORNIA • LOS ANGELES**

UNIVERSITY OF CALIFORNIA  
LOS ANGELES CAMPUS



UNIVERSITY BUILDINGS

ADM	ADMINISTRATION	LIB	LIBRARY	UR	UNIVERSITY RESIDENCE
ART	DICKSON ART CENTER	LS	LIFE SCIENCES	VIV	VIVARIUM
BOT	BOTANY	MS	MATHEMATICAL SCIENCES	WD	WESTERN DATA PROCESSING CENTER
BAE	BUSINESS ADMINISTRATION AND ECONOMICS	MB	Mechanics	WG	WOMEN'S GYMNASIUM
CHEM	CHEMISTRY	MED. CTR.	MEDICAL CENTER	SITE 1	TEMPORARY BUILDINGS
CYC	CYCLOTRON	MG	MEN'S GYMNASIUM	IM	AIR SCIENCE & TACTICS
DH	DYKSTRA HALL	MHH	MIRA HERSHEY HALL	SITE 2	TEMPORARY ENGINEERING BUILDINGS
ENG 1	ENGINEERING 1	MH	MOORE HALL	SITE 3	TEMPORARY BUILDINGS
ENG 2	ENGINEERING 2	MUS	MUSIC	3U	NUMERICAL ANALYSIS
FC	FACULTY CENTER	PB	PHYSICS-BIOLOGY	3V	RESEARCH THEATER ARTS
PH	FRANZ HALL	PL. PH.	PLANT PHYSIOLOGY	SITE 5	TEMPORARY BUILDINGS
GEOL	GEOLOGY	PL. SCI	PLANT SCIENCES	SABG	UNIVERSITY EXTENSION
GSA	GRADUATE SCHOOL OF BUSINESS ADMINISTRATION	PCS	PSYCHOLOGY CLINIC SCHOOL	5D	MEDICAL SCHOOL-HOSPITAL
NH	HAINES HALL	RH	ROYCE HALL	5E	ATOMIC ENERGY PROJECT
HE	HOME ECONOMICS	SERV	SERVICE BUILDINGS	5F	MEDICAL SCHOOL
HML	HOME MANAGEMENT LAB.	SP	STEAM PLANT		
HN	HUMANITIES	SU	STUDENT UNION		
KH	KERCKHOFF HALL	TAB	TEMPORARY ATHLETIC BUILDING		
LY	LAUNDRY	UES	UNIVERSITY ELEMENTARY SCHOOL		
LAW	LAW	UNS	UNIVERSITY NURSERY SCHOOL		



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# CALENDAR, 1960-1961

## 1960

## FALL SEMESTER

*Aug. 1, Monday	Application for admission to graduate standing in the fall semester, with complete credentials and the application fee, must be filed with the Dean of the Graduate Division on or before this date (April 15 for Social Welfare).
Aug. 15, Monday	Last day to file applications for readmission in graduate Standing by students returning after an absence.
*Aug. 15, Monday	Applications for admission to undergraduate standing in the fall semester, with complete credentials and the application fee, must be filed with the Director of Admissions on or before this date.
Aug. 27, Saturday	Last day to file applications for readmission in undergraduate standing by students returning after an absence.
Sept. 5, Monday	Labor Day—academic and administrative holiday.
Sept. 6, Tuesday, to Sept. 10, Saturday	} Counseling of students.
Sept. 7, Wednesday	Examination in English for foreign students.
Sept. 7, Wednesday	Examination in Subject A.
Sept. 12, Monday	Fall semester begins.
†Sept. 12, Monday, to †Sept. 14, Wednesday	} Registration of new and re-entering students only.
†Sept. 15, Thursday	Registration of continuing students who did not register by mail.
Sept. 16, Friday	Special examination in Subject A.
Sept. 19, Monday	Instruction begins.
Sept. 30, Friday	Last day to file registration packets or to change study lists <i>without fee</i> .
Oct. 3, Monday	Last day to file applications for advancement to candidacy for the master's degree to be conferred in January, 1961.
Oct. 4, Tuesday	Last day to add courses to study lists.
Oct. 4, Tuesday	Last day to file registration packets without penalty of lapse in status as a student in the University.
Oct. 13, Thursday	Last day to file applications for foreign language screening tests to be given October 22.
Oct. 22, Saturday	Foreign language screening tests.
Oct. 22, Saturday	Last day to file <i>without fee</i> notice of candidacy for the bachelor's degree to be conferred in January, 1961.
Oct. 24, Monday 4:00 p.m.	} Last day to drop courses from study lists without penalty of grade F (failure).
Nov. 12, Saturday	End of mid-term period.
Nov. 24, Thursday Nov. 25, Friday	} Thanksgiving holiday—academic and administrative holiday.
Nov. 24, Thurs., to Nov. 26, Saturday	} Fall recess.
Dec. 1, Thursday	Last day to file in final form with the committee in charge theses for the doctor's degree to be conferred in January, 1961.
Dec. 10, Saturday	Last day to file notice of candidacy for the bachelor's degree to be conferred in January, 1961.
Dec. 19, Monday, to Jan. 2, Monday	} Christmas recess.
Dec. 23, Friday, to Dec. 26, Monday	} Christmas holiday—academic and administrative holiday.

\* Also the last dates for renewal of applications submitted for a previous session by graduates and undergraduates respectively who have not previously registered in a regular semester.

† For details, see REGISTRATION CIRCULAR and official bulletin boards.

Dec. 30, Friday, to Jan. 2, Monday } New Year's holiday—academic and administrative holiday.

## 1961

Jan. 3, Tuesday Instruction resumes.  
 Jan. 3, Tuesday Last day to file in final form with the committee in charge theses for the master's degree to be conferred in January, 1961.  
 Jan. 14, Saturday Instruction ends.  
 Jan. 16, Monday Last day to file with the Dean of the Graduate Division completed copies of theses for the master's and doctor's degree to be conferred in January, 1961.  
 Jan. 16, Monday, to Jan. 25, Wednesday } Final examinations, fall semester.  
 Jan. 25, Wednesday Fall semester ends.

## 1961

## SPRING SEMESTER

\*Jan. 3, Tuesday Applications for admission to graduate standing in the spring semester, with complete credentials and the application fee, must be filed with the Dean of the Graduate Division on or before this date.  
 Jan. 3, Tuesday Last day to file applications for readmission in graduate standing by students returning after an absence (December 1 for Nursing).  
 Jan. 10, Tuesday Last day for resident students to file applications for undergraduate scholarships for the academic year 1961-1962.  
 \*Jan. 14, Saturday Applications for admission to undergraduate standing in the spring semester, with complete credentials, must be filed on or before this date.  
 Jan. 14, Saturday Last day to file applications for readmission in undergraduate standing by students returning after an absence.  
 Jan. 23, Monday, to Jan. 28, Saturday } Counseling of students.  
 Jan. 25, Wednesday Examination in English for foreign students.  
 Jan. 30, Monday Examination in Subject A.  
 Jan. 30, Monday Spring semester begins.  
 Jan. 31, Tuesday } Registration of all students who did not register by mail. For  
 Feb. 1, Wednesday } details, see REGISTRATION CIRCULAR and official bulletin boards.  
 Feb. 3, Friday Special examination in Subject A.  
 Feb. 6, Monday Instruction begins.  
 Feb. 7, Tuesday Last day to file applications for fellowship and graduate scholarships tenable at Los Angeles for 1961-1962.  
 Feb. 13, Monday Lincoln's Birthday—academic and administrative holiday.  
 Feb. 14, Tuesday Last day to file applications for advancement to candidacy for the master's degree to be conferred in June or in August, 1961.  
 Feb. 17, Friday Last day to file registration packets or to change study lists *without fee*.  
 Feb. 21, Tuesday Last day to add courses to study lists.  
 Feb. 21, Tuesday Last day to file registration packets without penalty of lapse in status as a student in the University.  
 Feb. 23, Thursday Last day to file applications for foreign language screening tests to be given March 4.  
 Mar. 1, Wednesday Last day for entering students to file application for undergraduate scholarships or for Alumni Association scholarships for the academic year 1961-1962.  
 Mar. 4, Saturday Foreign language screening tests.

\* Also the last dates for renewal of applications submitted for a previous session by graduates and undergraduates respectively who have not previously registered in a regular semester.



## Calendar

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Mar. 18, Monday 4:00 p.m.	} Last day to drop courses from study lists without penalty of grade F (failure).
Mar. 18, Saturday	
Mar. 27, Monday, to April 1, Saturday	} Spring recess.
Apr. 7, Friday	
Apr. 8, Saturday	End of mid-term period.
Apr. 24, Monday	Last day to file with the committee in charge theses for the master's degree to be conferred in June, 1961.
May 6, Saturday	Last day to file notice of candidacy for the bachelor's degree to be conferred in June, 1961.
May 27, Saturday	Instruction ends.
May 29, Monday	Last day to file with the Dean of the Graduate Division completed copies of theses for the master's and doctor's degrees to be conferred in June, 1961.
May 29, Monday, to June 8, Thursday	} Final examinations, spring semester.
May 30, Tuesday	
June 9, Friday	Spring semester ends.

# THE REGENTS OF THE UNIVERSITY

## REGENTS EX OFFICIO

His Excellency, **EDMUND G. BROWN, LL.B.**  
Governor of California and President of  
the Regents  
State Capitol, Sacramento 14

**GLENN ANDERSON, A.B.**  
Lieutenant-Governor of California  
State Capitol, Sacramento 14

**RALPH M. BROWN, A.B., LL.B.**  
Speaker of the Assembly  
State Capitol, Sacramento 14

**ROY E. SIMPSON, M.A., Litt.D.**  
State Superintendent of Public  
Instruction  
721 Capitol av, Sacramento 14

**JOHN S. WATSON, B.S.**  
President of the State Board of  
Agriculture  
498 Pepper rd, Petaluma

**WILLIAM G. MERCHANT**  
President of the Mechanics' Institute  
804 Mechanics' Institute bldg,  
San Francisco 4

**MORTIMER SMITH**  
President of the Alumni Association of  
the University of California  
California Pacific Title Insurance Co.,  
15th and Franklin sts, Oakland 2

**CLARK KERR, Ph.D., LL.D.**  
President of the University  
714 University Hall, Berkeley 4  
2147 Administration bldg,  
Los Angeles 24

## APPOINTED REGENTS

The term of the appointed Regents is sixteen years, and terms expire March 1 of the years indicated in parentheses. The names are arranged in the order of original accession to the Board.

**EDWIN W. PAULEY, B.S., LL.D. (1970)**

717 N Highland av, Los Angeles 38  
**EDWARD H. HELLER, A.B. (1976)**

100 Montgomery st, San Francisco 4

**VICTOR R. HANSEN, LL.B. (1962)**

1784 Earlmont av, La Canada  
**CORNELIUS J. HAGGERTY (1966)**

995 Market st, Room 810,

San Francisco 3  
**JESSE H. STEINHAERT, A.B., LL.B., LL.D. (1962)**

111 Sutter st, San Francisco 4  
**DONALD H. McLAUGHLIN, B.S., M.A., Ph.D., D.Eng. (1966)**

100 Bush st, San Francisco 4  
**GERALD H. HAGAR, A.B., J.D. (1964)**  
1520 Central bldg, 14th and Broadway,  
Oakland 12

**HOWARD C. NAFFZIGER, B.S., M.S., M.D. (1968)**

Room 417, 58 Sutter st, San Francisco 4

**EDWARD W. CARTER, A.B., M.B.A. (1968)**

401 S Broadway, Los Angeles 13

**MRS. DOROTHY B. CHANDLER (1970)**  
202 W First st, Los Angeles 58

**MRS. CATHERINE HEARST (1974)**

701 N Canon dr, Beverly Hills

**SAMUEL B. MOSHER, B.S. (1972)**

811 W Seventh st, Los Angeles 17

**JOHN E. CANADAY, A.B. (1974)**

Lockheed Aircraft Corporation,  
Burbank

**PHILIP L. BOYD, A.B. (1972)**

8900 Market st, Riverside

**JERD F. SULLIVAN, JR. (1964)**

Crocker-Anglo National Bank,  
1 Montgomery st, San Francisco 4

**NORTON SIMON (1976)**

Suite 1201, 8440 Wilshire blvd,  
Los Angeles 5

## OFFICERS OF THE REGENTS

His Excellency **Edmund G. Brown, LL.B.**  
Governor of California  
President  
State Capitol, Sacramento 14

**Donald H. McLaughlin, B.S., M.A., Ph.D., D.Eng., Chairman**  
100 Bush st, San Francisco 4

**Robert M. Underhill, B.S.**  
Secretary and Treasurer  
615 University Hall, Berkeley 4

**Stanley J. Thomson, A.B., Assistant Secretary and Assistant Treasurer**  
615 University Hall, Berkeley 4

**Miss Marjorie J. Woolman**  
Associate Secretary  
689 University Hall, Berkeley 4

**Thomas J. Cunningham, A.B., LL.B., LL.D.**

General Counsel of the Regents

590 University Hall, Berkeley 4

**John E. Landon, A.B., LL.B.**

Associate Counsel of the Regents

590 University Hall, Berkeley 4

**John P. Sparrow, A.B., LL.B.**

Associate Counsel of the Regents

590 University Hall, Berkeley 4

**Milton H. Gordon, A.B., LL.B.**

Assistant Counsel of the Regents

590 University Hall, Berkeley 4

**R. Bruce Hoffe, A.B., LL.B.**

Assistant Counsel of the Regents

590 University Hall, Berkeley 4

**Mark Owens, Jr., A.B., LL.B.**

Assistant Counsel of the Regents  
and Attorney in Residence Matters

590 University Hall, Berkeley 4

# UNIVERSITY OF CALIFORNIA

## GENERAL ADMINISTRATIVE OFFICERS

- Clark Kerr, Ph.D., LL.D., *President of the University.*  
Robert Gordon Sproul, B.S., LL.D., Litt.D., *President of the University, Emeritus.*  
Harry R. Wellman, Ph.D., *Vice-President of the University.*  
Claude B. Hutchison, M.S., LL.D., D.Agr. (hon.e.), *Vice-President of the University and Dean of the College of Agriculture, Emeritus.*  
James H. Corley, B.S., *Vice-President—Governmental Relations and Projects.*  
Thomas J. Cunningham, A.B., LL.B., LL.D., *Vice-President and General Counsel.*  
Raymond W. Kettler, M.A., *Vice-President—Finance and Controller.*  
Elmo R. Morgan, B.S., *Vice-President—Business.*  
Robert M. Underhill, B.S., *Vice-President, and Secretary and Treasurer of the Regents.*  
John W. Oswald, Ph.D., *Assistant Vice-President.*  
Daniel G. Aldrich, Jr., Ph.D., *University Dean of Agriculture.*  
Paul H. Sheats, Ph.D., *Dean of University Extension.*  
Glenn T. Seaborg, Ph.D., Sc.D., LL.D., *Chancellor at Berkeley.*  
Emil M. Mrak, Ph.D., *Chancellor at Davis.*  
Franklin D. Murphy, M.D., Sc.D., L.H.D., LL.D., *Chancellor at Los Angeles.*  
Herman T. Spieth, Ph.D., *Chancellor at Riverside.*  
Samuel B. Gould, M.A., LL.D., *Chancellor at Santa Barbara.*  
John B. deC. M. Saunders, M.B., Ch.B., F.R.C.S. (Edin.), *Provost at San Francisco Medical Center.*  
Roger R. Revelle, Ph.D., *Director at La Jolla.*

## GENERAL ADMINISTRATIVE OFFICERS—LOS ANGELES CAMPUS

- Franklin D. Murphy, M.D., Sc.D., L.H.D., LL.D., *Chancellor.*  
Vern O. Knudsen, Ph.D., LL.D., *Chancellor, Emeritus.*  
William G. Young, Ph.D., *Vice-Chancellor.*  
Edgar L. Lazier, Ph.D., *Acting Director of Admissions.*  
William T. Puckett, Ph.D., *Registrar.*  
Gustave O. Arlt, Ph.D., *Dean of the Graduate Division, Southern Section.*  
———, *Dean of Students.*  
Byron H. Atkinson, Ed.D., *Associate Dean of Students and Dean of Men.*  
Nola-Stark Cavette, Ed.D., *Associate Dean of Students and Dean of Women.*  
Clifford H. MacFadden, Ph.D., *Foreign Student Adviser.*  
Raymond T. Eddy, M.A., *Supervisor of Special Services.*  
Lawrence C. Powell, Ph.D., Litt.D., *University Librarian.*  
Paul C. Hannum, B.S., *Campus Business Manager.*  
J. D. Morgan, B.S., *Associate Business Manager.*  
Robert A. Rogers, A.B., *Accounting Officer.*  
Aubrey L. Berry, Ed.D., *Assistant Manager of the School and College Placement Service.*  
Donald P. LaBoaskey, A.B., *Manager of the Student and Alumni Placement Center.*  
Gladys M. Jewett, Ph.D., *Counseling Center Manager.*  
Donald S. MacKinnon, M.D., *Director, Student Health Service.*

**ADMINISTRATIVE OFFICERS OF THE COLLEGES AND SCHOOLS**

- Gustave O. Arlt, Ph.D., *Dean of the Graduate Division, Southern Section.*  
 Francis E. Blacet, Ph.D., *Divisional Dean of Physical Sciences, College of Letters and Science.*  
 Fred E. Case, D.C.S., *Assistant Dean, Graduate School of Business Administration.*  
 Lewellyn M. K. Boelter, M.S., *Dean of the College of Engineering.*  
 Paul A. Dodd, Ph.D., LL.D., *Dean of the College of Letters and Science.*  
 Roy M. Doreus, Ph.D., *Divisional Dean of Life Sciences, College of Letters and Science.*  
 O. Martin Duke, M.S., *Associate Dean of the College of Engineering.*  
 Max S. Dunn, *Associate Dean of the Graduate Division, Southern Section.*  
 Mary E. Duren, M.S., *Assistant Dean of the School of Social Welfare.*  
 John Field, II, Ph.D., *Associate Dean of the School of Medicine.*  
 Raymond H. Fisher, Ph.D., *Associate Dean of the Graduate Division.*  
 James M. Gillies, Ph.D., *Assistant Dean of Student Affairs, School of Business Administration.*  
 Lenor S. Goerke, M.D., M.S.P.H., *Associate Dean of the School of Public Health.*  
 Lulu Wolf Hassenplug, M.P.H., *Dean of the School of Nursing.*  
 Robert W. Hodgson, M.S., *Dean of the College of Agriculture, Emeritus.*  
 Andrew A. Horn, Ph.D., *Assistant Dean, School of Library Service.*  
 ———, *Dean of the School of Social Welfare.*  
 David F. Jackey, Ph.D., *Dean of the College of Applied Arts, Emeritus.*  
 Neil H. Jacoby, Ph.D., *Dean of the School of Business Administration and Dean of the Graduate School of Business Administration.*  
 Edwin A. Lee, Ph.D., *Dean of the School of Education, Emeritus.*  
 Richard C. Maxwell, B.S.L., LL.B., *Acting Dean of the School of Law.*  
 Frank W. McKee, Ph.D., *Assistant Dean of the School of Medicine.*  
 William W. Melnitz, Ph.D., *Acting Dean of the College of Applied Arts.*  
 George E. Mowry, Ph.D., *Divisional Dean of Social Sciences, College of Letters and Science.*  
 Daniel G. Morton, M.D., *Assistant Dean of the School of Medicine.*  
 Russell R. O'Neill, Ph.D., *Assistant Dean of Engineering Graduate Studies, College of Engineering.*  
 Wesley L. Orr, C.E., *Assistant Dean of the College of Engineering.*  
 Thomas A. Petit, Ph.D., *Assistant Dean, School of Business Administration.*  
 Lawrence Clark Powell, Ph.D., Litt.D., *Dean of the School of Library Service.*  
 Joel J. Pressman, M.D., *Assistant Dean of the School of Medicine.*  
 George W. Robbins, M.B.A., *Associate Dean of the School of Business Administration.*  
 J. Wesley Robson, Ph.D., *Associate Dean of Student Affairs, College of Letters and Science.*  
 Franklin P. Rolfe, Ph.D., *Divisional Dean of Humanities, College of Letters and Science.*  
 Murray L. Schwartz, B.S., LL.B., *Assistant Dean of the School of Law.*  
 May V. Seagoe, Ph.D., *Assistant Dean of the School of Education.*  
 Eli Sobel, Ph.D., *Associate Dean, Special Gifted Student and Honors Programs, College of Letters and Science.*  
 Reidar F. Sognaes, L.D.S., D.M.D., Ph.D., *Dean of the School of Dentistry.*  
 Thomas H. Sternberg, M.D., *Assistant Dean for Postgraduate Medical Education, School of Medicine.*  
 Edward H. Taylor, M.S., *Assistant Dean of Undergraduate Studies, College of Engineering.*  
 Samuel J. Wanous, Ph.D., *Assistant Dean of the School of Education.*  
 Stafford L. Warren, M.D., *Dean of the School of Medicine.*  
 Howard E. Wilson, Ph.D., *Dean of the School of Education.*

# THE UNIVERSITY OF CALIFORNIA

FOUNDED 1868

*The Beginning.*—The Organic Act passed by the State Legislature and signed by the Governor in 1868, established the University of California. It opened its doors in 1869 on the Oakland campus of the College of California, which had grown out of a movement started by Congregational and Presbyterian ministers sent to the West by the Home Missionary Society of New York, as early as 1848. The University of California moved to Berkeley in 1873 as soon as the first buildings were completed. One of these buildings, South Hall, is still standing and still in use.

*Today.*—The University, currently serving the state of California with seven campuses—Berkeley, San Francisco, Davis, Riverside, La Jolla, Los Angeles, and Santa Barbara—is composed of academic and professional schools and colleges, divisions, departments of instruction, museums, libraries, research institutes, bureaus, and foundations.

In addition to the educational facilities centered on its campuses, the University operates the University Extension and Agricultural Extension Service everywhere in the state where a public demand is apparent. Special instruction and research are carried on throughout the State, in other states and in foreign countries.

*Growth.*—The University is continuing, as in the past, to keep pace with the growth of the State. Present campuses are being expanded; new campuses are in the planning stage. Recent state-wide enrollment approximated 44,900. By 1970 it is estimated the enrollment will reach 103,000. That the University has steadily increased in quality as well as in size is attested to by the fact that it is generally recognized as one of the great universities in the country. The University of California provides a college education for all qualified students, without distinction as to sex, creed, or race. Its instruction covers all the broad and essential fields of human knowledge, including the arts, sciences, and literature. It also provides fundamental training for many of the professions.

*Governing Board.*—The University is governed by a Board of Regents, sixteen of whom are appointed for a term of sixteen years. The Governor of the State serves as President of the Board. The Regents appoint the President of the University, who is the executive head of the University and with his advice, appoint the chancellors, provosts, directors, and deans who administer the affairs of the individual campuses and divisions making up the University.

*Academic Senate.*—By authority vested in them by the State constitution, the Regents created an *academic* administrative body called the Academic Senate. Subject to approval of the Regents, the Senate determines conditions for admission, certificates, and degrees. It authorizes and supervises all courses of instruction in the academic and professional colleges and schools, except in professional schools offering courses at graduate level only. Deans or directors of schools, colleges, or other divisions of the University assist the President in the administration of the University, with special emphasis on the welfare of the division which they individually represent, and of the students therein.

# UNIVERSITY OF CALIFORNIA, LOS ANGELES

## HISTORY AND DEVELOPMENT

*Early Years.*—The Los Angeles State Normal School, destined to become the University of California, Los Angeles, was established by action of the State Legislature in March, 1881. Initially located on the present site of the Los Angeles City Library, the School was moved in 1914 to a new site on North Vermont Avenue. Through legislative action made effective by the Governor's signature on July 24, 1919, the property and records of the State Normal School were transferred to The Regents of the University of California.

Operating as the Southern Branch of the University, the new campus expanded its curriculum to include the freshman and sophomore years in Letters and Science. The third and fourth years were added in 1923 and 1924 respectively. In 1922 the teacher-training courses were organized as a Teachers College.

On February 1, 1927, the Southern Branch of the University was officially designated the University of California at Los Angeles. Shortly thereafter, in August, 1929, the University occupied its new Westwood campus, encompassing three hundred and eighty-four acres in the foothills of the Santa Monica Mountains. Within a decade the University of California, Los Angeles, expanded its educational facilities to include a College of Agriculture, a College of Business Administration (later School of Business Administration), a College of Applied Arts, a School of Education, and a Graduate Division. Successively added were a College of Engineering, schools of Dentistry, Law, Library Service, Medicine, Nursing, Public Health, Social Welfare, and a Graduate School of Business Administration.

*Today.*—Dominated by the majestic towers of Royce Hall on the north and the impressive bulk of the Medical Center on the south, the Los Angeles campus of the University of California reflects the tremendous growth of the University. There are now 65 departments, 14 schools and colleges, the Graduate Division, Southern Section, and several other divisions of instruction and research.

Under way is a long-range development program designed to prepare the campus for an expected enrollment by 1970 of approximately 27,500 full-time students. Recent additions to the physical plant include the Mathematical Sciences Building, an Engineering Unit II, a Botany Building, a Faculty Center, a Life Science Graduate Instruction and Research Unit, and two of eight residence halls to be built on the campus: Dykstra Hall, which accommodates 800 men, and Sproul Hall, which provides facilities for 400 women and 400 men. Other buildings under construction or scheduled include a Neuropsychiatric Unit, a Student Union Building, a Graduate Business Administration Building, an Extension to Franz Hall, a Social Science Building, and a Theater Arts Building.

## COMMUNITY AND TRANSPORTATION

Located in the corporate limits of the City of Los Angeles, the Los Angeles campus of the University of California, fringed on the north by the Santa Monica Mountains and within visible distance of the Pacific Ocean, enjoys a temperate climate. During the summer months the mean temperature is about 68 degrees; during the winter period, the mean temperature is about 49 degrees.

It is ideally located for varied recreation and entertainment. The beaches and mountain resorts are within easy driving distance. Hollywood is close by. And the community is served by a number of fine restaurants.

The cultural atmosphere of the community is active and challenging, supplementing the year-around programs offered on the campus.

The campus may be reached by bus as follows: from *Los Angeles* business district, Metropolitan Transit Authority bus 83W, southbound on Hill Street. From *Santa Monica*, Metropolitan Transit Authority bus via Wilshire Boulevard, and Santa Monica Municipal Bus Lines, via Wilshire Boulevard and Santa Monica Boulevard. From *Los Angeles International Airport*, Airport-transit, via Beverly Hills.

### **SURVEY OF CURRICULA**

The scope of the undergraduate and graduate programs of instruction offered in the four colleges and eight schools of the University on the Los Angeles campus is briefly indicated below. For more details see pages 1 through 71 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: prebusiness, precriminology, pre dental, pre dental hygiene, premedical, prepharmacy, prepublic health, and presocial welfare.

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

The *College of Applied Arts* offers curricula leading to the degrees of Bachelor of Arts and Bachelor of Science.

The *School of Law* offers a curriculum leading to the degree of Bachelor of Law.

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

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

The *School of Library Service* offers a curriculum leading to the degree of Master of Library Science.

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 Science, and Doctor of Philosophy; and the professional degrees of Master of Business Administration, Master of Education, Master of Engineering, Master of Library Science, Master of Public Administration, Master of Social Welfare, Doctor of Education, and Doctor of Public Health.

### **THE UNIVERSITY LIBRARY**

The University Library has approximately 1,450,000 accessioned volumes and regularly receives about 20,000 periodicals and newspapers.

In the Main Library, books, except for bound periodicals, circulate for a three-week period. Circulation rules are posted in the library. All graduate students have access to the book stacks on presentation of registration cards. Undergraduate honor students are admitted to the stacks on presentation of registration cards properly stamped by the Registrar's Office.

An open-shelf collection of materials of interest primarily to undergraduate students is available in the College Library in the Main Library Building.

The Graduate Reading Room provides special study facilities for graduate students, and assigned seats are available here to a limited number of students; application should be made to the librarian in charge of the room.

The Main Library's Department of Special Collections contains rare books and rare and early pamphlets, maps, manuscripts, and the University Archives.

The Government Publications Room in the Main Library is a depository for the official publications of the United States Government, the United Nations and certain of its specialized agencies, and the State of California, and also receives selected publications of the other states and territories and of foreign governments.

Branch libraries in Agriculture, Art, Biomedicine, Business Administration, Chemistry, Education, Engineering, English, Geology, Home Economics, Industrial Relations, Music, Physics, Theater Arts, and the University Elementary School are housed in the quarters of their respective departments. The Biomedical Library, situated in the east wing of the Medical Center, serves the schools of Medicine, Nursing, and Public Health and the departments of Bacteriology and Zoology. Hours are posted and also listed in the library handbook, *Know Your Library*. Branch libraries serve primarily the schools and departments in which they are situated, but their resources are available to all students and faculty of the University.

The Law Library is housed in the Law Building and serves all students and faculty of the University. Hours of service are the same as those of the University Library.

Supplementing the University Library is the William Andrews Clark Memorial Library\* of about 67,000 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, and admission is by card only, application for which should be made to the University Librarian. Leaflets descriptive of the Clark Library are available upon application to the University Librarian.

#### **PUBLIC LECTURES, CONCERTS, AND ART EXHIBITS**

As opportunity offers, the University presents public lectures of general and of scholarly interest by qualified persons. These lectures are intended to supplement and stimulate the work of all departments of the University. In addition, the Speakers' Bureau of University Extension provides clubs and organizations with speakers from the University faculty.

The musical program of the University includes many special events. The Concert Series Section of the Committee on Fine Arts Productions offers a broad variety of concerts by soloists, chamber musicians, and other groups of nationally known artists. The Department of Music offers each semester evening concerts by its performance organizations—the A Cappella Choir, the Madrigal Singers, the Symphony Orchestra, the Opera Workshop, the Chamber Symphonette, the Chorus, the Symphonic Band and the Glee Clubs. Individual student artists and members of the music faculty also present weekly Tuesday Noon Recitals and monthly Friday Noon Organ Recitals. All of these events are open to the public.

The Art 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, sculpture, architecture, industrial design and the crafts. The Galleries are open from 12:30 to 5 p.m. Mondays through Fridays and from 1:30 to 4:30 p.m. Sundays.

Dance recitals are presented regularly under the auspices of the Department of Physical Education. In addition, well-known dance groups are brought to the campus by the Concert Series Section of the Committee on Fine Arts Productions.

\* This library is not on the University campus but is situated at 2205 West Adams Boulevard (Telephone REpublic 1-8529). From the Los Angeles campus, it may be reached by Metropolitan Transit Authority bus to Western Avenue transferring to the "84" bus; from downtown, by the "11" bus. The library is open Mondays through Saturdays from 8 A.M. to 5 P.M.



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 plays for the campus and community.

A number of art, documentary, educational, and foreign films, including film series, are presented each semester. These, too, are open to the public.

### SUMMER SESSIONS

During the summer the University conducts at Los Angeles a six-week and an eight-week session. In 1960 the Summer Sessions will begin Monday, June 20. The Summer Sessions bulletin is obtainable after February 15 of each year from the Office of the Summer Sessions, Administration Building, University of California, Los Angeles 24, California.

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 7 C-19 C of this bulletin.

### UNIVERSITY EXTENSION

University Extension makes available the resources of the University, on a state-wide basis, to those who cannot take up residence at one of the campuses or who prefer a part-time special program. Its program includes classes, correspondence courses, conferences, and special activities in a wide variety of subjects. These include art, business administration, economics, engineering, geography, history, industrial relations, languages, literature, mathematics and physical sciences, music, philosophy, political science, psychology, real estate, sociology, speech, and many others.

During the past few years, an increasingly large and significant service has been made available to those in professions and others with advanced training. Study at the professional level is offered in engineering, and the sciences, law, medicine, dentistry, education, and other fields. However, many University Extension offerings are in the more general subjects and are open to all adults who can pursue the work with profit.

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

The educational services of University Extension are organized around three primary aims: to help men and women advance professionally; to aid them in meeting their responsibilities as citizens; and to assist them in the pursuit of intellectual and cultural interests.

Six principal services are provided:

1. Classes may be organized in any community of the State where a sufficient number of persons wish to study a particular subject. Discussion groups in world politics and the liberal arts may also be arranged.

2. Correspondence instruction offers lessons, study materials, and University faculty guidance by mail.

3. Conferences, workshops, and institutes, for periods ranging from one day to several weeks, provide intensive instruction for groups interested in specialized knowledge.

4. The Department of Visual Communications administers the University's programming in the field of educational television; produces educational motion pictures as needed by campus departments; makes certain educational films available for purchase; and maintains film libraries on a rental basis for the campus (the general public may rent films from the department located on the campus in Berkeley).

5. Lectures, singly or in series, may be arranged for clubs and organizations.

6. Vocational counseling is now available to the general public through University Extension's Counseling and Testing Services Center at 1063 Gayley Avenue in Westwood Village.

For detailed information, write or telephone to University Extension offices at the following locations: 405 Hilgard Avenue, Los Angeles 24 (BRadshaw 2-6161 or GRanite 3-0971, extension 721); 818 South Hill Street, Los Angeles 14 (MAdison 3-6123); University of California, Berkeley 4; University Extension Building, University of California, Riverside; 129 East Carrillo Street, Santa Barbara.

# ADMISSION TO THE UNIVERSITY

## IN UNDERGRADUATE STATUS

AN APPLICANT WHO WISHES to register on any campus of the University must fulfill the general requirements for admission as set forth below. The University of California bases its entrance requirements on two principles: first, that the best guarantee of success in the University is high quality of scholarship in previous work, and second, that the study of certain specified subjects will give to the student both good preparation for the work of the University and reasonable freedom of choice of a major field of study after his entrance. These principles apply to admission in either freshman or advanced standing.

## ADMISSION PROCEDURE

*Application for Admission.*—Formal application must be filed with the Director of Admissions, 1147 Administration Building, University of California, Los Angeles 24. Application blanks will be supplied by the Office of Admissions upon request. The application should be filed during the semester preceding that for which the applicant wishes to register and must be filed not later than *August 15* for the fall semester or *January 15* for the spring semester. Applicants for the College of Engineering have earlier dates for filing applications; see under "Special Requirements for Engineering," page 14 O.

*Application Fee.*—Every applicant for admission is required to pay a fee of \$5 when the first application is filed. Remittance by bank draft or money order should be sent to the Office of Admissions, but be made payable to The Regents of the University of California.

*Transcripts and Records.*—Official transcripts of records should be sent directly to the Office of Admissions from the graduating high school and from each college attended. Transcripts should be endorsed by the proper authority and final college transcripts should include a statement of good standing or honorable dismissal from the last college attended. A preliminary transcript should show work in progress.

*Examination Requirement.*—September, 1960, and thereafter, all applicants for undergraduate status (except second baccalaureate degree, limited, foreign, and applicants for Engineering at the junior level) must present a satisfactory score on the College Entrance Examination Board Scholastic Aptitude Test. Arrangements for the test, which must be taken no earlier than the senior year in high school or within the year the applicant applies for transfer, are made with the Educational Testing Service, P. O. Box 27896, Los Angeles 27, California, or P. O. Box 592, Princeton, New Jersey. The fee for the Scholastic Aptitude Test is to be paid to the Educational Testing Service. Scores will be regarded as official only if they are received directly from the Educational Testing Service. See also sections on "Admission of Out-of-State Applicants" and "Admission by Examination."

## APTITUDE TEST DATES FOR 1960-1961

<i>Test Dates</i>	<i>Application Deadlines</i>
Saturday, December 3, 1960.....	November 5, 1960
Saturday, January 14, 1961.....	December 17, 1960
Saturday, February 4, 1961.....	January 7, 1961
Saturday, March 18, 1961.....	February 18, 1961
Saturday, May 20, 1961.....	April 22, 1961
Wednesday, August 9, 1961.....	July 12, 1961

**Vaccination Certificate.**—Every new student (and every student returning to the University after an absence) must present at the time of medical examination by the University Medical Examiners a certificate establishing the fact that he has been successfully vaccinated against smallpox within the last seven years. A form for this purpose will be furnished by the Admissions Offices of the University. Vaccination should be completed prior to registration. However, if a new student wishes, he may be vaccinated at the Student Health Service at the time he takes his entrance physical examination.

### ADMISSION IN FRESHMAN STANDING

An applicant who does not meet at the time of high school graduation the requirements given below for admission to freshman standing must qualify for admission with *advanced standing* (see page 12 C). The only exception to this regulation is in the case of a student whose subject deficiency was the result of not having studied one or more required high school subjects. It is sometimes possible for such a student to clear the deficiency during the summer, provided approval is secured in advance from the Office of Admissions on the campus where the applicant expects to enroll.

An applicant who has attended a junior college, four-year college, university, extension classes of college level, or any comparable institution since graduating from high school is subject to regulations governing admission in advanced standing (see page 12 C). Such college attendance may not be disregarded, whether or not any courses were completed.

### Requirements for California Residents

(This includes applicants from out-of-State high schools who are bona fide residents of California.)

1. COLLEGE ENTRANCE EXAMINATION BOARD SCHOLASTIC APTITUDE TEST (see above).
2. GRADUATION FROM AN ACCREDITED HIGH SCHOOL.

An accredited high school in California is one that has been officially designated by the Board of Regents of the University as a school from which students will be admitted to the University primarily on the basis of the record of subjects completed and scholarship attained. The list of accredited schools is published by the University annually in the month of September. Accreditation by the University refers to the college preparatory function of the high school and implies no judgment regarding the other educational functions of the school. For information concerning the accrediting of schools, principals may communicate with the Office of Relations with Schools, Berkeley or Los Angeles. If the high school from which the applicant graduated is not accredited, the Office of Admissions will, upon request, instruct the student regarding the procedure he should follow.

3. ADMISSION—METHOD I (see "Alternate Methods of Admission" under (4) below).

**Subject Requirements.**—Upon the high school authorities rests the responsibility for determining the scope and content of courses preparatory to admission to the University and for certifying such courses to the University. Students naturally will be guided by their respective high school principals in making their preparation for entrance to the University.

- (a) History ..... 1 unit. This requirements must be satisfied by 1 unit of United States history or 1 unit of United States history and civics.
- (b) English ..... 3 units. These must consist of six semesters of English composition, literature, and oral expression, certified by the high school principal as University preparatory in nature.

- (c) Mathematics . . . . .2 units. These must consist of two semesters of algebra and two semesters of plane geometry or an integrated two-year course covering the same material. Advanced algebra and trigonometry may be substituted for algebra, and trigonometry and solid geometry for plane geometry.
- (d) Laboratory Science. . .1 unit. This must consist of an advanced (eleventh or twelfth grade) year course in one laboratory science. Both semesters must be in the same subject field. Courses designated chemistry or physics are accepted without special certification. Courses in other subjects, such as biology, physiology, botany, physical science, and zoology, are acceptable on written certification from the high school principal.
- (e) Foreign Language. . .2 units. These must be in one language.
- (f) Advanced course chosen from one of the following . . . . .1 (or 2) units.
1. Mathematics, a total of 1 unit (second-year algebra,  $\frac{1}{2}$  or 1 unit; solid geometry,  $\frac{1}{2}$  unit; trigonometry,  $\frac{1}{2}$  unit or other course for which trigonometry is a prerequisite).
  2. Foreign language, either 1 additional unit in the same foreign language offered under (e), or 2 units of a different foreign language.
  3. Science, 1 unit of either chemistry or physics in addition to the science offered under (d) above.

Additional elective units to complete the minimum of 15 standard entrance units.

*Scholarship Requirements.*—An average of grade B (3.0 based on a marking system of four passing grades) is required in the (a) to (f) subjects listed above, which are taken in the tenth, eleventh, and twelfth years. Courses taken for subject credit in the ninth year need show passing grades only.

In determining the B average, a grade of A in one course may be used to balance a C in another; only courses used to meet the (a) to (f) subject requirements and completed in the tenth, eleventh, and twelfth years are used in computing the grade average. Grades are considered on a semester basis, except from schools that give only year grades.

Courses in the required list completed after the ninth year in which a grade of D is received may not be counted in satisfaction of a subject requirement; an A grade may not be used to compensate for D, E, or F grades. Courses taken in the tenth, eleventh, and twelfth years in which a grade of C or lower is received may be repeated to raise grades, when approved by the principal of an accredited high school, in an amount not to exceed 2 units of the (a) to (f) pattern. Only the first repetition of a subject will be used to satisfy scholarship requirements, although additional repetitions are allowed for the purpose of satisfying a subject requirement.

#### 4. ALTERNATE METHODS OF ADMISSION (for students who do not qualify under Method I)

**METHOD II**

*Subject*—complete in the entire high school program not less than 10 units in college preparatory courses chosen from the fields of English, mathematics, science, foreign language, and social science  
and

*Scholarship*—achieve a scholarship rank in the highest ten per cent of the graduating class.

**METHOD III**

*Subject*—complete not less than twelve high school units of grade A or B in the work of the tenth, eleventh, and twelfth grades and have no more than 2 units of subject deficiencies in the (a) to (f) subjects. The 2 units of subject shortage must be the result of *omission* only. Courses such as physical education, study period, work experience, military science, E.O.T.C., and religion are not to be counted under this method.  
and

*Scholarship*—in the subjects completed in the tenth, eleventh, and twelfth years and applied on the (a) to (f) requirements have an average grade of B and no grades lower than C.

**METHOD IV**

*Subject*—complete in the eleventh and twelfth grades not less than 6 high school units of A or B grade selected from the following academic subjects:

Third- and fourth-year English

Third- and fourth-year mathematics

Third- and fourth-year laboratory science

Third- and fourth-year foreign language

Third- and fourth-year history or social science (not more than one unit of social science other than United States history or civics may be used)

and

*Scholarship*—in the subjects completed in the tenth, eleventh, and twelfth years and applied on the (a) to (f) pattern, earn no grade lower than C, and maintain a scholarship average of not more than  $\frac{1}{2}$  unit below a B average.

University authorities believe that high school students who follow the regular (a) to (f) pattern of subjects outlined above, together with the additional subjects recommended for particular majors, will be well prepared for work in the University. However, the University does not wish to exclude a student who has followed a program of university preparatory studies recommended to him by his high school and will therefore admit an applicant on a grade B average scholarship in a different program of University preparatory studies provided such a program has been previously filed with, and approved by, the Board of Admissions and Relations with Schools.

**5. EXPERIMENTAL PLANS OF ADMISSION**

In addition to the foregoing methods, the Board of Admissions and Relations with Schools authorizes from time to time experimental programs to test the validity of suggested procedures. Information about these programs is communicated promptly to school authorities in California by the Office of Relations with Schools. Also the Director of Admissions is charged by the Board with the authority and responsibility for waiving minor deficiencies when justification is evident in the form of unusual academic records or recommendations.

### Requirements for Out-of-State Applicants

#### 1. Graduation from an Accredited High School.

For schools outside California, regional or other accrediting agencies are consulted. The University makes the final decision regarding acceptability.

#### 2. College Entrance Examination Board Scholastic Aptitude Test.

An average score of 500 or above in the Aptitude Test—see detailed statement on page 7 C.

#### 3. Subject Requirements.

The same subject pattern required of California residents—see Method I (page 8 C).

#### 4. Scholarship Requirements.

An applicant must present evidence that he has maintained a grade-point average of 3.4 or higher on the required high school subjects. One unit of A counts four points, one unit of B counts three points, one unit of C counts two points, one unit of D counts one point. E and F yield no points.

The alternate plans of admission given on page 9 C are not applicable to out-of-State applicants.

The above regulations apply, also, to all foreign students who have studied for two or more years in American high schools.

### ADMISSION BY EXAMINATION

Applicable only to high school graduates who are residents of California and ineligible on their school records and who have no college work.

The University of California does not itself offer entrance examinations but accepts on all campuses the results of examinations given by the Educational Testing Service for the College Entrance Examination Board (see page 7 C for information as to dates and places of examinations for 1960-1961).

To qualify by examination, the tests must be taken no earlier than the applicant's senior year in high school and arrangements must be made with the Educational Testing Service at least four weeks prior to the test date. Test results must be forwarded directly from the Educational Testing Service to the Office of Admissions on the campus at which the student expects to register.

#### Assignment of Examinations

An applicant who has completed all of the (a) to (f) subjects with grades of at least C but is deficient in scholarship may qualify by attaining a score of 500 or above on:

(a) The Scholastic Aptitude Test (Verbal and Mathematics scores may be averaged)

and

(b) Each of any three achievement tests in subject fields. An applicant may not present examinations in both Intermediate and Advanced Mathematics.

The applicant who has not completed all the (a) to (f) subjects with C grades or better must consult the Office of Admissions to determine the examinations he is required to take.

The applicant who has graduated from an unaccredited high school may qualify by examination but must consult with the Office of Admissions regarding the required tests.

### PREPARATION FOR UNIVERSITY CURRICULA

In addition to those subjects required for admission to the University, outlined beginning on page 8 C, certain preparatory subjects are recommended for each University curriculum which, if included in the high school program,

will give the student a more adequate background for his chosen field of study. In some cases, lack of a recommended high school course will delay graduation from the University. Details of these recommendations will be found in the circular, PREREQUISITES AND RECOMMENDED SUBJECTS, which may be obtained from the Director of Admissions and Relations with Schools, Berkeley or Los Angeles.

It is recommended that students pursue a full program of academic subjects during their senior year.

A statement of the requirements for the bachelor's degree is contained in the ANNOUNCEMENT OF COURSES AND CURRICULA, DEPARTMENTS AT LOS ANGELES (40 cents). A copy of the desired announcement may be obtained from the Office of the Registrar.

### HONORS AT ENTRANCE

All entering freshmen are considered for Honors at Entrance on the basis of their high school records. Honors recognition at the time of admission is given to entering freshman students with outstanding high school scholastic records. Certificates are presented to the Honors recipients shortly after registration in the University.

### ADMISSION IN ADVANCED STANDING

#### Requirements for California Residents

1. An applicant who was eligible for admission in freshman standing or whose only deficiency arose from not having studied one or more required high school subjects may be admitted at any time if he presents evidence that:

- (a) He has satisfied, either through high school or college courses, the subjects required for admission of high school graduates in freshman standing (see page 8 C).
- (b) His advanced work, in institutions of college level, has met the minimum scholarship standard required of transferring students, in no case lower than a C average in the last college attended, and an over-all C average in all college work attempted. "Scholarship standard" is expressed by a system of grade points and grade-point averages in courses acceptable for transfer to the University of California. One unit of A counts four grade points; one unit of B counts three grade points; one unit of C counts two grade points; one unit of D counts one grade point; E and F yield no grade points.

The grade-point average is determined by dividing the total number of grade points by the total number of units undertaken. Courses completed with a grade lower than C may be repeated but the units and grade points count each time the course is taken.

- (c) He is entitled to return as a student in good standing to the last college attended.
- (d) He has earned a satisfactory score in the College Entrance Examination Board Scholastic Aptitude Test, taken not earlier than the year preceding that in which he plans to enter the University.

2. If an applicant for admission to the University in advanced standing was ineligible at the time of high school graduation because of low scholarship or a combination of low scholarship and incomplete subject preparation, he may remove his deficiencies by completing college courses of appropriate content and amount. These courses completed with satisfactory grades may be taken in any approved college.

- (a) The applicant must include in his program courses acceptable for removing high school subject shortages caused by omission or by grades of D or lower  
and



present a minimum of 30 units of transfer courses with a grade-point average of at least 2.4 and a satisfactory score on the College Entrance Board Scholastic Aptitude Test, taken not earlier than the year preceding that in which he plans to enter the University.

*or*

- (b) As an alternative to making up high school subject deficiencies, an applicant may be admitted on the basis of a record showing completion of at least 60 units of transfer courses with a grade-point average of 2.4 or higher in which must be included all of the subjects required for junior standing in a school or college of the University. Applicants qualifying under this regulation will also be required to present a satisfactory score on the College Entrance Examination Board Scholastic Aptitude Test, taken not earlier than the year preceding that in which he plans to enter the University.

Ordinarily, it is recommended that graduates of California high schools who are not eligible for admission to the University attend one of the California junior colleges and complete the lower division requirements of the college in which they wish to register.

### **Requirements for Out-of-State Applicants**

(See also page 15 C)

In addition to the regular admission requirements described above, out-of-State applicants with advanced standing must meet the following regulations:

1. A grade-point average of 2.8 or higher must be maintained in college subjects acceptable for transfer credit, plus an average score of 500 or above on the College Entrance Examination Board Scholastic Aptitude Test.
2. An advanced standing applicant who presents less than 30 units of acceptable transfer courses must also meet both the subject and scholarship requirements set for applicants from out-of-State high schools listed on page 11 C.

The above regulations apply, also, to all foreign students who have studied for two or more years in American high schools which are outside of California, with the exception of the College Entrance Examination Board Scholastic Aptitude Test requirement.

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

The University grants credit for courses appropriate to the student's curriculum in the University that have been completed in other accredited colleges and universities, subject to the restrictions of the senior residence requirement.

As an integral part of the system of public education of California, the University of California accepts at full value approved transfer courses completed with satisfactory grades in the public junior colleges of the State; students who intend to complete their advanced studies at the University will frequently find it to their advantage to complete the first two years of their college course in one of the many excellent California public junior colleges.

An applicant may not disregard his college record and apply for admission in freshman standing; he is subject without exception to the regulations governing admission in advanced standing. He should ask the registrars of all high schools and colleges he has attended to forward complete official transcripts directly to the Office of Admissions where he has filed his application. Transcripts not sent directly by the issuing school to the Office of Admissions will be considered unofficial. A statement of good standing from the last college attended must also be sent.

No applicant may receive transfer credit in excess of an average of 18

units per semester. After a student has earned 70 units acceptable toward a degree (except credit allowed on the basis of military service and training), no further unit credit will be granted for courses completed at a junior college.

Extension courses taken at some institution other than the University of California may not be acceptable. The decision as to their acceptability rests with the Office of Admissions. If such a program is planned with the intention of applying it toward a degree at the University of California, it is wise to have the approval of the Office of Admissions in advance.

### Removal of Scholarship Deficiencies by Applicants From Other Colleges

Applicants otherwise eligible who seek to transfer from other institutions of collegiate rank but whose college records fail to show a satisfactory scholarship average may be admitted only when the deficiency has been removed by additional work completed with grades sufficiently high to offset the shortage of grade points. This may be accomplished by work in other approved higher institutions, in Summer Sessions, or by courses in University Extension; students are not admitted in probationary status.

### SPECIAL REQUIREMENTS FOR ENGINEERING

An engineering qualifying examination must be taken by all applicants for admission to the College of Engineering at both the lower division and upper division levels. The examination is to be taken the semester previous to that in which the applicant desires to register. No other test results may be substituted for those of the appropriate engineering qualifying examination. The formal application for admission to the University as well as the application to take the test must be filed before the date scheduled for the examination. Students not taking the test on the date scheduled will not be considered for admission to the College of Engineering in the semester immediately following.\*

Applicants for admission to the lower division of the College of Engineering must present satisfactory scores on both the Engineering Examination—Lower Division, and the Scholastic Aptitude Test of the College Entrance Examination Board. No fee will be charged for the Engineering test where applicants are required to take both it and the Scholastic Aptitude Test. Applicants for admission to the College of Engineering at or above the junior level must submit satisfactory scores on the Engineering Examination—Upper Division. The Scholastic Aptitude Test will be waived for these upper division Engineering applicants. Identical examination programs are required for admission to the College of Engineering, Berkeley, Davis, or Los Angeles.

The Engineering Examination—Lower Division is primarily an aptitude test, but presumes that the student has had the required subjects in high school, particularly those in mathematics through trigonometry, physics or chemistry, mechanical drawing, and English. The test is designed to demonstrate the applicant's general scholastic ability and his ability to comprehend scientific materials and principles, to use mathematical concepts, and to judge spatial relationships. No preparation beyond successful completion of the high school courses is required.

The Engineering Examination—Upper Division is required of applicants for admission at and above the junior level, and must be passed satisfactorily

\*Engineering Qualifying Examinations dates:

	Test Dates	Test Application Deadlines
For fall, 1960	April 2, 1960	March 23, 1960
For spring, 1961	Nov. 5, 1960	October 25, 1960
For fall, 1961	April 8, 1961	March 23, 1961

by all continuing students prior to beginning the work of the upper division and by all new students prior to admission. This examination is an achievement test, including the subject areas of English usage, lower division engineering subjects, general college chemistry, mathematics through integral calculus, and general college physics.

#### **LIMITATION OF ENROLLMENT OF OUT-OF-STATE APPLICANTS**

It has been necessary to place some limitation on enrollment of applicants who are not residents of California and only those of exceptional promise will be eligible for admission. Children of alumni of the University of California are not subject to the special nonresident requirements for admission nor are applicants who at the time of application have become bona fide residents of California. The regulations below are designed to admit approximately the upper half of candidates eligible for admission under regular rules as measured by scholastic record and aptitude tests.

#### **Admission to Freshman Standing**

An applicant must present evidence that he has maintained a grade-point average of 3.4 or higher on the required high school subjects and an average score of 500 or above on the College Entrance Examination Board Scholastic Aptitude Test (see "Admission in Freshman Standing for Out-of-State Students," page 11 C).

#### **Admission with Advanced Standing**

An applicant must present a grade-point average of at least 2.8 in college subjects acceptable for transfer credit plus an average score of 500 or above on the College Entrance Examination Board Scholastic Aptitude Test (see "Special Requirements for Out-of-State Applicants" under "Admission with Advanced Standing," page 13 C).

#### **INTERCAMPUS TRANSFER**

An undergraduate student, who has attended a regular session of the University of California and has not since that time been registered in a regular session in another institution, may apply for transfer to another campus of the University by obtaining the proper forms from the campus on which he was last registered. The Intercampus Transfer Application forms and Application for Transcript of Record forms may be obtained from the Office of the Registrar and must be filed with that office by January 15 for the spring semester and August 15 for the fall semester.

#### **ADMISSION OF SPECIAL STUDENTS**

Special students are students of mature years who have not had the opportunity to complete a satisfactory high school program or who have not completed a substantial amount of college work, and who, by reason of special attainments, may be prepared to undertake certain courses in the University toward a definite and limited objective. Only cases of very unusual merit will be considered.

The conditions for the admission of each applicant under this classification are assigned by the Director of Admissions, and are subject to the approval of the dean of the college. Ordinarily, a personal interview is required before final action can be taken, and, in general, special students are required to confine their attention to some special study and its related branches. Admission as a special student is for a limited time only, as fixed by the Director, and is subject at all times to satisfactory scholastic achievement as defined by the Director.

No person under 21 years of age will be admitted as a special student, but mere attainment of any given age is not in itself a qualification for admission. An applicant will not be admitted directly from high school to the status of special student. Graduates of high schools are expected to qualify for admission in accordance with the usual rules; students admitted to regular status, if not candidates for degrees, may, with the approval of the dean of the students' college, pursue elective or limited programs.

Transcripts of record from all schools attended beyond the eighth grade must ordinarily be submitted by an applicant for special status. He may also be required to take the examination in Subject A.

The University has no "special courses." All courses are organized for regular students. A special student may be admitted to those regular courses for which, in the judgment of the instructor, he has satisfactory preparation. A special student will seldom be able to undertake the work of the engineering and professional colleges or schools.

A special student may at any time attain the status of regular student by satisfying all the matriculation requirements for admission to the University, but *an applicant will not be admitted to special status for the purpose of making up requirements.*

### ADMISSION OF LIMITED STUDENTS

Limited students are those with a bachelor's degree but ineligible for admission to graduate standing, or those without a bachelor's degree who have completed a substantial amount of college work in the University of California or in another institution of approved standing with a satisfactory scholarship average and who, by reason of special attainments, may be prepared to undertake certain courses in the University toward a definite and limited objective.

The conditions for the undergraduate admission of each applicant under this classification are assigned by the Director of Admissions and are subject to the approval of the dean of the professional school to which he seeks eventual admission or by the dean of the college or school in which the applicant desires to satisfy a definite need or interest. A student in limited status is, for purposes of record and supervision, considered undergraduate even though he may have a valid baccalaureate degree. He will not be permitted to take graduate courses.

Transcripts of record from all schools attended beyond the eighth grade must ordinarily be submitted by an applicant for limited status. He may also be required to take the examination in Subject A.

The applicant will not be admitted to limited status for the purpose of raising a low scholarship average. Limited students for whom no grades have been specified are subject to the minimum scholarship requirements of the college or school in which they are enrolled. Any deviation from the program as planned, or any scholarship deficiency incurred while pursuing it, will result in the cancellation of a student's limited status and will render him subject to dismissal from the University.

### ADMISSION OF APPLICANTS WITH BACHELORS' 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. Occasionally, such an applicant with a superior record may qualify as a limited student or, as a result of 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 also subject to the approval of the dean of the school or college in which the applicant plans to enroll.

### ADMISSION FROM SCHOOLS AND COLLEGES IN FOREIGN COUNTRIES

The credentials of an applicant for admission from a foreign country, either in undergraduate or graduate standing, are evaluated in accordance with the general regulations governing admission. An application, official certificates and detailed transcripts of record should be submitted to the Director of Admissions several months in advance of the opening of the semester in which the applicant hopes to gain admittance. This will allow time for exchange of necessary correspondence relative to entrance and, if the applicant is admitted, will assist him in obtaining the necessary passport visa.

All foreign students who have studied in American high schools or colleges which are outside of California should refer to the sections above which deal with the special requirements for out-of-State applicants (see pages 11 C-13 C).

An applicant from a foreign country whose education has been conducted in a language other than English may be admitted only after demonstrating that his command of English is sufficient to permit him to profit by instruction in this University. An applicant's knowledge of English is tested by an oral and written examination given by the University of California. This regulation applies to both graduate and undergraduate foreign students. Admission of an applicant who fails to pass this examination will be deferred until he has acquired the required proficiency in the use of English.

*Language Credit for a Foreign Student.*—College credit for the mother tongue of a foreigner and for its literature is given only for courses taken in native institutions of college level, or for upper division or graduate courses actually taken in the University of California, or in another English-speaking institution of approved standing.

*College of Engineering.*—An applicant for admission to the College of Engineering who is outside the United States must pass with satisfactory scores the Scholastic Aptitude Test (verbal and mathematics sections) and achievement examinations in English composition, physics, and advanced mathematics of the College Entrance Examination Board before a letter of admission to the College of Engineering may be issued. Arrangements to take the tests in another country may be made directly with the College Entrance Examination Board, P.O. Box 592, Princeton, New Jersey. A fee of \$16 is charged for these examinations and should be forwarded to the College Entrance Examination Board, not to the University of California. An applicant should request that his scores in the tests be forwarded to the Office of Admissions.

*Foreign Student Adviser.*—Advisers are appointed by the President of the University to assist foreign students in all matters pertaining to their attendance at the University. Every student from another country is urged, upon his arrival at the University, to consult the Foreign Student Adviser, 2248 Administration Building.

### ADMISSION IN GRADUATE STANDING

Applications for admission to graduate status will be received from graduates of recognized colleges and universities who propose to work for the degree of Master of Arts, Master of Science, Master of Education, Master of Engineering, Master of Business Administration, Master of Library Science, Master of Public Administration, or Master of Social Welfare, for the degree of Doctor of Education, Doctor of Public Health, or for the degree of Doctor of Philosophy, for the Certificate in Social Welfare or for the certificates of completion leading to the general secondary or junior college teaching credentials, and the supervision and administration creden-

tials. Completed applications with supporting documents *in duplicate* must be in the hands of the Dean of the Graduate Division not later than August 1, 1960, for the fall semester, and not later than January 3, 1961, for the spring semester. Corresponding days will be set for subsequent semesters. Because of the time required to process an application and to prepare the registration forms, applications and/or transcripts received after the deadline date will be considered only as time permits.

Holders of the bachelor's degree from institutions of acceptable standing are accorded admission to the Graduate Division, subject to the following qualifications: (1) that the standards of the degree in question are equivalent to those maintained at the University of California; (2) that the record of scholarship is satisfactory (for applicants with post-baccalaureate work a grade average of B in that work is required); and (3) that the student can be accommodated in the field in which he wishes to study. The Dean of the Graduate Division may deny admission, however, if the record of scholarship is not sufficiently distinguished, or if he judges the undergraduate program not to have been such as to furnish an adequate foundation for advanced academic or professional study. These provisions affect all applicants whether from colleges or schools in the University of California or outside it. Notification of acceptance or rejection is sent to each applicant as soon as possible after the receipt of his application. *Applicants are warned not to make definite arrangements for attending the University, on the assumption that they will be accepted for admission, until they have received notification of acceptance.*

Application is to be made upon the form provided by the Dean of the Graduate Division, and must be accompanied by the application fee (see below); transcripts of previous work must be submitted in accordance with the instructions on the application form.

An application fee of \$5 is required of every student applying for admission to graduate status, even though he may have been in previous attendance at the University in other than graduate status.

### Admission with Subject Deficiencies

In special instances an applicant whose undergraduate program is not the equivalent to that required for the bachelor's degree of the University of California—in the pattern of subjects and/or requirements of the major in which the applicant wishes to obtain an advanced degree—he may be admitted to the Graduate Division, but only upon recommendation of the department in which he wishes to take an advanced degree and with the understanding that the applicants will have to take courses to make up his deficiencies prior to or in addition to the work required for the advanced degree. Such applicants must expect to have to spend more than the usual time in residence required for the advanced degree.

### Admission without an Advanced Degree Objective

Students who do not desire to become candidates for higher degrees must meet the same admission requirements as those who are prospective candidates for degrees. They must be admitted to a specified field of study, and they must satisfy the Dean that their program of study has a definite scholarly or professional purpose. Such students are not eligible to apply for exemption from the nonresident tuition fee.

### Graduate Students in Summer Sessions

Students are warned that admission to graduate courses in the Summer Sessions does not of itself constitute admission to the Graduate Division. Students who wish to take upper division and graduate courses in the Sum-

mer Sessions with the intention of applying them toward an advanced degree, or who wish to work for an advanced degree or University recommended credential in Summer Sessions only, must establish their eligibility for graduate work at the University by applying for and being admitted to graduate standing for a regular session (fall or spring), even though they do not plan to register that semester. This should be done before the student begins an advanced degree program.

Students who do not register in the semester for which they were admitted and who later wish to attend a regular session must file a renewal of application for admission to graduate status, even if they have attended one or more Summer Sessions in the interval. If they have attended other institutions or University extension in the interval, they must file supplementary transcripts covering such work.

## GENERAL REGULATIONS

CERTAIN GENERAL REGULATIONS govern residence and study in the academic departments. These regulations, unless otherwise stated, concern both graduate and undergraduate students.

### APPLICATION FOR ADMISSION

Prospective students are warned of the necessity of making early application for admission in order that their credentials may be processed in time to permit registration within the scheduled period. New undergraduate students must file applications for admission, with complete credentials, not later than August 15 for the fall semester and not later than January 14 for the spring semester. For new graduate students (including old undergraduate students entering graduate status for the first time), these dates are August 1 and January 3, respectively. Attention is called to the fact that new students expecting to enter the *College of Engineering, School of Law, School of Medicine, School of Nursing, and School of Social Welfare* must file applications at earlier dates. For these dates see the sections explanatory of the curricula of the college or school in later pages of this bulletin.

Undergraduate students planning to return after an absence must file applications for readmission not later than August 27 for the fall semester and not later than January 14 for the spring semester. For graduate students, these dates are August 15 and January 3, respectively. Students planning to reënter the college or one of the schools listed in the preceding paragraph should follow the instructions given at the end of the paragraph.

### REGISTRATION

Each student registers in the University of California, Los Angeles, at times appointed for this purpose, at the beginning of each semester. Registration covers the following steps: (1) filling out address card, paying fees, and receiving in exchange a card showing that the applicant has been enrolled in the University; (2) enrolling in courses according to instructions which will be posted on the University bulletin boards; and (3) filing registration packet at the office of the dean of his college or school. All old students, except reentrants, will have an opportunity to perform one or both of steps (1) and (2) by mail.

The student or prospective student should consult the University calendar and acquaint himself with the dates upon which students should register and begin their work at the opening of the sessions.

### PHYSICAL EXAMINATION

All new students (graduate and undergraduate, including transfer students from other campuses of the University) must appear at the Student Health Service and take a physical examination to the end that the health of the University community, as well as that of the individual student, may be safeguarded. This examination must be taken prior to registration.

All reëntrant students and all old undergraduates entering graduate status for the first time are required to report to the Student Health Service for clearance of health record and recheck of certain items in the physical examination.

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. This will prevent possible loss of time from studies. Prior to registration in the University, prospective students who have had a diagnosis of active tuberculosis will be required to submit evidence that their disease has become inactive.

### **STUDENT HEALTH SERVICE**

The purpose of the Student Health Service is to conserve the time of the students for their classwork and studies, by preventing and treating acute illnesses and injuries. The services are limited by the staff and facilities available.

Each student registering in the fall and continuing through the spring semester, and each student registering in the spring semester may, at need, have such medical care as the campus health service is staffed and equipped to provide, from the first day of the semester in which the student first registers during the academic year to the last day of the spring semester of the same academic year, or to the date of official withdrawal from the University. Additional service may be provided for seven days after the last day of the semester, at the discretion of the Director of the Student Health Service. Any prospective registrant who receives health service and who does not register for the next following semester shall be required to pay toward the cost of the service rendered him up to the amount of the incidental fee.

Hospital care for a period up to thirty days may be given in the event of serious illness, on the recommendation of the Director of the Student Health Service. A student patient who is still in the hospital at the end of the semester will be released to the care of his family or community as soon as this can be done with safety. Also, in the case of illnesses or injuries requiring long-continued care (tuberculosis, mental illness, spinal injury, etc.) where the condition will obviously prevent the student from returning to classes during the current semester, he will likewise be released to the care of his family or community as soon as this can be done safely.

The Student Health Service does not take responsibility for the care of chronic physical defects or illnesses present at the time of entrance to the University as, for example, hernias, chronic bone and joint diseases or deformities, chronic gastrointestinal disorders, uterine fibroids, chronically infected tonsils, tuberculosis, syphilis, malignant diseases, allergic and endocrine disorders, etc. Furthermore, it does not take responsibility for any injury or illness wherein treatment (other than first aid or emergency care) has been initiated elsewhere; nor for providing elective medical or surgical care, where the best interests of the student would be served by treatment during vacation. There is no provision for the fitting of glasses. Industrial injuries covered by workmen's compensation insurance are given no care other than first aid.

Dental service is provided for diagnosis, and for emergencies such as fractures. A limited amount of general dentistry is also available in certain cases where there is some special need as, for example, when a student's family dentist is unavailable because of distance. Charges are made for such general dentistry in accordance with a schedule of fees approved by the President of the University. The Dental Department is not prepared to provide bridges or other extensive prostheses.

The Student Health Service does not provide complete protection against large medical expenses. Students may utilize its services only if they are able to come to the campus. They ordinarily are not eligible for any services during the summer vacation. There is no provision for replacing teeth lost in accidents. A supplemental medical expense insurance policy, especially designed to protect the students in times, places, and situations where they cannot utilize the Student Health Service, may be purchased at low cost through the Associated Students, at the beginning of each semester.

### PHYSICAL EDUCATION

Upon admission, every undergraduate student in the lower division, man or woman, must, unless officially notified of exemption, report immediately to the proper officer for enrollment in physical education,\* in accordance with the directions in the REGISTRATION CIRCULAR or the announcements which may be posted on the bulletin boards. The student must list the course physical education upon his study card with other University courses. Upon petition a student more than twenty-three years of age will be excused from physical education.

Information concerning the requirements in physical education, including a statement of the grounds upon which a student may be excused from this work, may be obtained from the Registrar.

### RESERVE OFFICERS' TRAINING CORPS

Upon admission, every able-bodied male undergraduate in the lower division, who is under twenty-three years of age at the time of admission and who is a citizen of the United States, unless officially notified of exemption, must report immediately for enrollment in Military Science, Naval Science, or Air Science. The student must list the R.O.T.C. courses in which he has enrolled on his study card with other University courses.

Information concerning the requirements in R.O.T.C., including a statement of the grounds upon which a student may be excused from this work, may be obtained from the Registrar.

The student is referred to the announcements of the Departments of Military Science, Naval Science, or Air Science in the ANNOUNCEMENT OF COURSES AND CURRICULA.

### 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 object 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 or aircraft of the Navy or with field troops of the Marine Corps.

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, never have been married and agree to remain unmarried until commissioned or disenrolled. Students must pass the same physical examination as is required of all candidates for admission to the Naval Academy.

The N.R.O.T.C. program normally covers eight consecutive semesters.

Courses in naval orientation and organization, naval history, seamanship, communications, advanced naval weapons, psychology, navigation, advanced seamanship, naval engineering damage control, military justice, and leadership are given to those students seeking naval commissions. Courses in military history and principles, small-unit tactics and amphibious landings are

\* The University requirements in physical education referred to in this section cover Physical Education 1, a 1-unit course which is required of students in each semester of the freshman and sophomore years, irrespective of the total number of units of credit received in these courses.

given during the last four semesters to those students seeking Marine Corps commissions.

Students are enrolled in the Naval Reserve Officers' Training Corps under one of two categories. These categories are listed below together with the method of selection:

**Regular N.R.O.T.C.**—Students selected by nation-wide competitive examination and personal interviews. Applications to take the examination must be submitted in early November of the year prior to entering Regular N.R.O.T.C. Successful candidates receive tuition, fees, books, uniforms, and \$50 per month retainer pay from the Navy.

**Contract N.R.O.T.C.**—Students selected by the Professor of Naval Science after a personal interview and under the quota and policies set by the Navy Department.

### **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 R.O.T.C. 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 R.O.T.C. program qualifies graduates for commissions as officers in the United States Army Reserve, and selected graduates for commissions in the Regular Army.

The courses in general military science are prescribed by the Department of the Army and are designed to offer the opportunity for commissions in all of the arms and services of the United States Army.

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

The Air Force R.O.T.C. program is a four-year course of study 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 the 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 Air Force Reserve. With continued increase in importance of air power in over-all United States strategic planning, the selection of Air Force R.O.T.C. trained college graduates is receiving increased emphasis.

The course of study is divided into two parts. The Basic Course, or first two years of the program, is concerned with Air Power indoctrination. The Advanced Course, or last two years of the program, is concerned with preparing selected students for active duty in fields compatible with their major field of effort on the college campus.

Acceptance into the Advanced Course is based on academic standing at the University, aptitudes and interests of the individual, and the result of a thorough physical examination. Those students desiring to train for Air Force officer positions and who pass the stringent entrance requirements will be earmarked for assignment in a specific Air Force Career Area on acceptance for the advanced program.

More detailed information is available elsewhere in this bulletin or in the ANNOUNCEMENT OF COURSES AND CURRICULA, DEPARTMENTS AT LOS ANGELES.

### **R.O.T.C. DRAFT DEFERMENT**

Students who qualify and are accepted for the Advanced Course R.O.T.C. (junior and senior years) 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 R.O.T.C. draft deferments need not request deferment through the Office of Special Services described on page 40 C of this bulletin.

### SUBJECT A: ENGLISH COMPOSITION

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

The examination in Subject A is given at the opening of each semester. (See the REGISTRATION CIRCULAR, to be obtained from the Registrar.) A second examination for persons who do not appear at the announced time is given a few days after the first examination in each semester; for this examination a fee of \$1 is charged.

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

Every student who does not pass in the examination in Subject A must, immediately after his failure, enroll in a course of instruction, three hours weekly for one semester, 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 semester 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 given credit for Subject A.

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

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

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

A student who has received a satisfactory rating in the College Entrance Examination Board examination in English composition will receive credit for Subject A. A student who has passed an examination in Subject A given by the University at Berkeley or given under the jurisdiction of the University at various centers in the State annually in May or June will receive credit for Subject A.

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

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

Students from other countries whose native language is not English should take the special examination in English for foreign students rather than the Subject A examination. Those who pass this special examination will be

credited as having met the Subject A requirement, as will students who subsequently complete English 33B with a grade of C or better, 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 satisfied in any one of four ways.

1. 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 one each semester. No unit credit is given for the examinations.)

2. By satisfactorily completing in the University a minimum total credit of four units, from the following list:

Economics 13; History 6A, 6B, 7A, 7B, 8A, 8B, 101, 171A, 171B, 172, 173A, 173H, 174A, 174B, 175, 176, 177, 178A, 178B, 179, 180, 181; Political Science 1, 101, 113, 125, 141, 142, 145, 146, 166, 167A, 167B, 171, 186; History XL 17AB (Department of Correspondence Instruction, Berkeley 4, California).

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

3. By a combination of 1 and 2, above.

4. 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 a two-unit course on the principles and provisions of the Constitution of the United States.

Further information regarding the requirement and the optional examinations may be obtained from the Committee on American History and Institutions. Office hours are from 2:00 to 4:00 p.m., Monday or Thursday, in Room 174 Haines Hall.

### **DEGREES AND TEACHING CREDENTIALS**

Detailed statements of requirements for bachelor's degrees issued by the University will be found in this bulletin or in the ANNOUNCEMENT OF COURSES AND CURRICULA, DEPARTMENTS AT LOS ANGELES, under headings of the several colleges and departments; for the master's degrees and the doctor's degrees, see the ANNOUNCEMENT OF THE GRADUATE DIVISION, SOUTHERN SECTION, and the bulletins of the various professional schools. The requirements for certificates of completion leading to teaching credentials are to be found in the ANNOUNCEMENT OF THE SCHOOL OF EDUCATION, LOS ANGELES.

#### **Degree Residence†**

Every candidate for the bachelor's degree must during his final two semesters of residence, be enrolled in the college or school in which he is taking the degree; and the last 24 units must be completed while enrolled in this college or school. The student may offer two six-week Summer Sessions or one eight-

† 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 the ANNOUNCEMENT OF COURSES AND CURRICULA, DEPARTMENTS AT LOS ANGELES.

week Summer Session as equivalent to one semester; but he must complete in resident instruction at least one regular semester of his senior year. The regulation applies both to students entering this University from another institution and to students transferring from one college to another within the University.

All graduates receiving bachelor's degrees in any one calendar year—January 1 to December 31—are considered as belonging to the "class" of that year.

### CHANGE OF COLLEGE OR MAJOR

A student may be transferred from one college or major department of the University to another upon the approval of the dean or other responsible officers or committee of the college (or department) to which admission is sought. A form of petition for transfer is supplied by the Registrar.

No student is permitted to transfer from one major department to another after the opening of the last semester of his senior year.

### HONORS

Honor students are those who attain the standard of scholarship required by their respective college or school. Honors are granted also with the bachelor's degrees. For regulations concerning honors see the sections explanatory of the curricula of the various colleges in the ANNOUNCEMENT OF COURSES AND CURRICULA, DEPARTMENTS AT LOS ANGELES.

### CREDIT AND SCHOLARSHIP

In both the University and the high school the student is credited, in respect to the amount of work accomplished, in terms of units; and in respect to quality of scholarship, in terms of grades. In a further, more exact determination of the student's scholarship, the University assigns a numerical value in points to each scholarship grade. These points are called grade points and are more fully described below.

High school credit, when it is offered in application for admission to the University, is reckoned in matriculation units; one matriculation unit represents one year's work in a given subject in the high school.

High school credit, when it is offered in satisfaction of high school graduation requirements, is measured in standard secondary units; that is, the credit granted for the study of a subject throughout the school year of from thirty-six to forty weeks is stated in terms of the standard secondary unit. Each unit represents approximately one-quarter of a full year's work in high school; in other words, four standard secondary units represent one full year's work in high school.

*Relation between High School Matriculation Units and University Units.*—One year's work in the high school is considered to be equivalent to one University semester's work of college level; that is, a student who desires to make up any high school subject deficiency by offering work of college level can in one University semester earn credit equivalent to the credit of one year's work in high school.

In the University, a unit of credit represents one hour weekly of the student's time for the duration of one semester in lecture or recitation, with the time necessary for preparation, or a longer time in laboratory or other exercises for which outside preparation is not required. It is expected that most students will spend two hours preparation for one hour a week of lecture or recitation. Each University unit credit is thus understood to represent at least three hours of the student's time, and the credit value of a course is reckoned in units on that basis.

**STUDY-LIST LIMITS\***

Concurrent enrollment in resident courses and in extension courses 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.

A student on scholastic probation, except in the College of Engineering and the School of Business Administration, is limited to a program of 12 units each semester, to which may be added the required  $\frac{1}{2}$ -unit course in physical education.

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

College of Agriculture: 12 to 18 units per semester, plus  $\frac{1}{2}$  unit of physical education.

College of Applied Arts: 12 to 18 units per semester except for students in their first semester of residence and students who failed to make a C average the previous semester, in which cases the maximum is 16. Upon attaining at least a B average in a total program of 12 or more units, a student may petition to enroll in as many as 20 units. In all cases  $\frac{1}{2}$  unit of physical education may be added to the stated maximum.

School of Business Administration: 12 to 18 units per semester, plus  $\frac{1}{2}$  unit of physical education if required.

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

College of Letters and Science: 12 to 16 units for students in the first semester of the freshman year. All other students who have a C average or better and are not on probation may carry from 12 to a maximum of  $17\frac{1}{2}$  units without petition. After one's first semester, he may petition to enroll in as many as 20 units if in the preceding semester he attained at least a B average in a total program of 12 or more units. All first-semester 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 semesters on the Los Angeles campus. All entering freshmen who are enrolled in Naval R.O.T.C. may carry not more than  $17\frac{1}{2}$  units without petition.

School of Nursing: programs must be approved by a member of the Study-Lists Committee of the School.

School of Public Health: 12 to 18 units.

With the exception of the  $\frac{1}{2}$  unit of physical education allowed in certain cases, as indicated above, all courses in Military Science and Physical Education and all repeated courses are to be counted in study-list limits.

A special student ordinarily will have his study list specified at the time of his admission; it is limited to 16 units.

Regulations concerning study-list limits for graduate students will be found in the ANNOUNCEMENT OF THE GRADUATE DIVISION, SOUTHERN SECTION.

**GRADES OF SCHOLARSHIP; GRADE POINTS†**

In the University, the result of the student's work in each course (graduate and undergraduate) is reported to the Registrar in one of six scholarship grades, four of which are passing, as follows: A, excellent; B, good; C, fair; D, barely passed; E and F, not passed. The designations "passed" and "not passed" may be used in reporting upon the results of certain courses taken by honor students in the College of Letters and Science. These designations may also be used in reporting upon the results of lower division courses outside the major taken by students in graduate status.

\* The course in Subject A, which does not give units of credit toward the degree, nevertheless displaces 2 units from a student's allowable program.

† The assignment of grade points indicated in this section is the four-point system which became effective July 1, 1957.

Grade E indicates a record below passing, but one which may be raised to a passing grade without repetition of the course by passing a further examination or by performing other tasks required by the instructor. Grade F denotes a record so poor that it may be raised to a passing grade only by repeating the course. A student who raises a grade of E to a passing grade receives unit credit but no grade points unless granted by petition in special circumstances.

The term "incomplete" is not used in reporting the work of students. The instructor is required, for every student, to assign a definite grade based upon the work actually accomplished, irrespective of the circumstances which may have contributed to the results achieved.

Course reports filed by instructors at the end of each semester are final, not provisional.

Grade points are assigned to the respective scholarship grades as follows: for each unit of credit, the scholarship grade A is assigned 4 points; B, 3 points; C, 2 points; D, 1 point; E, and F, no points.

In order to qualify for any bachelor's degree at Los Angeles,\* the student must have obtained at least twice as many grade points as there are units in the total credit value of all courses undertaken by him in the University of California.† A similar regulation is in effect on all campuses of the University.

### MINIMUM SCHOLARSHIP REQUIREMENTS

The following provisions apply to all undergraduate students at Los Angeles except students in the College of Engineering:

**A. Probation:** a student shall be placed on probation

(1) If at the close of his first semester his record shows a total deficiency of six or more grade points below a C average; *or*

(2) If at the close of any subsequent semester, his grade-point average is less than 2.0 (a C average), computed on the total of all courses undertaken in this University for which he has received a final report.

**B. Dismissal:** a student shall be subject to dismissal from the University

(1) If in any semester he fails to pass with a grade of C or higher courses totaling at least 4 units; *or*

(2) If while on probation his grade-point average for the work undertaken during any semester falls below 2.0 (a C average); *or*

(3) If after two semesters of probationary status he has not obtained a grade-point average of 2.0 (a C average), computed on the total of all courses undertaken in this University for which he has received a final report.

Students at Los Angeles coming under the above regulations are subject to the supervision of the deans of their respective colleges, who have adopted a policy of limiting study lists of students under their charge to 12 units or less, exclusive of required physical education.

The following provisions apply to all students in the College of Engineering:

A student will be subject to dismissal from the University

(1) If during any semester or summer session he fails to attain a C average in all courses for which he is enrolled; *or*

(2) If at the end of any semester or summer session he has failed to attain at least a C average in all courses undertaken in the University.

A student who becomes subject to these provisions shall be under the supervision of the faculty of the College. The faculty, or persons designated by it, shall have the power to dismiss from the University students under its supervision, or to suspend the provisions of this regulation and permit the reten-

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

† Courses taken by honor students of the College of Letters and Science or by graduate students without letter grades are not counted in determining the grade-point status.



tion in the University of the students thus subject to dismissal, and the return to the University of students who have been dismissed under this regulation.

Any student who receives a notice of dismissal from the University may petition the dean of his college for a hearing. Ordinarily, however, a student dismissed for unsatisfactory scholarship will be excluded from the University for an indefinite period, with the presumption that his connection with the University will be ended by such exclusion.

The action to be taken in respect to students in graduate status who acquire scholarship deficiencies is left to the discretion of the Dean of the Graduate Division, Southern Section.

### **CREDIT BY EXAMINATION**

Provision is made whereby an undergraduate student in residence and in good standing may under certain conditions take examinations for degree credit either (a) in courses offered in the University, without formal enrollment in them, or (b) in subjects appropriate to the student's curriculum, but not offered as courses by the University. The results of all such examinations, with grades and grade points, are entered upon the student's record in the same manner as for regular courses of instruction (see Grades of Scholarship, above). No fees are required. Applications may be obtained from the Dean of the College.

Application for examination for advanced standing on the basis of work done before entrance to the University should be made to the Office of Admissions at the time of entrance to the University. If a student who has already matriculated proposes to enter upon study outside the University of California with a view to asking the University to examine him upon that work and to allow him credit toward the degree, he must make all arrangements *in advance* with the department concerned and with the Director of Admissions. Fees are required for such validation examinations.

The application form for examinations may be obtained from the Office of Admissions.

### **FINAL EXAMINATIONS**

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

If a final examination is one of the regular requirements in a course, there can be no individual exemption from examination, except as provided in the preceding paragraph.

### **WITHDRAWAL FROM THE UNIVERSITY**

During the course of any semester a student may file with the Registrar a Notice of Withdrawal and Request for Statement of Conditions for Readmission. Provided the student is in good standing at time of withdrawal and secures the necessary clearances, he may be issued an "honorable dismissal."

A student is in good standing if he is entitled to enjoy the normal privileges of a student in the status in which he is officially registered. Students dismissed by reason of scholarship deficiencies, and students under supervision or on probation, may receive letters of honorable dismissal which bear a notation concerning their scholarship; students under censure or suspension may

not receive an honorable dismissal but may receive transcripts of record which bear a notation concerning such censure or suspension.

*Discontinuance without Notice.*—Students who discontinue their work without petition for honorable dismissal may render themselves ineligible not only for readmission to the University of California but also for admission by transfer to another institution. All grades in courses undertaken in the semester from which a student withdraws without notice become "not passing" (E or F) and remain so upon the student's permanent record.

### TRANSCRIPTS OF RECORD

Each student, upon formal application to the Registrar, may receive or may have issued on his behalf, without cost, one transcript showing all work taken by him on this campus of the University. Subsequent transcripts will be issued upon application at a cost of one dollar per copy.

### DISCIPLINE

When a student enters the University it is taken for granted by the University authorities that he has an earnest purpose and that his conduct will bear out this presumption. If, however, he should be guilty of unbecoming behavior or should neglect his academic duties, the University authorities will take such action as, in their opinion, the particular offense requires. Students who fail to make proper use of the opportunities freely given to them by the University must expect to have their privileges curtailed or withdrawn.

### STUDENT RESPONSIBILITY

Each student is responsible for compliance with the regulations printed in this bulletin and in the handbook of RULES AND REGULATIONS FOR STUDENTS issued by the Registrar's Office; also with official notices published in the *Daily Bruin* or posted on official bulletin boards.

## MISCELLANEOUS INFORMATION

### EXPENSES—LIVING ACCOMMODATIONS—EMPLOYMENT— SCHOLARSHIPS—LOANS

#### 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 fifteen 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.

A table of estimated minimum, moderate, and liberal budgets for one semester is given on page 37 C.

Fees and deposits are payable preferable in cash. If a check is presented the face amount must not exceed all the fees to be paid.

*Incidental Fee.*—The incidental fee for all undergraduate and graduate students is \$60. This fee, which must be paid each semester 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 washrooms,§ 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 \$6 each semester is required of all undergraduate and graduate students. Membership in the Associated Students (fee \$8 for all rights and privileges) is required of all undergraduate students; see page 42 C. Membership in the Graduate Students Association (fee, \$2 for all rights and privileges) is required of all graduate students; see page 42 C. 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 from the date of his registration, a part of these fees will be refunded.

*Nonresident Tuition Fee.*—Tuition in the academic colleges is free to every student who has been a legal resident of the State of California for a period of one year immediately preceding the opening of the semester during which he proposes to attend the University. Every student who has not been a legal resident of the State of California for a period of one year immediately preceding the opening day of the semester during which he proposes to enroll is classified as a nonresident. Such students are required to pay, in addition to the incidental fee, a tuition fee of \$250‡ each semester.

\* During registration, fees will be paid as part of the registration procedure. Thereafter, they will be paid at the office of the Cashier, Administration Building. This office is open from 8:30 a.m. to 4 p.m. daily, and from 9 a.m. to 12 m. on Saturdays.

§ 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.

‡ Graduate students pay the full amount of \$250 regardless of the number of units undertaken unless for reasons of health or employment they are unable to devote more than one-half time to academic study, in which event they may petition the Dean of the Graduate Division for reduction to one-half the amount. If an undergraduate student registers for less than 12 units the tuition fee is \$21 a unit or fraction of a unit, with a minimum of \$42.

A student entering the University for the first time should read carefully the rules governing the determination of residence (see page 33 C), so that he may be prepared, in the event of his classification as a nonresident of California, to pay the required tuition fee. This fee must be paid at the time of registration.

If a student is in doubt about his residence status, he should communicate with the Attorney in Residence Matters, Room 590 University Hall, University of California, Berkeley 4, California. During registration the Attorney may be consulted upon the campus at a place that may be ascertained by inquiry at the Information Window, Administration Building. *Students are cautioned that the eligibility of a student to register as a resident of California for tuition fee purposes may be determined only by the Attorney in Residence Matters.*

Every entering student and every student returning to the University after an absence is required to make a "Statement as to Residence" on the day of registration upon a form which will be provided for that purpose, and his status with respect to residence will be determined by the Attorney in Residence Matters soon after registration. Continuing students are advised that application for reclassification to status as a resident student should be filed as a part of the preregistration procedure, but in no event later than three weeks before regular registration. Application for a change of classification with respect to a preceding semester will not be received under any circumstances.

On approval of the Dean of the Graduate Division, the nonresident tuition fee may be exempted in whole or in part in the case of students in graduate status [except in the professional schools, e.g., Law, Medicine, Education (leading to the Ed.D. degree), and except in the case of foreign students whose tuition is paid by their governments], who have proved that they are distinguished scholars and who are carrying full programs of work toward the fulfillment of requirements for academic higher degrees. No graduate student, no matter how distinguished his scholarship may have been, will be exempted from the payment of the tuition fee if he is merely carrying some lower division courses for his cultural advancement. For further information, consult the ANNOUNCEMENT OF THE GRADUATE DIVISION, SOUTHERN SECTION.

The term *distinguished scholarship* in connection with the question of exemption from the payment of the tuition fee is interpreted as follows: the scholarship standing must have been excellent throughout a period of no less than two years just preceding the time of application for this privilege. Moreover, only students from institutions of high standing in scholarly work will be considered. Applicants for this privilege will be required to have sent to the Dean of the Graduate Division confidential letters about themselves from persons who are thoroughly acquainted with their personalities and their intellectual achievements. It should be clear from these statements, therefore, that only the decidedly exceptional student will be eligible for the privilege of exemption from the payment of tuition fee if he is a nonresident. Students exempted from the tuition fee pay only the incidental and other required fees.

The privilege of exemption from the nonresident tuition fee may be revoked at any time at the discretion of the Dean of the Graduate Division if in his judgment a student fails to maintain distinguished scholarship, or if he proves himself unworthy in other respects.

*Special Commutation of the Nonresident Tuition Fee.*—Exemption from payment of the nonresident fee may be granted to an 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 semester during which the unmarried minor proposes to attend the University. A student who believes he qualifies under this measure should request further information from the Attorney in Residence Matters at the address given above.

**Other Fees**

*Application fee, \$5.* This fee is charged every applicant for admission to the University, and is payable at the time the first application is filed. Applicants for graduate status must pay this fee, even though it may have been paid once in undergraduate status; see page 18 C.

*Medical examination:* original appointment, or deferment arranged in advance, no fee; *fee for a second appointment, \$4.*

*Late registration, \$10.*

*Late filing of registration packet, \$10.*

*Late examination in Subject A, \$1.*

*For courses added or dropped after date set for filing registration packet, \$2 for each petition.*

*For removal of grade E, \$4 for each petition.*

*For reinstatement of lapsed status, \$10.*

*For late application for teaching assignment, \$1.*

*For late notice of candidacy for the bachelor's degree, \$3.*

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

*For failure to empty locker within a specified time, \$5.*

*Returned check collection, \$5.*

*For duplicate registration card or student name card, \$2.*

*For duplicate cards in the registration packet, \$1 for one and \$.25 for each additional card up to a maximum of \$3.*

*Tuition fee for Government students, \$250.*

**REFUNDS**

Refunds of a part of the incidental fee (and of the nonresident tuition fee, if paid) is made to a student who withdraws from the University within five weeks from the first day of classes.

No claim for refund of fees will be considered unless such claim is presented during the fiscal year to which the claim is applicable. No student will be entitled to a refund except upon surrender to the Registrar of his registration card and receipt. Students should preserve their receipts.

**RULES GOVERNING RESIDENCE**

The term "nonresident student" is construed to mean a person who has not been a bona fide resident of the State of California for more than one year immediately preceding the opening day of a semester during which he proposes to attend the University.

The residence of each student is determined in accordance with the rules for determining residence prescribed by the provisions of Section 244 of the Government Code of California and Sections 20005 and 20007 of the Education Code of California.

*The attention of the prospective student who has not attained the age of twenty-two years and whose parents do not live in the State of California is directed to the fact that presence in the State of California for a period of more than one year immediately preceding the opening day of the semester in which he proposes to attend the University does not of itself entitle him to classification as a resident student for tuition purposes.*

Every alien student who has not been lawfully admitted to the United States for permanent residence in accordance with all applicable provisions of the laws of the United States is classified as a nonresident student for tuition purposes.

\* 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.

*A veteran who was not a legal resident of the State of California at the time of his entrance into the Armed Forces is cautioned that presence in California under military orders does not of itself entitle him to classification as a resident student for tuition purposes.*

Every person who has been, or who shall hereafter be classified as a non-resident student shall be considered to retain that status until such time as he shall have made application in the form prescribed by the Registrar of the University for reclassification, and shall have been reclassified as a resident student. Every person who is classified as a resident student, but who becomes a nonresident at any time by virtue of a change of domicile by his own action or by the person controlling his domicile, is obliged to notify the Attorney in Residence Matters at once.

Every person who has been classified as a resident student shall, nevertheless, be subject to reclassification as a nonresident student and shall be reclassified as a nonresident student whenever there shall be found to exist circumstances which, if they had existed at the time of his classification as a resident student, would have caused him to be classified as a nonresident student. If any student who has been classified as a resident student should be determined to have been erroneously so classified, he shall be reclassified as a nonresident student, and if the cause of his incorrect classification shall be found to be due to any concealment of facts or untruthful statement made by him at or before the time of his original classification, he shall be required to pay all tuition fees which would have been charged to him except for such erroneous classification, and shall be subject also to such discipline as the President of the University may approve.

### LIVING ACCOMMODATIONS

Suitable living accommodations for out-of-town students are limited in comparison to the total student enrollment with the problem of providing adequate housing facilities becoming increasingly difficult. Prospective students should give considerable thought and planning to their housing needs.

Living accommodations for students who do not live with friends or relatives are provided in a number of ways—in Mira Hershey Hall, the University residence for women; in Clarence Dykstra Hall, the new residence hall for 800 men students; in Sproul Hall, the University's new co-ed residence hall; in private homes which accept paying guests; in one of the privately owned residence halls or cooperatives; in neighboring rented apartments; in sororities or fraternities; or in the Veterans Housing Project for married students. Information concerning any of these accommodations may be obtained from the Housing Office, Room 1228, Administration Building, University of California, Los Angeles 24. Office hours are: Monday through Friday, 8 a.m. to 5 p.m.

#### *Accommodations with Private Landlords*

Up-to-date room and apartment rental listings are freely available to any student who desires to call in person at the Housing Office. Arrangements for such accommodations cannot be made by mail but must be made by the individual directly with the landlord. Students and landlords are both advised to have a clear understanding, preferably in writing, as to prices, intended length of tenancy, charges to be made during vacation periods, etc.

Prices range from \$85 to \$125 per month for room and board, from \$40 to \$55 per month per person for room only, and \$80 to \$125 per month for furnished single and bachelor apartments. Those students who are not boarding by the month can obtain moderately priced meals at the cafeteria in Kerckhoff Hall, the Student Union, or at one of the many restaurants in Westwood Village adjoining the campus.

**UNIVERSITY RESIDENCE HALLS**

*Mira Hershey Hall (for Women)*

Mira Hershey Hall has been enlarged and redecorated to provide accommodations for 328 women students. Contemporary student rooms have been added as have a new recreation room and dining room while the charm of the Mediterranean architecture of the original structure with its graceful courtyards and gardens has been maintained. The hall is located on Hilgard Avenue, within easy walking distance of Westwood Village.

*Clarence Dykstra Hall (for Men)*

Clarence Dykstra Hall provides accommodations for 802 men. This ten-story structure served by high-speed elevators is set in the west campus hills. The hall represents the best in contemporary design, and many of the rooms have views of Santa Monica Bay, the beach cities, and Catalina Island.

*Sproul Hall (for Men and Women)*

Sproul Hall, opening for the fall semester, 1960, offers accommodations for 404 women and 404 men students in the first co-ed residence hall at University of California, Los Angeles. Contemporary in design, this hall provides dining and lounge areas to be shared by the men and women occupants who live in separate wings. It is located in the west campus hills and provides sweeping views of the campus and surrounding areas.

If a student is reasonably sure of being accepted by the Office of Admissions for enrollment, an application for residence may be obtained by writing to the Housing Office on or after October 15 for the spring semester, and March 15 for the fall semester.

Completed applications should be submitted to the Housing Office as soon as possible since all assignments are based on the chronological order in which the completed application is received with final selections being made on the basis of class percentages and the geographical location of the applicant's home.

Contracts for residence are on a semester basis with assignments being made after July 1 for the fall semester and December 1 for the spring semester.

The present rate for room and board is \$390 per person per semester during the time the University is in session. Two students are assigned to each room. Three meals are served daily, with the exception of Sundays and University holidays when two meals only are served.

*Privately Owned Residence Halls*

There are four privately owned and operated residence halls in the vicinity of the University, three being for women and one being for men. One accommodates 54 women students, providing room and 17 meals per week for \$370 per person per semester. Two have apartments for 91 women students at rates ranging from \$30 to \$35 per month per person depending on the number of women sharing the apartment. The one hall for men accommodates 77 students, providing room and 15 meals per week at \$300 per semester.

All business dealings should be clearly understood by both the student and the owner since the University cannot assume any responsibility for arrangements to which it is not a party.

*Cooperatives*

Four residence halls for women are on the cooperative plan with rates for board and room varying from \$50 to \$60 per month per person. Under this plan the students share in the work of operating the hall and work an average of four to five hours per week for part payment of their room and board.

The Cooperative Housing Association is a privately owned, nonprofit organization operating three houses accommodating about 206 men, each member

being required to work from three to four hours per week. The cost for board and lodging with two, three, or four in one room is \$56-\$60 per month. Information concerning membership application may be secured from the manager at Landfair House, 500 Landfair Avenue, Los Angeles 24.

#### *Fraternities and Sororities*

Most of the 35 fraternities and 23 sororities own or lease homes near the campus and provide lodging and meals for their members and pledges. Monthly bills for residents range from \$70 to \$95 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) or the Interfraternity Office (for fraternities) at 900 Hilgard Avenue, Los Angeles 24, California.

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 University residence halls or with private householders. However, students will not be allowed to break their contract to move in fraternities or sororities during the course of the semester.

#### *Accommodations for Married Students*

There is no low-cost housing available near the University for married students. Apartment and house rentals are plentiful but monthly rates are high. Prevailing prices on furnished and unfurnished rentals are as follows: bachelor and single apartments, \$80 to \$125 per month; 1-bedroom apartments, \$85 to \$150 per month; 2-bedroom apartments \$90 to \$160 per month. Monthly rental prices for houses are appreciably higher. Although the facilities of the Housing Office are available to all students, apartment and house rental listings cannot be sent by mail to interested students. Up-to-date listings are available to any student who desires to call in person at the Housing Office.

#### *Veteran Housing*

The University operates a Veterans Emergency Housing Project on the campus consisting of 252 two-room apartments (combination living room-dinette, kitchen, one bedroom, and bathroom with shower) renting at \$38 per month furnished and \$34 per month unfurnished. These are available to veterans of the United States Army, Air Force, Navy, Marine Corps, or Coast Guard who are married or heads of families, and who are "students"\* at the University of California, Los Angeles. Applications may be obtained from the Housing Office during the semester preceding that in which the student plans to enroll and after the student is reasonably sure of being accepted for enrollment by the Office of Admissions.

Assignments to the Veterans Housing Project are made within the following indicated assignment priorities on a "desperate need" basis which considers number of children in the family, lack of suitable income, and need for housing.

- Priority 1. Veterans who are now or were previously eligible for veterans educational benefits including all service-connected disabled veterans. Veteran applicants in this group must have entered the service by January 31, 1955.
- Priority 2. Veterans who are not eligible under Priority 1, but who have a minimum of 12 months of active duty.
- Priority 3. All other ex-service men and women.

\* A "student" means any veteran student (regular, special, or graduate) taking a combination of courses during the regular sessions whose study-load determination under the formula of the Office of Special Services shows that he is entitled to be classified as a full-time student. Any combination student (carrying regular and extension courses) ranks as a regular student and is eligible, provided the Office of Special Services classifies him as a full-time student.



All qualified applicants in the highest priority shall be assigned before any applicants are assigned from any lower priority group. Since it is impossible to make a commitment as to when one might be able to obtain an apartment, a new applicant is advised not to plan on too-early occupancy of these units.

Persons not taking a sufficient amount of work to be classified under the Veterans Program as full-time students *will not* be entitled to housing.

**Motels and Trailer Courts**

Good motels are located one to five miles from the campus with varying rates and accommodations. It is sometimes advisable for family groups to accept these accommodations temporarily until more permanent quarters can be located. Listings may be secured from the Housing Office.

No trailer parking areas are provided on or near the campus. Information relative to such facilities is available at the Housing Office.

**PRINCIPAL ITEMS OF EXPENSE ESTIMATED FOR ONE SEMESTER**

Expense items	Minimum	Moderate	Liberal
Incidental Fee .....	\$ 60	\$ 60	\$ 60
Student Union Fee .....	6	6	6
A.S.U.C.L.A. Membership Fee <sup>1</sup> .....	8	8	8
Books and Supplies .....	30	45	65
Board and Room .....	390	430	500
Miscellaneous (recreation, club dues, laundry, drugs, etc.) .....	50	100	200
<b>Total .....</b>	<b>\$544</b>	<b>\$649</b>	<b>\$839</b>

NOTE.—It is impossible to include in the above figures such variable items as clothes or transportation to and from home, or fees other than the incidental and the A.S.U.C.L.A. membership fees. Students classified as nonresidents of the State must also add to their estimated budgets the tuition fee of \$250 per semester.

<sup>1</sup> Membership required of undergraduates; optional for graduate students, however.  
<sup>2</sup> Graduate Students Association membership fee is required.

**TRANSPORTATION TO CAMPUS AND PARKING**

Student parking facilities on campus are limited and are subject to a parking fee. If on-campus parking is required, students must obtain an application form at the Campus Parking Service, the Student Parking Review Board, or at registration.

Applications will be available beginning May 2, 1960. Full instructions and deadline dates for submission of applications are included in the application packet. Approval for issuance of parking permits will be determined by the Student Parking Review Board, on the basis of need, after review and comparison of all applications received. For additional information, inquire at the Campus Parking Service, Room A251, Administration Building.

Since parking permits cannot be approved for all student applicants, the use of public transportation, bicycles, and motor scooters is encouraged whenever possible. Bicycle racks and scooter parking are provided at convenient locations throughout the campus. Please contact the Metropolitan Transit Authority or the Santa Monica Municipal Bus Line for information regarding bus schedule in this area.

## **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 forearm him with facts and information so that he may plan carefully and intelligently, and by so doing overcome many of the difficulties that might otherwise lead to disappointment and failure.

1. Whenever possible, it is wise for a student to use his savings to make the first semester 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 semester the student should know the demands of university life and his own capabilities well enough to make it possible to plan, for subsequent semesters, a combined program of studies and work for self-support.

2. The regular undergraduate four-year course based on an average of 15 units of academic work a semester 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 eight semesters (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 twelve 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.

3. Students who are not physically strong or in good general health should not, under ordinary circumstances, attempt to be wholly self-supporting because of the danger of jeopardizing health and academic progress.

## **STUDENT AND ALUMNI PLACEMENT CENTER**

### **Part-Time Student Employment**

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

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

Jobs are usually available on an hourly basis in the fields of typing, stenography, bookkeeping, sales and clerical work, care of children, housework, manual labor, tutoring, and other specialized types of work for the properly qualified. Listings of room and board in exchange for work in private homes are also maintained. These are available to men and women and married couples.

### **Full-Time Career Placement**

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

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

This service is available to all regularly enrolled students of the University, their wives, and alumni of the University (in attendance in regular session at least one year) who are unemployed or who desire career relocation.

### **SCHOOL AND COLLEGE PLACEMENT SERVICE**

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

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

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

### **STUDENT COUNSELING CENTER**

Individual counseling of regularly enrolled University students is provided by a staff of counseling psychologists who assist students in dealing with choice of and preparation for educational and vocational objectives and with personal-social problems related to their academic performance.

Focus in counseling is on the individual's strengths and on helping him to gain maximum benefit from his University experience and from living in our society. Study discussion groups are conducted by the Student Counseling Center staff for students indicating a need for help with study skills, and a vocational library is maintained for reference.

Students may arrange an appointment for counseling or sign up for one of the study groups in Room 2255, Administration Building.

Testing is done when it seems advisable as a basis for counseling, and special testing projects for departments and colleges within the University are also administered through this center.

Information regarding the Graduate Record Examination and the Medical College Admission Test are available in the center.

### **CALIFORNIA REHABILITATION SERVICE**

Men and women who have a physical or mental disability which handicaps them vocationally may be eligible for the services of the California Rehabili-

tation Service of the State Department of Education. These services include vocational counseling and guidance, training (with payment of costs such as books, fees, tuition, etc.), and placement.

A Rehabilitation Counselor is available on the Los Angeles campus for interviewing applicants. Appointments may be made in the Office of Dean of Students—Special Services, A-207 Administration Building, or by contacting the California Rehabilitation Service Office at 312 West Fifth Street, Los Angeles; telephone MADison 5-2781, Ext. 55. One year's residence in California is required for eligibility.

### **SELECTIVE SERVICE (DRAFT)**

Selective service information and counseling on draft status are available Mondays through Fridays at the Office of Dean of Students—Special Services, Administration Building. Certifications of enrollment, ranking, and training status for students, and occupational status for employees will be submitted to selective service boards on request. Students desiring deferments on the basis of enrollment in University R.O.T.C. programs should consult the proper R.O.T.C. departments of the campus as described on page 23 C.

### **VETERANS INFORMATION**

Dean of Students—Special Services maintains liaison between certain veterans and veterans' dependents, the Veterans Administration, the State Department of Veterans Affairs, and other agencies offering veterans educational benefits to assist veterans in becoming assimilated into the life and spirit of the University. This office is located in the Administration Building. Offices of the United States Veterans Administration are located as follows: Los Angeles Regional Office, 1380 Sepulveda Boulevard, Los Angeles 25, California; San Francisco Regional Office, 49 Fourth Street, San Francisco 3, California.

Information regarding educational benefits available from the State of California (CVEI) may be obtained from the State Department of Veterans Affairs, P. O. Box 1559, Sacramento 7, California; or by writing either to Room 225, 542 South Broadway, Los Angeles 13, California, or 515 Van Ness Avenue, San Francisco 2, California.

Veterans wishing to enroll under the provisions of Public Law 550 (Korean G.I. Bill) and students wishing to enroll under the provisions of Public Law 634 (War Orphans Education Act) 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-207 Administration Building as soon as possible. These veterans must be prepared to pay all fees and educational costs at the time of registration as education and training allowances are paid to the veteran by the Veterans Administration and the first monthly payments will normally be received 60 to 75 days after compliance with the above instructions.

### **UNDERGRADUATE SCHOLARSHIPS**

A number of scholarships are available for both entering and continuing students on the Los Angeles campus from funds provided by the Regents and friends of the University. A very limited number of scholarships are available for out-of-state students.

Application blanks and descriptive circulars may be obtained from the Committee on Undergraduate Scholarships and Prizes, 2244 Administration Building, University of California, Los Angeles 24, California. Applications must be filed with the committee during the period of October 1 to January 10 for resident students, and during the period October 1 to March 1 for

entering students. These dates pertain to the year prior to the academic year for which the awards are to be made. Applications received later than the stated deadlines cannot usually be considered.

To be eligible for a scholarship the applicant must meet certain minimum requirements as to scholarship, financial need, and character and promise. The committee will rate all applicants with respect to these criteria and will base its recommendations for awards upon the relative total ratings of all eligible students applying during the periods specified above. Some of the scholarships are restricted to students with special qualifications in addition to those mentioned above; these special qualifications are listed on the application blank.

### **Alumni Scholarships**

The U.C.L.A. Alumni Association, in conjunction with the University, makes available each year a number of scholarships for entering freshmen from accredited California high schools, and a limited number for students entering for the first time from California junior colleges, or other acceptable collegiate institutions in California. These scholarships are tenable on any campus of the University of California, the applicant specifying which campus at the time of application. The same application blanks are used for these as for other scholarships open to entering students (see above) and the completed forms must be referred to the committee by March 1. In the selection of individuals for recommendation for these awards, the Committee on Undergraduate Scholarships and Prizes, with the advice of the Alumni Committee, will choose applicants with not only substantial scholastic ability but also high character and outstanding qualities of leadership, who give promise of reflecting credit on themselves and the University.

The California (Berkeley) Alumni Association also makes available a number of scholarships for entering students, and they also are tenable on any of the campuses of the University, with the particular one specified at time of application. Blanks which give all necessary information for application for these scholarships may be obtained from the Committee on Undergraduate Scholarships, University of California, Berkeley 4.

## **GRADUATE SCHOLARSHIPS AND FELLOWSHIPS**

For information concerning graduate scholarships, consult the ANNOUNCEMENT OF THE GRADUATE DIVISION, SOUTHERN SECTION.

## **LOANS**

Various organizations and individuals have contributed toward the building up of several student loan funds. The gifts for this purpose are administered by the University in accordance with the conditions laid down by the donors.

All loans are repayable as soon as possible without defeating the purpose of the loan or seriously inconveniencing students.

National Defense Education Act loans are also administered in this office.

Applications should be filed at least twelve days in advance of need. For further information, apply to the Office of the Dean of Students, Administration Building.

## **PRIZES**

The generosity of alumni and friends of the University provides each year for competitive prizes and awards in several fields. These prizes and awards are described in a bulletin issued monthly. The recipients are ordinarily announced at Commencement in June of each year. Further information may be obtained from the Office of the Dean of Students.

### THE ASSOCIATED STUDENTS

The undergraduate student self-government is organized and administered by the Associated Students. All undergraduates hold membership by virtue of paying the required A.S.U.C.L.A. membership fee at registration. The organization has a legislative council composed of a President, Vice-President, fifteen elected student representatives, and four adult members. The council administers the general business of the association and coordinates the various cocurricular activities such as publications, athletics, and recreation.

Members are entitled to participate in the affairs of the Associated Students, to subscriptions to the U.C.L.A. *Daily Bruin*, and certain other publications, to free admissions to many athletic contests and reduced rates to others, as well as to dramatic, social, and similar events which are part of the program of the Associated Students. In addition to the *Daily Bruin* the Associated Students publish the *Southern Campus*, the yearbook of the University.

All graduate students belong to a parallel organization, the Graduate Students Association. The Graduate Students Association is part of the A.S.U.C.L.A. but maintains its own separate program geared to the interests and needs of graduate students.

Both the undergraduate and graduate associations have offices in Kerkhoff Hall, given to the University by Mrs. William G. Kerkhoff of Los Angeles. Also in Kerkhoff Hall are the cafeteria and student store which are owned and operated by the A.S.U.C.L.A. The crowded quarters of Kerkhoff Hall will soon be supplemented by one of the finest student union buildings in the United States.

### OFFICE OF STUDENT ACTIVITIES

The Student Activities Office, located in Room 2225 Administration Building, provides student groups a place to work, facilities to help in program planning, and a qualified staff to give advice and information on campus organizations and activities.

In cooperation with student groups, this office is also responsible for the supervision of the University social program and the enforcement of regulations. The Assistant Dean of Students, the Student Activities Adviser, the Administrative Assistant to the Dean of Women, and the Men's Living Group Adviser have offices here.

Necessary clearances and approvals for student activities and events should be obtained through this office in the early stages of planning.

### RELIGIOUS FACILITIES

In the immediate vicinity of the campus, at the southeast corner of Hilgard and LeConte Avenues, is the University Religious Conference, where official representatives of the Baptist, Catholic, Congregational, Disciple, Episcopal, Jewish, Latter-day Saints, Lutheran, Methodist and Presbyterian denominations have student headquarters. Additional facilities are available for Catholic students at the Newman Club, 840 Hilgard Avenue. The Y.W.C.A. occupies its own building, at 574 Hilgard Avenue, near the entrance to the campus; the Y.M.C.A. has its office in the same building, at 572 Hilgard Avenue. The Christian Science Organization reading room and headquarters are located at 560 Hilgard Avenue, near the entrance to the campus.

At these centers are held religious discussion groups, lectures, Bible classes, social gatherings, luncheons, dinners, and other student meetings.

# REQUIREMENTS IN THE SEVERAL COLLEGES, SCHOOLS, AND CURRICULA

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## 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 to 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 eighth semester.

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 field of concentration in the upper division which may be a program of related courses within a single department (departmental major), or a group of coordinated courses involving a number of departments (interdepartmental curriculum), or, under certain circumstances, an organized group of courses chosen to meet a student's special need (individual field of concentration). 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.

### 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 units for the bachelor's degree shall be 120, of which at least 108 shall be in courses taken from the Letters and Science List of Courses (see page 2), and at least 42 shall be in upper division courses from the Letters and Science List. At least 12 of these upper division units shall be outside a single department, and not more than 42 units of upper division courses taken in one department may be counted toward the bachelor's degree. Not more than 4 units in prescribed lower division courses in physical education may be counted toward the bachelor's degree. Not more than 8 units of music courses in the series 40A-41W and 190A-192W will be counted toward the bachelor's degree. No credit will be allowed for work completed at a junior college after the student has completed 70 units toward the degree.

The candidate shall have attained at least a 2.00 grade-point average in all courses undertaken in this University.

2. The candidate shall have completed the general University and College requirements (A) to (G), inclusive (pages 4-6), except for exemptions authorized for his field of concentration (see pages 2 and 3).

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

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

5. The candidate shall have been registered in the College of Letters and Science while completing the final 24 units of work, and shall have completed while registered in the College at least 18 units of upper division courses, including at least 12 units in his field of concentration. This regulation applies to all students including those entering this University from other institutions or from University of California Extension, and to students transferring from other colleges of this University.

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 fields of concentration as the Executive Committee of the College may designate as leading to that degree.

### **LETTERS AND SCIENCE LIST OF COURSES**

At least 108 units offered for the degree of Bachelor of Arts or Bachelor of Science must be in courses chosen from the Letters and Science List of Courses, and the 42 units required in upper division courses (numbered 100-199) must be selected from the same list.

Any course not included in the Letters and Science List of Courses but required or accepted as part of a field of concentration or as a prerequisite therefor, will, for students in that field of concentration, but for no others, be treated as if it were on the Letters and Science List of Courses. Students in the General Elementary and Early Childhood Education Curricula are specifically referred to the special regulation under those curricula concerning the Letters and Science List of Courses.

The following list refers to the courses as given in the department offerings for the fall and spring semesters, 1960-1961.

#### **Agriculture:**

Agricultural Economics. 120, 130, 177.

Botany. All undergraduate courses.

Entomology. 100, 105, 112A, 126.

Floriculture and Ornamental Horticulture. 146A-146B.

Horticultural Science. 111.

Irrigation and Soil Science. 101, 108, 110A.

Plant Pathology. 120.

Air Science. All undergraduate courses up to a total of 12 units.

#### **Anthropology and Sociology:**

Anthropology. All undergraduate courses except 400.

Sociology. All undergraduate courses.

Art. 1A, 1B, 5A, 5B, 100A, 100B, 101A, 101B, 101C, 103A, 103B, 104A, 104B, 105A, 105B, 106A, 106B, 107, 108, 109, 110A, 110B, 112, 113A, 113B, 113C, 113D, 115, 116, 117, 118A, 118B, 148, 149A, 149B, 149C, 149D, 199.

Astronomy. All undergraduate courses.

Bacteriology. All undergraduate courses.

Business Administration. 100, 118, 133, 135, 140, 152, 160, 170, 180, 190.

Chemistry. All undergraduate courses.

#### **Classics:**

Classics. All undergraduate courses.

Latin. All undergraduate courses except 370.



- Greek. All undergraduate courses.  
Sanskrit. All undergraduate courses.  
Economics. All undergraduate courses.  
Education. 100A-100B, 108, 110A-110B.  
Engineering. 2, 111A, 115A, 117A, 120A, 122A, 130A, 145, 150B, 151A, 160A, 163A, 181A, 182D, 182E, 183A, 185B, 186A, 187A.  
English:  
  English. All undergraduate courses except 370.  
  Speech. All undergraduate courses except 142A, 142B, and 370.  
Folklore. All undergraduate courses.  
French. All undergraduate courses except 370.  
Geography. All undergraduate courses.  
Geology:  
  Geology. All undergraduate courses.  
  Mineralogy. All undergraduate courses.  
  Paleontology. All undergraduate courses.  
Germanic Languages:  
  German. All undergraduate courses except 370.  
  Scandinavian Languages. All undergraduate courses.  
History. All undergraduate courses.  
Home Economics. 113, 114, 134, 138, 143, 144, 154, 170.  
Humanities. 1A-1B.  
Integrated Arts. 1A-1B.  
Italian. All undergraduate courses.  
Journalism. All undergraduate courses.  
Linguistics and Philology. All undergraduate courses.  
Mathematics:  
  Mathematics. All undergraduate courses except 38, 41, and 370.  
  Statistics. All undergraduate courses.  
Meteorology. All undergraduate courses.  
Military Science. All undergraduate courses up to a total of 12 units.  
Music. All courses included in the following series: 1A to 30B, 100A to 115D, 118, 121A to 177, 197, 199.  
Naval Science. All undergraduate courses up to a total of 12 units.  
Near Eastern Languages:  
  Arabic. All undergraduate courses.  
  Hebrew. All undergraduate courses.  
  Persian. All undergraduate courses.  
  Turkish. All undergraduate courses.  
Oceanography. All undergraduate courses.  
Oriental Languages. All undergraduate courses.  
Philosophy. All undergraduate courses.  
Physical Education. 1, 44, 130, 139, 146, 147, 150A-150B, 151, 155.  
Physics. All undergraduate courses except 370.  
Political Science. All undergraduate courses except 104.  
Psychology. All undergraduate courses.  
Public Health. 5, 100, 110, 147, 160A.  
Slavic Languages. All undergraduate courses.  
Spanish and Portuguese:  
  Spanish. All undergraduate courses except 370.  
  Portuguese. All undergraduate courses.  
Theater Arts. 5A, 5B, 101, 102, 104, 105A, 105B, 105C.  
Zoology:  
  Zoology. All undergraduate courses except 11H, 136, and 370.  
  Life Sciences. 1A-1B.  
  Biology. 12.

# COLLEGE OF LETTERS AND SCIENCE

## GENERAL UNIVERSITY AND COLLEGE REQUIREMENTS

It is advisable that each of the requirements (A) to (G) be completed as early as possible in the student's progress toward the degree, normally all of them within the first 60 units of college work. In fields of concentration requiring unusually heavy preparation, some postponements are possible; and in certain fields, exemptions have been authorized (see pages 6 and 7).

### (A) *General University Requirements.\**

- (1) *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 24 C of this bulletin.
- (2) *Military Science* (6 units), or *Air Science* (6 units), or *Naval Science* (12 units), 4 semesters (men).

### (B) *Foreign Language.* At least 16 units in not more than two languages.

- (1) The first two years of high school work in a foreign language will be counted in satisfaction of 4 units of this requirement; the third and fourth years in the same language will be counted in satisfaction of 4 units each. Only work of grade C or higher may be counted.†
- (2) If a new language is begun on the college level it may not apply on this requirement unless course 2, or the equivalent, with its prerequisites is completed.
- (3) This requirement may also be satisfied in one of the following ways: (a) by passing a proficiency examination in one foreign language; or (b) on petition, by presentation of credentials from a secondary school in which the language of instruction is a foreign language.
- (4) Courses given in English by a foreign language department will not be accepted in fulfillment of this requirement.
- (5) College credit for the mother tongue of a foreign student and for its literature is allowed only for courses taken in native institutions of college grade, or for upper division and graduate courses actually taken at the University of California or at another English-speaking institution of approved standing.

(C) *Mathematics.* Elementary algebra and plane geometry. If these subjects were not completed in the high school, they may be taken in University of California Extension, but will not be counted as part of the 120 units.

(D) *English Composition.* At least 3 units in English composition (English 1A) with a grade of C or better. This requirement may also be satisfied by passing a proficiency examination in English composition set and administered by the Department of English with the approval of the Executive Committee of the College. 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 33B with a grade of C or better.

\* For information concerning exemption from these requirements apply to the Registrar.

† Any student who because of lapse of time or other circumstances feels unable to continue successfully a language begun in high school may consult the department of the language concerned regarding the possibility of repeating all or a part of the work for credit. Such credit would count on the 120 units required for the bachelor's degree; but credit is not allowed toward the required 16 units in foreign language for both the high school and college work thus duplicated.

**(E) Natural Sciences.**

- (1) At least 5 units in physical science chosen from the following:  
 Astronomy 1, 100, 101  
 Chemistry 1A, 2A, 2  
 Geography 1  
 Geology 2, 3, 101  
 One course (not more than 3 units) from: Mathematics C, D, 1,  
 3A, 5A, 5B, 32A, 37; Statistics 1; Philosophy 81  
 Meteorology 3  
 Physics 1A, 1B, 1C, 1D, 2A, 2B, 10, 11
- (2) At least 5 units in biological science, chosen from the following:  
 Anthropology 1  
 Bacteriology 1, 6  
 Biology 12  
 Botany 1, 2, 3  
 Life Sciences 1A-1B (both 1A and 1B must be completed to  
 count on science requirement)  
 Paleontology 101, 110, 111, 136, 137  
 Psychology 1B  
 Zoology 1A, 1B, 15, 138

**(F) Social Sciences.**

- (1) A lower division year course in history, chosen from the following:  
 History 1A-1B or 5A-5B or 6A-6B or 7A-7B or 8A-8B
- (2) At least 6 units in social sciences exclusive of history and including  
 courses in at least two subjects, chosen from the following list:  
 Anthropology 2  
 Economics 1A, 13, 101  
 Geography 2  
 Political Science 1, 2, 101, 103  
 Psychology 1A, 101  
 Public Health 5  
 Sociology 1, 101

**(G) Humanities.** Two of the following three groups:

- (1) *Literature.* At least 4 units in English, American, or any foreign  
 literature, in the original language\* or in translation, selected  
 from the following list:  
 Arabic 150A, 150B  
 Classics 118  
 English 30A, 30B, 46A, 46B, 115, 117J, 125C, 125D, 130, 133,  
 135, 136, 151M, 153, 190A, 190B  
 French 109A, 109B, 109M, 109N  
 German 104A, 104B, 118A, 118B, 121A, 121B  
 Greek 102, 103, 180A, 180B  
 Hebrew 150A, 150B  
 Humanities 1A, 1B  
 Italian 103A, 103B, 109A, 109B  
 Latin 4, 106, 180  
 Oriental Languages 112, 132  
 Scandinavian 141A, 141B  
 Slavic Languages 130, 132, 143A, 143B  
 Spanish 102A, 102B, 104A, 104B

\* The same courses in foreign language may not be counted both on requirement (G-1) and on the foreign language requirement (B).

- (2) *Philosophy*. A 6-unit lower division year course in philosophy, selected from the following:  
Philosophy 6A-6B, 20A-20B
- (3) *The Arts*. At least 4 units selected from the following:  
Art 1A, 1B, 5A, 100A, 100B, 108, 109  
Integrated Arts 1A-1B  
Music 20A, 20B, 30A, 30B, 130, 131, 136A, 136B, 170  
Theater Arts 5A, 102

### Authorized Exemptions

The following exemptions have been authorized in the fields of concentration listed below.

#### *Curricula in Astronomy-Mathematics and Astronomy-Physics*

##### Exemptions:

1. Requirement (F-1); and
2. One of the two groups required under (G).

#### *Major in Bacteriology*

##### Exemption:

1. Requirement (F-2).

#### *Curriculum in Biological Illustration*

##### Exemptions:

1. Either (F-1), or (F-2); and
2. One of the two groups under (G).

#### *Curriculum in Biophysics*

##### Exemptions:

1. Either (F-1), or (F-2); and
2. One of the two groups required under (G).

#### *Major in Botany*

##### Exemptions:

1. Requirement (F-2); and
2. One of the two groups required under (G).

#### *Major in Chemistry*

##### Exemptions:

1. Either (F-1), or (F-2); and
2. Either (E-2), or one of the two groups required under (G).

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

##### Exemptions:

1. Requirement (F-2); and
2. One of the two groups required under (G).

#### *Major in Geology*

##### Exemptions:

1. Requirement (F-2); and
2. One of the two groups required under (G).

#### *Major in Mathematics*

##### Exemption: Requirement (F-1).\*

\* Mathematics majors who are candidates for the general secondary teaching credential may be exempted from one of the two groups required under (G) upon petition recommended by the department and approved by the Dean of the College.

*Curriculum in Physical Sciences—Mathematics*

**Exemption:**

One of the two groups required under (G).

*Major in Zoology*

**Exemptions:**

1. Either (F-1), or (F-2); and
2. One of the two groups required under (G).

**REGULATIONS GOVERNING THE FIELD OF CONCENTRATION**

(A) A field of concentration shall consist of not less than 24, nor more than 42 units of upper division courses. Not more than 42 units of upper division courses taken in one department after receiving upper division standing will be counted toward the bachelor's degree. In economics this limitation is inclusive of courses in business administration. Only the following courses may be counted in satisfaction of the field of concentration: (1) courses in resident instruction\* at the University of California, Los Angeles campus, or at another college or university; (2) courses in University Extension with numbers having the prefix X, XB, XL, XR, or XSB. Courses numbered in the 300 series (teachers' courses) or in the 400 series (professional courses) are not accepted as part of the field of concentration (with the exception of the General Elementary and Early Childhood Education curricula).

(B) The fields of concentration shall be designated as *departmental*, *inter-departmental*, or *individual*.

- (1) A departmental field of concentration (or major) shall consist of a group of coordinated upper division courses, of which at least two-thirds of the units are in one department, set up and supervised by a department.
- (2) An interdepartmental field of concentration (or curriculum) shall consist of at least 36 units of coordinated upper division courses, of which less than two-thirds are in one department, set up and supervised by a committee appointed by the Executive Committee of the College.
- (3) A student who has some unusual but definite academic interest, for which no suitable major or curriculum is offered in the University of California, and who has completed at least two semesters of work (a minimum of 24 units) in the University with a grade-point average of 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 field of concentration. This field will consist of at least 36 units of coordinated upper division courses, of which less than two-thirds are in one department.

(C) Each upper division student must designate his field of concentration on his study-list card, he must register with the department or committee in charge of his field of concentration, and his study list must be approved by a representative of the department or committee before it will be accepted by the Registrar. A department or committee may designate the Dean of the College as its representative.

(D) An upper division student may change his field of concentration only by permission of the Dean of the College and of the department or committee in charge of the field of concentration to which the student petitions to transfer. No change of field of concentration will be permitted after the opening of the student's last semester.

\* Resident instruction is defined as that which is offered to students in regular attendance during the fall and spring semesters and the Summer Session.

(E) Students who fail to attain a grade-point average of at least 2.00 in work taken in the prerequisites for the field of concentration, or in courses in the field of concentration, may, at the option of the department or committee in charge, be denied the privilege of continuing in that field of concentration. The student must attain an average grade of C (2 grade points for each unit undertaken) in all courses offered as part of the field of concentration.

(F) All students must take at least one course in their field of concentration each semester during their last, or senior year.

#### ORGANIZED FIELDS OF CONCENTRATION IN THE COLLEGE OF LETTERS AND SCIENCE

##### *Majors Leading to the Bachelor's Degree*

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

Anthropology	Geography	Oriental Languages
Applied Physics†	Geology	Philosophy
Art History	German	Physical Education†
Astronomy	Greek	Physics
Bacteriology	History	Political Science
Botany	Home Economics†	Psychology
Chemistry†	Italian	Slavic Languages
Classics	Latin	Sociology
Economics	Mathematics	Spanish
English	Meteorology	Speech
French	Musie	Zoology

##### *Curricula Leading to the Bachelor's Degree*

The College offers curricula (interdepartmental fields of concentration) leading to the degree of Bachelor of Arts in the following fields:

Astronomy-Mathematics  
 Astronomy-Physics  
 Biological Illustration  
 Biophysics  
 Early Childhood Education  
 Earth Physics and Exploration Geophysics  
 General Elementary Teaching  
 International Relations  
 Latin-American Studies  
 Near Eastern Studies  
 Physical Sciences-Mathematics  
 Prelibrarianship  
 Presocial Welfare  
 Public Service

Requirements of these curricula are listed in detail in the following pages.

#### SPECIAL PROGRAM IN AFRICAN STUDIES

*Committee in Charge:* J. S. Coleman (chairman), R. E. Baldwin, J. S. Galbraith, W. E. Goldschmidt, W. P. Jones, W. Leslau, R. F. Logan, C. R. Nixon, C. H. Prator, C. Taylor, B. E. Thomas, H. E. Wilson.

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,

† Leading to degree of Bachelor of Science.

Near Eastern languages and literature, economics, geography, history, political science, sociology. The student completing this joint course will receive a degree with a major in his chosen discipline and specialization in African Studies.

The program is designed primarily for (1) students who plan to live and work in Africa or who are interested in governmental 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 languages and literature with primary concentration on the African field.

*Preparation.*—Introductory courses in any four of the following: Anthropology 2 (3), Economics 1A-1B (3-3) or 101 (3), Geography 1 (3), 2 (3) or 100 (3), History 1A-1B (3-3) or 5A-5B (3-3), Political Science 2 (3) or 103 (2), Sociology 1 (3) or 101 (3). Training in Arabic, French, or Portuguese is highly recommended.

*Upper Division.*—The student must fulfill the requirements of a major in a social science or in Near Eastern languages and literature. The following courses are required for the program in African Studies, and may also be used to satisfy requirements of the major whenever relevant: Anthropology 139 (3), Geography 126 (3), History 130 (3), Political Science 156 (3), and two courses outside the major field chosen from Anthropology 123 (3), Anthropology 165 (3), History 158A (3), History 158B (3), Political Science 152 (3).

## **CURRICULA LEADING TO DEGREES**

### **CURRICULUM IN ASTRONOMY-MATHEMATICS**

*Committee in Charge of the Curriculum:* S. Herrick (chairman), G. O. Abell, D. M. Popper, A. E. Taylor.

#### **Lower Division**

Required: Astronomy 2 (2), 4 (3), Physics 1A-1B-1C-1D (12) or, with the consent of the adviser, Physics 2A-2B; Mathematics 5A-5B, 6A-6B or 1, 3A, 3B, 4A, 4B(14).

#### **Upper Division**

The curriculum comprises 36 upper division units in astronomy, mathematics, and physics of which at least 15 units must be taken in astronomy and at least 12 in mathematics.

I. Required: Astronomy 101, 112, 115 (9 units), Mathematics 119A and three of the courses 108, 124, 125, 128 (12 units), Physics 105.

II. Electives in astronomy, mathematics, and physics. The following courses are recommended: Astronomy 104, 107, 117A, 117B, Mathematics 119B, 122A-122B, 135, 136, Statistics 120A, Physics 108B, 121.

### **CURRICULUM IN ASTRONOMY-PHYSICS**

*Committee in Charge of the Curriculum:* G. O. Abell (chairman), M. R. Hestenes, J. Kaplan, D. S. Saxon.

#### **Lower Division**

Required: Astronomy 2 (2), 4 (3), Physics 1A-1B-1C-1D (12), Mathematics 5A-5B, 6A-6B or 1-3A, 3B, 4A-4B (14).

#### **Upper Division**

The curriculum comprises 36 upper division units, distributed as follows:

I. Required: Astronomy 101 (3), 117A (3), 117B (3), Physics 105 or Mathematics 125 (3), Physics 108B (3), 112 (3), 121 (3), Mathematics 110AB (4) or 119A (3), and 122A (3).

II. Electives in astronomy, mathematics, and physics, of which at least 5 units must be in astronomy, and all of which must be in courses approved for the individual. It is recommended that the elective courses be chosen from: Astronomy 104, 105, 112, Mathematics 122B, Physics 107, 110, 114A, and 124A.

#### CURRICULUM IN BIOLOGICAL ILLUSTRATION

*Committee in Charge of the Curriculum:* R. A. Boolootian (chairman), B. C. Abbott, C. F. Bridgman.

The curriculum in biological illustration offers a minimum four-year program balanced between illustrative drawing and the biological sciences. Although as here outlined it prepares a student to illustrate primarily in the biological sciences, special consideration may be made for those students whose interest is illustrating in the physical sciences. Some degree of flexibility and program modification is provided through conferences with the Committee.

The curriculum is designed to prepare a student for illustrating in a specific field, e.g., botany, zoology, or general biology, or for further study in the highly specialized field of medical illustration.

##### Lower Division

Required: Art 10A, 10B, 20B, 30A, 30C, Zoology 1A-1B, Chemistry 2A.

##### Upper Division

Required: 36 units of upper division courses, including Art 145, 148, 149A-B-C-D, 150, 167A-167B, and at least 20 units from zoology, botany, and allied fields. Recommended: Art 155, 190; Botany 126, 199; English 106S; Theater Arts 145, 180; Zoology 140. The student must have his selection of courses approved by his curricular adviser each semester.

#### CURRICULUM IN BIOPHYSICS

*Committee in Charge of the Curriculum:* G. A. Bartholomew (chairman), T. A. Geissman, E. L. Kinsey.

This curriculum is designed to furnish a minimum background of information and training essential for undertaking advanced work in biophysics. Some degree of flexibility and program modification is provided through conferences with the Committee.

Biophysics approaches biological problems using the special tools of biology and physics with substantial support from chemistry and mathematics. Preparatory training is therefore somewhat exacting. Students who can decide early on their field of specialization will usually be able to proceed in graduate work with a minimum of time devoted to making up undergraduate deficiencies.

*Preparation.*—Chemistry 1A-1B (10); Mathematics 1, 3A, 3B, 4A, 4B, (14), or 5A, 5B, 6A, 6B, or their equivalents; Physics 1A-1B-1C-1D (12), or, with the consent of the Committee in charge of the curriculum, 2A-1C-1D (10) or 2A-2B (8); Zoology 1A-1B (8).

*Field of Concentration.*—Required: Chemistry 5A, 8 or 112A, 110A-110B (12-14); Mathematics 110AB (4) or 110C (3) or 119A (3); Physics 107, 107C, 108B, 116A-116C, 121, 124A, 124C or 108C (19); Zoology 101A-101B-101C, 130A (11). Recommended: Physics 114A (3); Statistics 131A (3); Zoology 102 (3), 119 (3).

#### CURRICULUM IN EARTH PHYSICS AND EXPLORATION GEOPHYSICS

*Committee in Charge of the Curriculum:* J. Kaplan (chairman), G. C. Kennedy, G. Tunell.



This curriculum is designed to provide training in physics, chemistry, mathematics, and geology, which are basic to geophysics. The requirements of the petroleum and mining industries for exploration experts, and the demands of educational and research institutions, indicate the desirability of a broad training in the physical sciences for those intending to enter either the field of applied geophysics or the general field of the physics of the earth. Summer employment with geophysical prospecting parties is strongly recommended. The curriculum below will be modified to allow students to prepare for graduate study in geophysics either in the Department of Geology or in the Department of Physics.

**Lower Division**

Required: Chemistry 1A-1B (10), Geology 2 and 2L (4), 3 (4), Mineralogy 6A-6B (5), Mathematics 5A-5B (8), 6A-6B (6), or Mathematics 1, 3A, 3B, 4A, 4B (14), Physics 1A-1B-1C-1D (12).

**Upper Division**

The curriculum comprises 36 upper division units, distributed as follows:

Required: Geology 102A (2), 103 (3), Geophysics 122 (3), Mathematics 110AB (4), Physics 107 (2), 107C (2). Recommended: Chemistry 110A-110B (6), 111 (4), Geology 110 (3), 111 (3), 116 (3), Mathematics 124 (3), 128 (3), Physics 105 (3), 110 (3), 112 (3), 116A (3), 116C (2), Engineering 115A (3), 181A (3), 198 (3). A summer's field experience with a geophysical crew.

Each student is required to obtain approval of his upper division curriculum, including electives, from the course adviser in the Institute of Geophysics.

**GENERAL ELEMENTARY AND EARLY CHILDHOOD EDUCATION CURRICULA**

*Committee in Charge of the Curricula:* A. E. Longueil (chairman), J. A. Crow, W. H. Dutton, I. A. Hinderaker, H. L. Kostanick, Miss A. B. Nisbet, Miss V. Richard (secretary).

*Lower Division Adviser:* Mrs. Elizabeth Murray, Room 202, Moore Hall.

*Upper Division Adviser:* Miss V. Richard, Room 202, Moore Hall.

These curricula have been designed by the College of Letters and Science and the School of Education to lead to both the degree of Bachelor of Arts from the College of Letters and Science, and the *Certificate of Completion* in general elementary or kindergarten-primary teaching from the School of Education. It is possible to complete the requirements for these two objectives in approximately four years and one summer session by completing the requirements for the bachelor's degree concurrently with one of the curricula set forth below.\*

At the beginning of their junior year, if not before, students in these curricula must formally register in the School of Education as credential candidates; this is in addition to registration in the College of Letters and Science as candidates for the bachelor's degree.

**Curriculum I. General Elementary**

**Lower Division**

Required: English 1A and either English 1B or Speech 1; Psychology 1A and either 1B or 33 (transfer students may meet this requirement by taking

\* It is also possible to secure the recommendation of the School of Education for the general elementary or kindergarten-primary teaching credential by pursuing a departmental field of concentration and by completing, in addition to the requirements for the bachelor's degree, the credential requirements set forth in the ANNOUNCEMENT OF THE SCHOOL OF EDUCATION, LOS ANGELES. This program will require approximately one semester longer than the special program outlined above.

Psychology 101); Art 5B; Music 31; Physical Education 27A, 27B, and 44; Mathematics 38. Recommended: Life Science 1A-1B or Biology 12, Botany 1, or Zoology 1A; History 7A-7B or 8A-8B.

#### Upper Division

The following courses in education are required for the credential and should be taken approximately in the order listed: Education 100A (open to high sophomores), 100B, 110A-110B, 124A, 139, 324A-324B (Supervised Teaching). (At least a C average is required for all courses in education, including at least a grade of C in Supervised Teaching.)

The field of concentration in this curriculum comprises at least 36 upper division units of professional and academic courses. At least a C average must be maintained in the field of concentration.

1. The professional courses in the field of concentration: Education 124B, Art 330, Music 330, Physical Education 330.

2. The academic courses in the field of concentration: At least 27 units of work in no more than four departments, according to one of the following patterns. (The units in any department may vary by one unit above or below that specified, provided the total is 27 or more units.)

(a) English .....	9	(c) English .....	6
Geography .....	9	Geography .....	6
History .....	9	Anthropology or Sociology....	6
	—	Phys. Ed. or Poli. Sci. or	
	27	Psych. ....	6
(b) English .....	6	Additional units in one of	
Geography .....	6	above departments (other	
History .....	6	than Phys. Ed.) already	
Additional units in one of		chosen by the student.....	3
above .....	3		—
6 units from one of the follow-			27
ing: Anthro., Phys. Ed.,		(d) Same as (c) except that His-	
Poli. Sci. or Soc. ....	6	tory may be substituted for	
	—	Geography	
	27		

The courses in the field of concentration must be chosen from the approved list which is available in the College office and the Credentials office, School of Education, Room 202, Moore Hall. No student may offer for credit toward the minimum required 120 units any courses not on the Letters and Science List of Courses in addition to those required in this curriculum.

#### Curriculum II. Early Childhood Education

##### Lower Division

Required: Same as in Curriculum I with the exception of Mathematics 38, which is not required for kindergarten-primary teaching.

##### Upper Division

The following courses in education are required for the credential and should be taken approximately in the order listed: Education 100A (open to high sophomores), 100B, 110A-110B, 122A, 139EC, 322A-322B (Supervised Teaching). (At least a C average is required for all courses in education, including at least a grade of C in Supervised Teaching.)

The field of concentration in this curriculum comprises at least 36 upper division units of professional and academic courses. At least a C average must be maintained in the field of concentration.

1. The professional courses in the field of concentration: Education 122B and the sections for Early Childhood Education majors in Art 330, Music 330, Physical Education 330.

2. The academic courses in the field of concentration: Same as for Curriculum I. No student may offer for credit toward the minimum required 120 units any courses not on the Letters and Science List of Courses in addition to those required in this curriculum.

#### CURRICULUM IN INTERNATIONAL RELATIONS

*Committee in Charge of the Curriculum:* R. G. Neumann (chairman), W. R. Goldschmidt, K. E. Harper, J. E. Spencer, G. E. von Grunebaum.

This curriculum is designed primarily for students in the College of Letters and Science whose interests, while not specialized, fall in the field of international relations and modern diplomacy. Students interested in preparing for the American Foreign Service examinations should consult the adviser with respect to additional courses.

##### Lower Division

Required: Political Science 1 (3), 2 (3); History 1A-1B, 5A-5B, or 8A-8B (3-3); Economics 1A-1B (3-3); Geography 1 (3), 2 (3). Recommended: Anthropology 1 (3), 2 (3).

##### Upper Division

The curriculum comprises 36 upper division units, distributed as follows:

I. General requirements (24 units): (a) Political Science 125 (3) and 127 (3), or Political Science 130 (3) and 131 (3); (b) Political Science 133A-133B (3-3); (c) Geography 181 (3); (d) 9 units from the following, including 6 units of history and 3 of economics or 6 of economics and 3 of history: History 140B (3), 141H (3), 142A-142B (3-3), 178A-178B (3-3); Economics 107 (3), 108 (3), 195 (3), 196 (3), 197 (3).

II. Field requirements: At least 12 units in one of the four following fields of specialization (to be distributed in not less than two departments):

- (a) *Far Eastern Affairs:* Political Science 136 (3), 138 (3), 158 (3), 159 (3); History 191A-191B (3-3), 192A-192B (2-2), 193 (3), 194A-194B (3-3), 195A-195B (2-2); Geography 124A-124B (3-3).
- (b) *Latin-American Affairs:* Political Science 126 (3), 150A-150B (3-3); History 148 (3), 160 (3), 162A-162B (3-3), 166 (3), 169 (3); Geography 122A-122B (3-3).
- (c) *European Affairs:* Political Science 154 (3), 155A (3), 157 (3); History 141D (3), 141F (3), 141G (3), 141H (3) [if not offered under I, above], 142A-142B (3-3) [if not offered under I, above], 143D (3), 146A-146B (3-3); Geography 123A-123B (3-3), 173 (3).
- (d) *British Empire Affairs:* Political Science 152 (3), 153 (2); History 130 (3), 151A-151B (3-3), 156 (3), 157 (3), 158A-158B (3-3), 159 (3), 196B (3); Geography 125 (3).

The following courses may be applied to any area requirement other than that in Latin-American Affairs: Political Science 151 (3); History 134A-134B (3-3), 135 (2), 138A-138B (2-2).

Recommended: Political Science 102 (3), 112 (3).

Candidates for the degree in this curriculum will be required to give evidence, normally by examination, of their ability to read current literature on international relations in one modern language: French, German, Spanish, Russian, or Italian. With permission, candidates may offer other languages not native to them.

**CURRICULA IN LATIN-AMERICAN STUDIES**

*Committee in Charge of the Curricula:* H. J. Bruman (chairman), R. L. Beals, R. H. Fitzgibbon, M. A. Zeitlin.

The curricula in Latin-American studies are designed to serve the needs of the following classes of students: (1) students desiring a general education focused on this particular area; (2) students planning careers which will necessitate residence in or knowledge of Latin America, such as teaching, business, scientific research, engineering, journalism, or government service; (3) students preparing for advanced study in the social sciences, primarily in the Latin-American field; (4) students preparing to teach social sciences or Spanish in the secondary schools. Selection of courses should be governed in part by the objective of the student.

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

**Lower Division**

Required: Spanish 4 and 44; Portuguese 1 and 2; Geography 1; Anthropology 1; History 8A-8B. It is recommended that at least two courses be elected from the following list: Anthropology 2; Economics 1A, 1B; Geography 2; Political Science 1, 2; Sociology 1.

**Upper Division**

*Curriculum for Students Desiring a General Education or Careers in Business, Research, or Government Service*

Spanish 104A-104B; 6 units chosen from Portuguese 199, Spanish 101A, 101B, 146; 24 units of additional courses chosen from the list below. Courses must be chosen from at least three departments, with at least 9 units from each of two departments other than Spanish, and at least 20 units of courses of Latin-American content (indicated below by asterisks).

*Curricula for Students Preparing To Be Teachers*

A. Candidates for the general secondary credential with a teaching major in social sciences and a teaching minor in Spanish must take: Spanish 104A-104B and 6 units chosen from Spanish 100, 101A-101B, 146, 147, 148, 149 (either 100 or 147 must be included); and 24 units of additional courses chosen from the list below. Courses must be chosen from at least three departments with at least 9 units from each of two departments other than Spanish, and at least 20 units of courses of Latin-American content (indicated below by asterisks). In addition to the lower division courses required in the curriculum, the following must also be taken: History 1A-1B or 5A-5B, Geography 2, Political Science 1 and 2 (or 1 and 103), and Economics 1A-1B (or 1A and 108) or Sociology 1 and 2. Completion of a teaching major requires 6 units in graduate courses in anthropology, economics, geography, history, or political science, after attainment of the A.B. degree.

B. Candidates for the general secondary credential with a teaching major in Spanish and a teaching minor in social sciences must take: Spanish 100, 102A-102B (prerequisite: Spanish 42), 104A-104B, 146, 147, 148; and at least 18 units of additional courses chosen from the list below. Courses must be chosen from at least three departments, with at least 6 units from each of two departments other than Spanish, and at least 15 units of courses of Latin-American content (indicated below by asterisks). A teaching minor in social science may be completed by meeting the requirements of this curriculum. Completion of the teaching major in Spanish also requires Spanish 108, 149 (or 256), 370, and 6 units of graduate courses in Spanish after attainment of the A.B. degree.

*Note:* Candidates for the general secondary credential must take Psychology 1A, 1B (or 33) and 22 units of prescribed courses in education. For further information consult the ANNOUNCEMENT OF THE SCHOOL OF EDUCATION, LOS ANGELES, and the appropriate adviser.

#### *Additional Courses*

Anthropology 102, 105, 107\*, 110, 124, 125, 127, 140\*, 141\*, 142\*, 165; Art 101C\*; Economics 195, 196, 197; Folklore 101; Geography 113, 122A-122B\*, 131, 165, 175, 199\*; History 160\*, 162A-162B\*, 166\*, 169\*, 178A-178B, 188, 199\* (Section 9); Linguistics and Philology 170; Music 136A-136B; Political Science 125, 126\*, 127, 150A-150B\*, 199\*; Portuguese 123\*; Sociology 143, 144, 150\*, 186, 189; Spanish 108\*, 120\*, 130\*, 132\*, 134\*, 136\*, 149.

#### **MEDICAL TECHNOLOGY**

*Adviser:* Mrs. Meridian G. Ball.

For requirements, see program given under the Department of Bacteriology in later pages of this bulletin.

#### **CURRICULUM IN NEAR EASTERN STUDIES**

*Committee in Charge of the Curriculum:* G. E. von Grunebaum (chairman), A. Band, J. C. Greenfield, W. Hoenerbach, W. Leslau, E. Shevky, B. E. Thomas, A. Tietze.

This curriculum in Near Eastern studies is designed primarily for the following classes of students: (1) students seeking a general education and desiring a special emphasis in this particular area; (2) students who plan to live and work in this area, whose careers will be aided by a knowledge of the peoples, languages, and institutions (such careers might be centered on teaching, research, business, engineering, journalism, or government service); (3) students preparing for advanced study in the language, peoples, or institutions of the area. Selection of courses should be decided partly by the student's own special objectives.

##### **Lower Division**

Required: Hebrew 1A-1B or Arabic 1A-1B; candidates must also obtain a reading proficiency in either 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); 6 units of History (1A-1B recommended); 12 units from the following social sciences: Anthropology 2, 3; Economics 1A-1B; Political Science 2; Sociology 1.

##### **Upper Division**

Required: 14 units of upper division courses in Arabic and/or 12 units of upper division courses in Hebrew language; 10 units of Near Eastern history, 6 of which are to be taken in course 134A-134B; 3 units of Sociology 166 or 167 or Anthropology 123; 8 units of literature (in English) of which 4 are in Hebrew literature, 150A-150B, and 4 in Arabic literature, Arabic 150A-150B; 6 units from the following courses: Hebrew 199 (Special Studies in Semitic Languages); Arabic 130A-130B, 199; History 199 (Special Studies in Near Eastern History). Recommended courses: Anthropology 103, 124, 125; Art 113D; Classics 102A-B-C-D; Folklore 101; Geography 126; History 111A, 117A-117B; Linguistics 170; Philosophy 112, 152, 153; Political Science 134, 151.

#### **CURRICULUM IN PHYSICAL SCIENCES-MATHEMATICS**

*Committee in Charge of the Curriculum:* R. L. Pecosok (chairman), C. Bell, J. A. Bond, N. A. Watson.

This curriculum 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 curriculum has been set up to provide adequate training for secondary teachers of physics, chemistry, general science, and mathematics.

#### Lower Division

Required: Chemistry 1A-1B (10); Mathematics 1, 3A, 3B, 4A (12); Physics 1A-1B, 1C (9). Physics 1C may be deferred to upper division.

*Note:* To satisfy the College requirement in biological science, students seeking the credential should choose 5 units from Biology 12; Life Science 1A-1B; Zoology 1A, 1B, 15.

#### Upper Division

Required: Chemistry 5A (3) and either 8 and 9 (6) or 112A-112B (10); Mathematics 4B (3) and 101A or 101B (3) and any other 100-level mathematics course (3); Physics 1D (3), and 105 (3) or 107 (2); Astronomy 101 (3); Geology 101 (3); English 106S (3); Education 100A, 100B, 130 (7); Mathematics 370 or Physical Science 370 (3).

For those students who are not certain that they will continue their work toward the general secondary, the last 10 units may be replaced by upper division work selected from Astronomy 102, 112, 115, 117A, 117B, 118; Chemistry 108A, 108B, 109; Physics 121.

#### CURRICULUM IN PRELIBRARIANSHIP

*Committee in Charge of the Curriculum:* L. C. Powell (chairman), H. T. Swedenberg.

*Advisers:* Mr. Powell in charge.

The prelibrarianship curriculum is designed to meet the needs of students who plan to pursue a general course in a graduate library school. The requirements of library schools and the demands of the profession indicate the desirability of a broad background in liberal arts subjects for students who plan to enter the general field of public and university library work. Proficiency in at least one foreign language is advantageous.

Students who intend to specialize in scientific, industrial, or other technical fields of librarianship should complete a major in the appropriate subject under the direction of the department concerned, rather than pursue the prelibrarianship curriculum. Students primarily interested in public school librarianship are advised to complete the requirements for a general teaching credential as described in the ANNOUNCEMENT OF THE SCHOOL OF EDUCATION, LOS ANGELES. A major in a subject field is also desirable for some phases of university library work.

Students interested in librarianship as a career should be advised that, in general, applications for admission to the accredited library schools from persons more than thirty-five years of age are considered only when the applicants hold responsible library positions from which they can obtain leaves of absence.

To be admitted to the prelibrarianship curriculum a student must file a "Prelibrarianship Plan" which has been approved by an authorized library adviser, and which meets general requirements stated as follows:

- (1) One year in each of two of the following languages: French, German, Italian, Russian, Spanish. Additional study in at least one of the two languages is strongly recommended.
- (2) Lower division courses:
  - (a) Requirements of the College of Letters and Science.

(b) Prerequisites for upper division courses selected by the student.

(c) Recommended electives:

Astronomy 1	Economics 1A
Bacteriology 6	English 1B, 31, 46A-46B
Life Sciences 1A	Speech 1
Botany 1	Philosophy 6A-6B
Chemistry 2	Physics 10
Geology 2	

(d) Ability to type is recommended by many library schools and is generally recognized as an asset to the professional librarian.

(3) Upper division courses: At least 36 upper division units chosen from the fields listed below, with no less than 12 units in one field, and no less than 6 units in each of four other fields. The particular choice of courses should be determined by the student in consultation with a library adviser on the basis of the student's individual interest and needs. (Courses marked with asterisks have lower division prerequisites.)

#### I. Art and Music

Art 100A-100B (3-3), 101C (2), 108 (3), 109 (3), 110A (2), 113B-113C (3-2), 139 (2); Music 121A-121B\* (2-2), 136A-136B (3-3), 170 (3).

#### II. Education and Philosophy

Education 100A-100B (2-2), 110A-110B (3-2), 139 (2); Philosophy 114 (3), 125 (3), 126 (2), 146A (3), 146B (3), 147 (3), 170A-170B\* (3-3).

#### III. English and American Literature

English 110 (3), 114A-114B\* (3-3), 117J (3), 118 (3), 122A-122B\* (3-3), 125C-125D (3-3), 125G-125H (3-3), 130 (2), 131\* (3), 132\* (3), 133 (3), 190A-190B (3-3), 195 (2).

#### IV. Foreign Language and Literature

Arabic 150A-150B (2-2); French 109M-109N (3-3); German 121A-121B (2-2); Greek 180A-180B (2-2); Hebrew 150A-150B (2-2); Italian 152\* (3); Latin 180 (3); Oriental Languages 112 (2), 132 (2); Slavic Languages 130 (3), 132 (3); Spanish 102A-102B\* (3-3); Turkish 150A-150B (2-2); Folklore 101 (3); Linguistics and Philology 170 (3).

#### V. History, Economics, and Political Science

History 101 (2), 140A-140B\* (3-3), 146A-146B\* (3-3), 151A-151B\* (3-3), 162A-162B\* (3-3), 177\* (3), 179\* (3), 188\* (3), 191A-191B\* (3-3), 193\* (3); Economics 100A\* (3), 103\* (3), 107\* (3), 108\* (3), 131\* (3); Political Science 103\* (2), 110 (3), 127 (3), 143\* (3), 146 (2), 148\* (2), 155A\* (3), 155B\* (3), 181\* (3), 184\* (3), 185\* (3).

#### VI. Psychology, Anthropology, and Sociology

Psychology 110\* (3), 120\* (3), 126\* (2), 143\* (2), 145A-145B\* (2-2), 147\* (3); Anthropology 102\* (3), 103\* (3), 124 (3), 125 (3); Sociology 143\* (3), 144\* (3), 145\* (3), 161\* (3), 170\* (3), 189\* (3).

### CURRICULUM IN PRESOCIAL WELFARE

*Committee in Charge of the Curriculum:* R. J. Murphy (chairman), D. B. Cressey, M. E. Duren, V. Oatrom, W. C. Scoville.

The field of concentration in social welfare is designed to give the student what is currently regarded as the most suitable background for professional training at the graduate level in the school of social welfare. A course of studies like this also serves all purposes in which a broad foundation in the various social sciences is desirable. Completion of this curriculum does not guarantee admission to a school of social welfare, and the student is expected to consult his adviser regarding the specific requirements of the school of social welfare he expects to enter.

Following an outline of the preparation required, the curriculum is set forth in two parts: I. Specialization and II. Social Science Electives.

*Preparation* (preferably to be taken during the first two years of college or at the beginning of the third year):

Anthropology 1-2 (6); Life Sciences 1A-1B (6); Sociology 1 or 101 (3); Psychology 1A-1B (6) or 101 (3); Economics 1A-1B (6) or 101 (3); Political Science 1-2 (6) or 103 (2); Statistics 1 (2) or Sociology 18 (3).

**I. Specialization:** Thirty (or 32) units in upper division Letters and Science courses to be distributed in the fields as indicated below:

*Sociology:* At least 12 units including Sociology 185 and 9 units of upper division sociology.

*Psychology:* At least 8 units of upper division psychology.

*Economics:* At least 5 to 6 units (2 courses) in upper division economics.

*Political Science:* At least 6 units including Political Science 181.

**II. Social Science Electives:** Ten (or 11) units, preferably to be chosen from the following list of courses, or similar courses, with approval of and in consultation with, an adviser. Courses in this list are also those recommended for the requirements under I above.

Anthropology 103, 125, 151, 165; Economics 100A, 103, 106, 107, 131, 133, 156; History 174A-174B, 175, 176, 188; Philosophy 104, 105, 114, 147; Political Science 113, 166, 186; Psychology 148, 168; Sociology 120, 126, 142, 143, 144, 145, 161, 181, 182, 186, 189; Home Economics 112, 143, 144; Public Health 110, 170.

#### CURRICULUM IN PUBLIC SERVICE

*Committee in Charge of the Curriculum:* P. Woll (chairman), J. M. Gillies, H. J. Nelson.

The curriculum in public service is designed to be of assistance to students who wish to qualify themselves for positions in government work. It should be noted that a large percentage of government positions are open only through competitive examinations. The curriculum, therefore, is designed to allow the student to coordinate a program drawn from several departments in preparation for a general class of positions. Although the curriculum is primarily related to political science, it is designed to allow a broader training in administrative work than is permitted in a departmental major.

#### Lower Division

**Required:** Business Administration 1A-1B (3-3); Economics 1A-1B (3-3); Political Science 1-2 (3-3); Statistics 1 (2); Speech 1 (3). In certain fields, other courses are prerequisite to upper division courses included in the curriculum:

*Public Personnel*—Psychology 1A-1B.

*Planning*—Geography 1-2 or Geography 5A-5B; Geography 4.

#### Upper Division

The curriculum itself consists of 36 units of upper division courses selected from one of five possible fields of concentration: Public Personnel Administration, Public Management, Public Relations, Financial Administration, and Planning. Less than two-thirds of the total units in the field are to be taken in one department. Political Science 141, 166 or 187, 172 or 184, 181, and 185 are required courses for each field of concentration. The remaining units must be chosen from the approved list of courses offered under the student's chosen field:



**I. Public Personnel Administration**

Political Science 166 (3), 171 (3), 172 (3), 183 (3), 184 (3), 186 (3), 187 (3); Psychology 105A-105B (3-2), 185 (2), 186 (2); Business Administration 150 (3), 152 (3); Economics 150 (3), 152 (3), 155 (3), 158 (3); Sociology 118 (3), 131 (3), 161 (3).

**II. Public Management**

Political Science 113 (3), 143 (3), 146 (2), 166 (3), 168 (3), 171 (3), 172 (3), 183 (3), 184 (3), 186 (3), 187 (3); Business Administration 150 (3), 152 (3), 190 (3); Economics 131 (3), 150 (3), 170 (3); Psychology 185 (2); Sociology 118 (3), 128 (3), 131 (3), 143 (3).

**III. Public Relations**

Political Science 125 (3), 127 (3), 142 (2), 143 (3), 146 (2), 148 (2), 166 (3), 167A-167B (3-3), 171 (3), 172 (3), 183 (3), 184 (3), 186 (3), 187 (3); Business Administration 150 (3), 163 (3), 168 (3); Economics 150 (3); Journalism 101 (3); Psychology 142 (2), 143 (2), 180 (2); Sociology 118 (3); 128 (3), 131 (3), 143 (3); not more than 6 units from History 171A (3), 171B (3), 172 (3), 173A (3), 173H (3), 174A-174B (3-3), 175 (3).

**IV. Financial Administration**

Political Science 143 (3), 166 (3), 167A-167B (3-3), 171 (3), 172 (3), 183 (3), 184 (3), 186 (3), 187 (3); Business Administration 120 (4), 121 (3); Economics 131 (3), 133 (3), 135 (3); Sociology 118 (3).

**V. Planning**

Agricultural Economics 120 (3); Art 100A (2); Business Administration 180 (3), 181 (3), 182 (3), 183 (3); Economics 107 (3), 131 (3), 170 (3), 171 (3), 173 (3); Engineering 137A (3); Geography 101 (3), 105 (3), 141 (3), 142 (3), 155 (3), 161 (3), 165 (3); Political Science 143 (3), 146 (2), 147 (3), 166 (3), 167A-167B (3-3), 168 (3), 171 (3), 172 (3), 183 (3), 184 (3), 186 (3), 187 (3); Sociology 122 (3), 128 (3), 131 (3), 143 (3), 144 (3), 145 (3).

Variations in the programs may be made with the approval of the adviser.

The curriculum in public service, which combines work of the departments of Political Science, Economics, Psychology, and Business Administration, prepares students for positions in governmental work other than foreign service. The curriculum is of value also for students interested in careers as public relations counselors, personnel managers, etc.

During the past few years, governmental employment, both in the federal 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, engineering, and in government management. In addition to regular positions with the government, there are openings for part-time or full-time internship training in various governmental agencies in the Los Angeles area.

**PREPARATION FOR VARIOUS PROFESSIONAL CURRICULA**

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

**PREBUSINESS CURRICULUM: TWO YEARS**

*Committee in Charge of the Curriculum:* W. F. Brown (chairman), R. P. Barthol, D. F. Pegrum.

The prebusiness curriculum offered in the lower division of the College of Letters and Science, Los Angeles, is designed to prepare students to meet the entrance requirements specified by the faculty of the School of Business Administration, Los Angeles (see page 45).

The prebusiness curriculum differs from the requirements for upper division standing in the College of Letters and Science in the following respects:

1. The specific courses which are required for acceptance by the School of Business Administration, Los Angeles;
2. Completion of course 2 in a foreign language is required, rather than completion of 16 units in not more than two languages.

#### The Prebusiness Curriculum

The curriculum as set forth below includes the specific requirements for acceptance by the School of Business Administration. Students should apply for admission to the School of Business Administration upon completion of 60 units of the prebusiness program with a C average or better.

(A) General University requirements	<i>Units</i>
(1) Subject A .....	0
(2) Military, air, or naval science (minimum).....	6
(3) Physical education .....	2
(B) Foreign language (Completion of course 2)*.....	4
(C) Elementary algebra and plane geometry.....	0
(D) English composition (English 1A) .....	3
(E) Natural science	
(1) Physical science .....	5
(2) Life science .....	5
(F) Social sciences	
(1) Lower division year course in history (History 7A-7B recommended) .....	6
(2) Social science exclusive of history, including courses in at least two subjects: Economics 1A (required for prebusiness curriculum) .....	3
Elective (to be selected from list on page 4).....	3
(G) Humanities. Two of the following three groups:	
(1) Literature	} .....
(2) Philosophy	
(3) The arts	
(H) Additional courses required for acceptance by School of Business Administration:	
Economics 1B .....	3
Business Administration 1A-1B .....	6
Mathematics 3B or 32B .....	3
<hr/> <b>Total Units 57-61</b>	

#### PRECRIMINOLOGY CURRICULA: TWO YEARS

The University offers a four-year program in criminology leading to the bachelor's degree. Three distinct fields of study are provided. Two of them deal with the application of the social sciences to: (a) law enforcement, and (b) correctional work; these lead to the degree of Bachelor of Arts. The third is concerned primarily with the application of the natural sciences to

\* Completion of course 2 in a foreign language or 3 years of one language in high school is required for the prebusiness curriculum.

law enforcement and crime investigation and leads to the degree of Bachelor of Science. The first two years of work in each field may be taken at Los Angeles; the last two years must be taken in the School of Criminology at Berkeley.

All applicants for admission to the School of Criminology must have completed at least 60 units of college work with a C average or better. In addition to fulfilling the lower division requirements of the College of Letters and Science (see pages 4-6), students are expected to complete certain prerequisite courses. While not all of the prerequisite courses are available on the Los Angeles campus, students should complete so far as possible these courses which are listed below. The remaining courses may be completed after admission to the School of Criminology.

#### Prerequisite Courses

##### For Law Enforcement and Correctional Work

Required: Political Science 1-2, Sociology 1-2, Psychology 1A, 33;  
 Statistics 1 ..... 20 units  
 Recommended: Anthropology 1, Business Administration 1A-1B, Chemistry 1A-1B, Physics 2A-2B, Public Health 5, Speech 1 and 2. Students interested in law enforcement are urged to take a year of wrestling and a year of boxing.

##### For Criminalistics

Required: Chemistry 1A-1B, 5A, 8, 9, Psychology 1A, Zoology 15,  
 Physics 2A-2B ..... 35 units  
 Recommended: Botany 1, Geology 2, Mineralogy 6A, Zoology 1A-1B, 4.

#### PREDENTAL CURRICULUM: TWO YEARS\*

The University offers a six-year program in dentistry leading to the degrees of Bachelor of Science and Doctor of Dental Surgery. The first two years may be taken at Los Angeles; the last four years must be taken in the School of Dentistry in San Francisco.

The student will find himself more adequately prepared for the predental curriculum if he has taken in high school the following subjects: English, 3 units; history, 1 unit; mathematics, 3 units (algebra, plane geometry, and trigonometry); chemistry, 1 unit; physics, 1 unit; foreign language, 2-4 units.

The 60 units of work required for admission to the School of Dentistry include general University requirements and additional specific requirements, as follows (the numbers in parentheses refer to courses at the University of California, Los Angeles, which fulfill the requirements):

##### (1) General University requirements

###### Subject A

Military science or air science (four semesters)

Physical education (four semesters)

American History and Institutions is prerequisite to the bachelor's degree. (Although this requirement may be satisfied in the School of Dentistry, it is preferable that it be completed in the predental program.)

##### (2) English 1A-1B or Speech 1, 2. .... 6 units

\* The School of Dentistry reserves the right to limit enrollment on the basis of scholarship, results of the performance and aptitude tests, recommendations, and interviews. At the present time, because of limited facilities and the large number of applications, it is not possible for the School of Dentistry to act favorably upon applications from persons who have not had the major portion of their high school and preprofessional education and residence in California or in one of the far western states which does not have a dental school. For further information see the ANNOUNCEMENT OF THE SCHOOL OF DENTISTRY.

- (3) Science ..... 32 units
- (a) Chemistry 1A, 1B, 8, 9..... 16
- (b) Physics 2A, 2B..... 8
- (c) Zoology 1A, 1B..... 8
- (4) Trigonometry (Mathematics C)  
(if not completed in high school)
- (5) Foreign language (in not more than one language).....12 units  
This may be counted from high school at the rate of 4 units for the first two years and 4 units for each year thereafter.
- (6) Social science and humanities.....12 units  
The following subjects are recommended for the student's consideration: anthropology, economics, history, political science, psychology, history and appreciation of art or music, English or speech (in addition to the basic requirement), and philosophy.  
If a student wishes to substitute mathematics in partial satisfaction of this requirement, he may include in his program a maximum of 3 units of mathematics (in addition to the required trigonometry).

**PREDENTAL HYGIENE CURRICULUM: TWO YEARS†**

*(Open to Women)*

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 student will find herself more adequately prepared if she has taken in high school the following subjects: English, 3 units; history, 1 unit; mathematics, 3 units (algebra and plane geometry); chemistry, 1 unit; physics, 1 unit; foreign language, 3 (or, preferably, 4 units).

The 60 units of work required for admission to the School of Dentistry include general University requirements and additional specific requirements, as follows (the numbers in parentheses refer to courses at the University of California, Los Angeles, which fulfill the requirements):

(1) *General University requirements*

Subject A

Physical Education (four semesters)

American History and Institutions (required for the bachelor's degree.

The examination in American History and Institutions may be taken in the School of Dentistry, but it is preferable to satisfy the requirement in the predental program).

- (2) English 1A-1B or Speech 1, 2..... 6 units
- ‡(3) Chemistry 1A-1B, 8 ..... 13 units
- (4) Zoology 1A-1B ..... 8 units
- (5) Psychology ..... 6 units
- (6) Social science ..... 12 units  
Courses in the fields of anthropology, economics, history, political science, and sociology may be used to satisfy this requirement.
- (7) Humanities ..... 12 units  
Courses in the field of history and appreciation of art or music, English or speech (in addition to the basic requirement), foreign language (in addition to requirement (8) below), and philosophy may be used to satisfy this requirement.

† 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.

‡ At Los Angeles, Chemistry 1B is prerequisite to Chemistry 8.

- (8) Foreign language (in not more than one language) . . . . . 12 units  
 This may be counted from high school at the rate of 4 units for the first two years and 4 units for each year thereafter.

#### PREMEDICAL STUDIES: FOUR YEARS

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 field of concentration within the College. In addition to fulfilling the requirements of the chosen field they should complete the courses specifically required for admission to medical school.

#### PREMEDICAL CURRICULUM: THREE YEARS\*

It is assumed that as preparation for this curriculum the student will have completed in the high school the following subjects: English, 3 units; United States history, 1 unit; mathematics, 2 units (elementary algebra and plane geometry); chemistry, 1 unit; physics, 1 unit; foreign language (preferably French or German), 2 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, trigonometry,  $\frac{1}{2}$  unit, although these courses may be taken in the University.

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 sixth semester, find themselves thus excluded from the School of Medicine, will be unable to obtain the bachelor's degree in the College of Letters and Science at the end of the eighth semester, unless they plan their program with this contingency in mind. They should, therefore, either enter a departmental major at the beginning of the fifth semester, 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.

#### PREPHARMACY CURRICULUM: TWO YEARS

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 or better in the University of California or in another institution of approved standing, at least 60 units of the program set forth below under the heading of "Prepharmacy Curriculum." 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 the high school.†

\* This section applies both to the School of Medicine at San Francisco and to the School of Medicine at Los Angeles.

† Students who have completed the two-year prepharmacy curriculum at Los Angeles cannot be assured of admission to the School of Pharmacy on 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 and by examination. A personal interview may be required. Applications for admission to the School of Pharmacy, San Francisco campus, must be filed between October 1 and March 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 22. For further information see the ANNOUNCEMENT OF THE SCHOOL OF PHARMACY which may be obtained from the Dean, School of Pharmacy, University of California Medical Center, San Francisco 22.

**Prepharmacy Curriculum**

Adviser: Mr. J. H. Beckerman

*First Year*

	<i>Units</i>
(1) General University Requirements	
Subject A .....	0
Military, air or naval science (minimum) .....	3
Physical education .....	1
(2) English 1A-1B or Speech 1, 2 .....	6
(3) Science	
Chemistry 1A-1B .....	10
Botany 1 .....	5
(4) Mathematics (if not completed in high school)	
Trigonometry (Mathematics C)	
Intermediate Algebra (Mathematics D)	
(5) Electives .....	5
Electives should be selected from courses in foreign language, social science, and humanities offered in satisfaction of the lower division requirements of the College of Letters and Science.	

*Second Year*

(1) General University requirements	
Military, air or naval science (minimum) .....	3
Physical education .....	1
(2) Science	
Zoology 1A-1B .....	8
Physics 2A-2B .....	8
(3) Mathematics 3A-3B .....	6
(4) History 7A-7B or History 7A, Political Science 1 .....	6
If the University requirement in American History and Institutions has been met, electives may be taken.	

**PREPUBLIC HEALTH CURRICULUM: TWO YEARS**

*Committee in Charge of the Curriculum:* L. S. Goerke (chairman), M. R. Ball, G. A. Bartholomew.

The University offers a four-year program leading to the degree of Bachelor of Science in public health. The prepublic health curriculum in the lower division of the College of Letters and Science is designed to prepare students for the upper division program in the School of Public Health.

The specific requirements for acceptance by the School of Public Health are included in the curriculum as set forth below. Students should apply for admission to the School of Public Health upon completion of 60 units of this program with a grade C average or better.

	<i>Units</i>
(A) General University requirements	
(1) Subject A .....	0
(2) Military, air, or naval science (minimum) .....	6
(3) Physical education .....	2
(B) Foreign language (completion of course 2)* .....	4-8
(C) Elementary algebra and plane geometry .....	0
(D) English 1A .....	3
(E) Natural science	

\* Completion of course 2 in a foreign language or 8 years of one language in high school is required.

	<i>Units</i>
(1) Physical science	
Chemistry 1A .....	5
Mathematics 1 or 3A .....	3
(2) Life science	
Bacteriology 1 .....	4
Zoology 1A-1B .....	8
(F) Social sciences	
(1) History 7A-7B .....	6
(2) At least 6 units in social sciences exclusive of history and including courses in at least two subjects, chosen from the following list:	
Anthropology 2	
Economics 1A, 13, 101	
Geography 2	
Political Science 1, 2, 101, 103	
Psychology 1A, 101	
Sociology 1, 101	6
(G) Humanities	
(1) Literature	
Humanities 1A-1B .....	6
(2) Philosophy	
Philosophy 6A-6B .....	6
<b>Total Units 59-63</b>	

#### OTHER PROFESSIONAL CURRICULA IN THE UNIVERSITY

**Architecture.**—Students in good standing having a minimum of 60 units of University credit will be admitted to the College of Architecture upon formal application filed with the Secretary of the College. In order to complete the prescribed curriculum in the indicated time, such students should also have completed the prerequisites to the work of the junior year. Only the academic courses in this program may be taken in the College of Letters and Science at Los Angeles; consequently, the student desiring a major in architecture is advised to enroll at Berkeley for the professional courses leading to the M.A. degree which carries a recommendation to State License Boards.

**Journalism.**—The University does not offer an undergraduate major in journalism at Los Angeles; therefore, it is not possible to receive a bachelor's degree in journalism on the Los Angeles campus. Instead, the basic background for the graduate program in journalism is drawn principally from the work offered in the various departments in the College of Letters and Science.

Undergraduate students who are primarily interested in journalism should select a major from the list of Majors and Curricula and indicate this major and the appropriate college on the Application for Admission, undergraduate, with Journalism in parentheses; e.g., *Letters and Science, Anthropology (Journalism)*. 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 Graduate Department of Journalism. Journalism should not be listed as a major. If the student is undecided regarding a choice of major and desires ultimately to enter the Graduate Department of Journalism as a graduate student, he should indicate on the Application, *Letters and Science, Undecided (Journalism)*.

It is advisable to choose a major that will follow one's field of interest and include as many as possible of the following courses recommended by the Graduate Department of Journalism: English 1A-1B, 31, 106A, 130, 131; Economics 1A-1B, 13; Geography 1-2 or 100, 4; History 7A-7B, and 5A-5B or 8A-8B; Political Science 1 or 101, 2, 110; Psychology 1A-1B; Anthropology 1, 2; Sociology 1A-1B or 101.

**Librarianship.**—The School of Librarianship in Berkeley offers two separate curricula of two years subsequent to the bachelor's degree, leading at the end of the first year to the degree of Bachelor of Library Science, and at the end of the second year to a master's degree—ordinarily the Master of Library Science, but in certain cases the Master of Arts. The A.B. degree of the University of California (Los Angeles or Berkeley) or its equivalent, a minimum grade-point average of 2.5 in the last two years of academic work, a graduate standing in the University without deficiencies, a satisfactory score on the Graduate Record Examination (Profile and Aptitude Tests), and a college year of each of two modern languages (preferably French and German) are required for admission to the B.L.S. program. For admission to the master's program the same requirements obtain except that a minimum 3.0 grade-point average in an accredited graduate library school is required.

### RELIGION

**Advisory Committee:** A. B. Nisbet (chairman), W. Leslau, R. H. Turner.

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 pretheological 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 fields of concentration on page 8 (recommended majors are English, history, philosophy) and indicate this major on the Application for Admission, Undergraduate, Letters and Science, with Religion in parentheses: for example, Letters and Science, History (Religion). If the student is undecided regarding a choice of major and desires ultimately to prepare himself for religious work, he should indicate on the application: Letters and Science, Undecided (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 as set forth by the interdenominational American Association of Theological Schools: English literature, composition, and speech (18 units); history (9–12 units); philosophy (9 units); natural sciences (6 units); psychology (3 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); Art 103A, 103B (Medieval Art); Art 100A (History of Architecture and Sculpture, with emphasis on relations between art and religion); Art 113D (Islamic Art); Classics 178 (Greek and Roman Mythology); English 116 (The English Bible as Literature); English 151M (Milton); Greek 117 (Greek New Testament); Hebrew 150A, 150B (Survey of Hebrew Literature); Hebrew 120A, 120B, 120C, 120D (Selected Texts of the Bible); Semitics 130 (Biblical Aramaic); History 121A, 121B (The Early and Later Middle Ages); History 135 (Introduction to Islamic Culture); History 138A, 138B (Jewish History); History 141B (The Reformation); History 177 (Intellectual History of the United States); History 196A (Early History of India); Italian 109A, 109B (Dante's *Divina Commedia*); Music 123 (Music in the Middle Ages); Music 171 (History and Literature of Church Music); Oriental Languages 172A, 172B (The Influence of Buddhism on Far Eastern Cultures); Persian 150A, 150B (Survey of Persian Literature); Philosophy 5 (Problems of Ethics and Religion); Philosophy 104 (Ethics); Philosophy 105 (Ethics and Society);



Philosophy 112 (Philosophy of Religion); Philosophy 157A, 157B (Medieval and Early Renaissance Thought); Philosophy 188 (Ethical Theory); Turkish 150A, 150B (Survey of Turkish Literature).

### **HONORS PROGRAM**

The College of Letters and Science has instituted an Honors Program which accords special privileges to superior students whose grade-point average for all work undertaken in the University is not less than 3.5:

#### *Honors Program in the Lower Division*

##### **1. Admission to Program**

A lower division student in the College who has completed 15 or more units in one semester, and whose grade-point average for all work undertaken in the University is not less than 3.5, may apply for admission to this program on forms to be supplied by the office of the Dean. The application form must be approved by the department or committee in charge of the student's proposed field of concentration and by the Dean of the College.

##### **2. Purpose of Program**

The Honors Program in the lower division is designed to give the outstanding student more freedom in meeting the lower division requirements by demonstrating proficiency and achievement by examination. The total credit which may be earned under the special provisions of the Honors Program in the lower division is 18 units, which may be earned in either or both of the following ways:

(a) Credit by examination for courses studied independently which may be undertaken in addition to the maximum study-list limits of the College.

(b) Credit for more advanced courses taken on a "passed" or "not passed" basis in the fields specified as fulfilling College requirements (E), (F), and (G). Work taken under this section must be included in the study-list limits of the College. The quality of the work required of a student in the Honors Program to be marked "passed" is higher than that required for a barely passing letter grade. In calculating grade-point standing, units gained in this way shall not be counted. Petitions for such credit will not be accepted later than the first week in the semester.

#### *Honors Program in the Upper Division*

##### **1. Admission to the Program**

A student who has attained upper division standing with a grade-point average for all work undertaken in the University of not less than 3.5, or any other upper division student recommended by his department or committee in charge of his field of concentration, may apply for admission to this program on forms to be supplied by the office of the Dean of the College. The application form must be approved by the department or committee in charge of the student's field of concentration and by the Dean. A student being recommended for this program without the necessary grade-point average must be specially approved as an honor student by the Committee on Honors of the College.

##### **2. Purpose of the Program**

A student approved for admission to this program may be admitted to such advanced honors programs as may be provided by the department or committee or faculty adviser in charge of the student's field of concentration. Such honors programs may include:

(a) Enrollment in small seminar-type classes;

(b) Independent research or reading during the two semesters of the student's senior year. The maximum amount of credit allowed under provision

(b) is 6 units.

Also, an upper division student in the Honors Program may take each semester one course not offered by him to satisfy the requirements for the field of concentration, in which his work shall be marked "passed" or "not passed." The quality of work required to be marked "passed" will be higher than that required for a barely passing letter grade. In calculating grade-point standing, units gained in this way shall not be counted. The maximum number of units which may be earned under this provision is 12. Petitions for such credit will not be accepted later than the first week in the semester.

#### *Honors with the Bachelor's Degree*

Honors may be awarded at graduation as provided under 1, 2, and 3, below, to a student who is recommended for such an award by the department or committee or faculty adviser in charge of his field of concentration and the Committee on Honors.

1. Honors may be awarded to a student who has both (a) completed his field of concentration with participation in such honors program as may have been provided for that field, and (b) qualified for honors by some other method (such as a comprehensive examination) to be prescribed by the department or committee or faculty adviser in charge of his field of concentration and approved by the Executive Committee of the College.
2. Honors also may be awarded to a student who has completed the field of concentration with distinction, and who has a general record satisfactory to the Committee on Honors, but who has not participated in an Honors Program.
3. Students who, in the judgment of the department, committee, or faculty advisers concerned, display marked superiority in their fields of concentration may be recommended for the special distinction of Highest Honors.
4. The Committee on Honors shall consider all recommendations, shall confer with the several departments, committees, faculty advisers, and Dean of the College about doubtful cases, and shall transmit to the Dean of the College its recommendation concerning the award of Honors or Highest Honors.
5. The lists of students to whom Honors and Highest Honors in the various fields of concentration shall have been awarded at time of graduation shall be published in the COMMENCEMENT PROGRAM each year, and students whose names appear upon these lists shall be issued certificates of honors in addition to University diplomas reflecting the highest order of honors awarded.

## COLLEGE OF AGRICULTURE

THE COLLEGE OF AGRICULTURE of the University of California offers at Los Angeles the following curricula:

*Plant Science*—majors in botany, floriculture and ornamental horticulture, general horticulture, and subtropical horticulture. These majors are not available in the other sections (Berkeley and Davis) of the state-wide College of Agriculture.

*Agricultural Business Management*—a new curriculum combining work in agriculture, business administration, and economics. Also available at Davis and Berkeley.

These curricula all lead to the degree of Bachelor of Science. Graduate work is also offered at Los Angeles leading to the degrees of Master of Science and Doctor of Philosophy in horticultural science.

Students electing other majors in the plant science curriculum—agronomy, genetics, landscape management, plant pathology, pomology, vegetable crops, and viticulture—may spend the freshman and sophomore years at Los Angeles and then transfer to the campus, Berkeley or Davis, where their major work is offered. The same is true of students electing certain other curricula in the College of Agriculture—agricultural economics, agricultural education, entomology and parasitology, food science, irrigation science, landscape architecture, preforestry, soil science, range management, and preveterinary medicine. Students electing the animal science curriculum are advised to transfer after one year at Los Angeles. The first three years of the agricultural engineering curriculum are available in the College of Engineering at Los Angeles. Students who register with the intention of later transferring to Berkeley or Davis to pursue other curricula or to obtain majors in the plant science curriculum other than those offered at Los Angeles are requested to consult the BULLETIN OF THE COLLEGE OF AGRICULTURE (obtainable from the Office of the Dean) and the appropriate advisers in agriculture at Los Angeles.

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

The Department of Botany of the College of Agriculture, Los Angeles, also offers a major in botany in the College of Letters and Science. Graduate work is also offered which leads to the degrees of Master of Arts and Doctor of Philosophy in botanical science. Students who elect this major are directed to register in the College of Letters and Science. Each student will be required to consult an educational counselor during his freshman and sophomore years, and thereafter an official adviser in the Department of Botany.

### **REQUIREMENTS FOR THE DEGREE OF BACHELOR OF SCIENCE IN AGRICULTURE**

The candidate for the degree of Bachelor of Science in the College of Agriculture must complete the following requirements:

(1) The equivalent of four years of university residence. The senior year must be spent in the College of Agriculture, University of California.

The student should note that in order to complete the work in agriculture within the normal four-year period, prerequisites must be systematically met and the proper sequences of courses followed. Unnecessary delay will thereby be avoided.

(2) One hundred and twenty-four units of university work, with at least twice as many grade points, in addition to matriculation units and Subject A. (The Subject A examination in English Composition is required of every undergraduate student on or before his first registration in the University.) Not more than 4 units may be in lower division physical education courses.

(3) Thirty-six of the 124 units must be in upper division courses (courses numbered 100-199).

(4) Nine units of mathematics. Matriculation work may be offered toward this requirement, with each year of high school work valued at 3 units. The student normally satisfies this requirement before the end of his sophomore year in the University.

(5) American History and Institutions. The student may meet this requirement by passing an examination for which no credit is given, or by completing certain prescribed courses or course sequences.

(6) In addition, every student must complete the requirements as listed under one of the following curricula:

## PLANT SCIENCE CURRICULUM

Students must complete the following:

(a) General	<i>Units</i>
Chemistry .....	13
Botany and plant physiology.....	9
Physics .....	3
Economics .....	3
English and/or speech .....	6
Genetics .....	4
Plant pathology .....	4
Soils, irrigation, or plant nutrition.....	3
Entomology .....	4
Additional units from:	
Natural Sciences.....	9-15
Bacteriology, biochemistry, botany or plant physiology, chemistry, entomology, geology, irrigation, mathematics,† physics, plant pathology, plant nutrition, soils, zoology, or animal physiology.	
Social Sciences and Foreign Languages.....	3-9
Economics, English or speech, foreign language, history or political science,** philosophy, psychology, sociology.	
	65

(b) Students must also complete a major, the minimum requirements of which consist of 12 units of approved upper division courses in the field of the major.

Certain courses, or other equivalent, are required by the following majors:

*Floriculture and Ornamental Horticulture.*—Botany 1, 107; Chemistry 1A, 1B, 8; Floriculture and Ornamental Horticulture 131A or 131B, and 136 A or 136B; Irrigation and Soil Science 101. Recommended: Agricultural Economics 130; Botany 151; Entomology 144; Horticultural Science 110; Irrigation and Soil Science 102, 110A; Plant Pathology 140.

*Subtropical Horticulture.*—Chemistry 1A, 1B, 8; Botany 1, 107. Recommended: Agricultural Economics 130; Entomology 134; Horticultural Science 101, 102; Irrigation and Soil Science 101. A student who intends to undertake graduate study is advised to elect additional courses in botany, chemistry, physics, mathematics, and statistics.

*General Horticulture.*—Chemistry 1A, 1B, 8; Botany 1, 107. Recommended: Agricultural Economics 130; Floriculture and Ornamental Horticulture 136A or 136B; Horticultural Science 101, 102, and 110; Irrigation and Soil Science 101.

*Botany.*—Chemistry 1A, 1B, 8; Botany 1, 2, 3, 6, 107. Recommended: Bacteriology 1; Floriculture and Ornamental Horticulture 136A, 136B; Geology 101; Horticultural Science 110; Irrigation and Soil Science 108; Physics 2B; Zoology 1A, 1B.

## Freshman and Sophomore Years

During the freshman and sophomore years the following schedule will normally be followed:

† Not including Mathematics O or D

\*\* In addition to the general University requirement.

**Example of Minimum Program—Plant Science Curriculum**

<i>Freshman Year</i>	Units First Semester	Units Second Semester
*Military or air science (for men) . . . . .	1½	1½
Physical education . . . . .	½	½
English 1A-1B or Speech 1, 2 . . . . .	3	3
Botany 1, 6 . . . . .	5	..
Chemistry 1A-1B . . . . .	5	5
History 7A or Political Science 1 . . . . .	..	3
Economics 1A . . . . .	..	3
	<hr/>	<hr/>
	15	16
 <i>Sophomore Year</i> 		
*Military or air science (for men) . . . . .	1½	1½
Physical education . . . . .	½	½
Physics 2A-2B . . . . .	4	4
Chemistry 8 or 5A . . . . .	3	..
Bacteriology 1 . . . . .	..	4
Horticultural Science 110 . . . . .	..	2
Botany 6 . . . . .	4	..
Elective . . . . .	3	2 or 3
	<hr/>	<hr/>
	16	14 or 15

Students who are unable to meet the above-outlined program of study during the first two years may take some of the requirements in their junior or senior years. It should be noted, however, that any great departure from the above program will delay graduation beyond the normal four-year period.

**Junior and Senior Years**

The additional required courses—Entomology 134 or 144; Botany 107 (Plant Physiology) and 140 (Plant Genetics); 3 units from Irrigation and Soil Science 101, 110A; Plant Pathology 120—together with such electives in any department as may be approved by the major adviser, will be taken during the junior and senior years. For elective courses in other departments, see elsewhere in this bulletin.

Where the option exists, the student should consult the major adviser concerning the 12 units required for his major.

**AGRICULTURAL BUSINESS MANAGEMENT CURRICULUM**

Students must complete the following:

	<i>Units</i>
(a) Accounting . . . . .	3
Agriculture (other than agricultural economics and botany) . . . . .	12
Anthropology, geography, history, philosophy, political science, psychology, or sociology and social institutions . . . . .	12
Bacteriology, botany, geology, physics, physiology or zoology or additional chemistry or mathematics . . . . .	7
Business law . . . . .	3
Chemistry . . . . .	5
English and/or speech . . . . .	6
Mathematics . . . . .	3

\* Or Naval science (3 units per semester)

	<i>Units</i>
Principles of economics.....	6
Statistics .....	3
	<hr/> 60

(b) In addition, students must take at least 24 units of upper division work in agricultural economics, economics or business administration.

Certain courses or their equivalents are required for the curriculum and where applicable may be used toward satisfaction of (d) and (b) requirements above: Agricultural Engineering 1, Botany (4 units), Psychology 1A, Agricultural Economics 117-117C, 130, Business Administration 140, 190, Economics 100A and one of the following 100B, 135, 150, 170, 195.

In addition, the student, with the guidance and approval of his adviser, shall select a field of interest consisting of a course program of at least 30 units. This must include 12 units of courses in agriculture as listed under (a) above and 12 units of upper division courses chosen from agricultural economics, business administration and economics in addition to those listed as required above.

### Freshman and Sophomore Years

During the freshman and sophomore years the following schedule will normally be followed:

#### Example of Minimum Program—Agricultural Business Management Curriculum

<i>Freshman Year</i>	Units First Semester	Units Second Semester
Botany 1 .....	5	..
Business Administration 1A (accounting).....	3	..
Chemistry 1A or 2A.....	..	5
English 1A-1B or Speech 1, 2.....	3	3
Psychology 1A .....	..	3
*Military science .....	1½	1½
Physical education .....	½	½
†Electives .....	3 or 4	3 or 4
	<hr/> 16 or 17	<hr/> 16 or 17

#### *Sophomore Year*

Agricultural Engineering 1.....	..	2
Chemistry 8 (elective).....	3	..
Economics 1A-1B.....	3	3
Mathematics 32A .....	3	..
‡Political science, history, etc.....	3	6
*Military science .....	1½	1½
Physical education .....	½	½
†Electives .....	2 or 3	2 or 3
	<hr/> 16 or 17	<hr/> 16 or 17

\* Air or Naval science (units differ).

† Selected from science, mathematics, and agriculture to meet curricular requirements and field of interest.

‡ Selected to meet both curricular and American History and Institutions requirements.

### OTHER CURRICULA

The requirements in the other curricula offered by the College of Agriculture will be found in the **BULLETIN OF THE COLLEGE OF AGRICULTURE** (obtainable from the Office of the Dean). Programs suitable for the conditions at Los Angeles are given in this bulletin or may be had from the appropriate advisers in agriculture, who should be consulted.

### REQUIREMENTS FOR THE DEGREE OF BACHELOR OF ARTS

#### MAJOR IN BOTANY

Since the major in botany is also available in the College of Letters and Science, the requirements for the degree of Bachelor of Arts with the major in botany will be found under College of Letters and Science (see page 1).

#### HONORS

Students who become candidates for the bachelor's degree in the College of Agriculture may be recommended for honors on the basis of the quality of the work done in the regular curriculum.

I. *Honorable Mention with Junior Standing* (that is, to students who have completed 64 units in their freshman and sophomore years).

- (1) Honorable mention is granted with junior standing to students who attain at least an average of three grade points for each unit of credit undertaken. Such students will remain in honors status unless their average for all work at the end of any semester falls below three grade points for each unit undertaken.
- (2) The list of students who receive Honorable Mention is sent to the chairman or study-list officer of the College before the beginning of the next semester.

#### II. *Honors with the Bachelor's Degree.*

- (1) Honors are granted at graduation only to students in honor status who have completed the major with distinction, and who have a general record satisfactory to the Study-Lists and Courses Committee.
- (2) Students who, in the judgment of the Study-Lists and Courses Committee, show marked superiority in their major subject may be recommended for the special distinction of Highest Honors.
- (3) A list of students to whom Honors or Highest Honors in the College have been awarded is published in the **COMMENCEMENT PROGRAM**, and honors are designated on the University diplomas of students whose names appear on these lists.

## COLLEGE OF ENGINEERING

THE DEPARTMENT OF ENGINEERING, in complement with other University departments, offers courses leading to the degrees of Bachelor of Science, Master of Science, Master of Engineering, and Doctor of Philosophy.

The engineering curriculum, leading to the degree of Bachelor of Science, is an integrated curriculum that emphasizes a thorough understanding of the following fundamentals of engineering: mathematics, physics, chemistry, life science, mensuration, graphics, materials, engineering mechanics, circuit analysis, thermodynamics and heat transfer, fluid mechanics, strength of materials, engineering design, and engineering economics. Superimposed on this framework are 18 or more units pertinent to a major field of engineering, and 21 or more units selected from the humanities, the arts and social studies. The elective courses not only provide for specialization in the last one and one-half years in conventional engineering branches, but also permit the student

to make a selection of courses with emphasis on an engineering field or engineering function of his own choosing, subject to College approval. This curriculum serves as a fundamental curriculum for the later achievement of professional competence in whatever field of engineering the graduate may enter.

The engineering curriculum is accredited by the Engineers' Council for Professional Development, 25-33 West 39 Street, New York 18.

The curriculum requires 140 units and is designed for completion in four years of full-time study. Students who engage in part-time employment, or who choose to take a broader program than required, may plan to devote more than four years to their undergraduate studies.

An optional Cooperative Work-Study Program enables students to obtain pre-engineering experience by working for pay in an approved industrial position during a portion of their college years.

Most students will find it desirable to complete the first and second years of college study at a junior college. There are in California approximately sixty public junior colleges, most of which offer instructional programs equivalent to the first two years of the engineering curriculum. The University of California accepts at full value the college-level courses completed with satisfactory grades at these junior colleges, up to a maximum of 70 units.

Upon admission to the College of Engineering, students are assigned to faculty advisers and are under the guidance of the Dean of the College of Engineering. Study programs are arranged in conference with the adviser and must be approved by the Dean.

Students in the College of Engineering may receive Honors at graduation for high scholarship or for distinction in advanced work. Students who display marked superiority may be recommended for the special recognition of Highest Honors at graduation. Honors are conferred exclusively on the basis of outstanding intellectual achievement which is measured primarily by grades, although faculty recommendations based on eminent performance in special studies, research, or other work may be considered as an infrequent alternative criterion. The normal basis for selection of honors candidates is a grade-point average, based on upper division work only, of 3.25 for Honors and 3.75 for Highest Honors. Students must have completed at least 50 units of upper division work at the University of California to qualify. Eminent performance in special studies, research, or other work is also recognized by the Engineering Achievement Award upon recommendation of the faculty and approval of the Committee on Student Relations.

Students who plan to seek advanced degrees are referred to the ANNOUNCEMENT OF THE GRADUATE DIVISION, SOUTHERN SECTION or NORTHERN SECTION.

THE ANNOUNCEMENT OF THE COLLEGES OF ENGINEERING, BERKELEY AND LOS ANGELES, gives information concerning the history of the Colleges, facilities for instruction and research, Engineering Extension, and other related matters.

### **ADMISSION TO ENGINEERING**

Attention is directed to the fact that the last days for filing applications for admission to the University by students desiring enrollment in the College of Engineering are August 15, 1960, for fall, 1960, admissions; January 14, 1961, for spring, 1961, admissions.

Under the terms of an agreement between the State Board of Education and the Regents of the University of California, the Colleges of Engineering at Berkeley and Los Angeles will provide capacity for a limited number of students in the lower division on each of the campuses. Application of this quota will, in effect, largely confine admission to beginning freshmen and to upper division students.



Satisfaction of the matriculation requirements admits the student to the University but not necessarily to the College of Engineering. Admission to the College of Engineering will be based upon the results of an entrance examination and on consideration of the student's grades.

There are two engineering qualifying examinations: the *Engineering Examination, Lower Division*, is required of all applicants for admission prior to the junior year; it is an aptitude test designed to demonstrate the applicant's general scholastic ability and his ability to comprehend scientific materials and principles, and to use mathematical concepts. The *Engineering Examination, Upper Division*, is required of applicants for admission at and above the junior level, and must be passed satisfactorily by all students, whether new or continuing, prior to beginning the work of the junior year; it is an achievement test covering lower division courses in mathematics, physics, chemistry and engineering. The same examinations are required for admission to the College of Engineering either at Berkeley or at Los Angeles. A list of the places and times for the examinations may be obtained from the Director of Admissions at either campus. Application blanks for these examinations should be obtained by the prospective student several months before he plans to enroll in the University. A \$5 fee will be charged for each examination if taken with a group of three or more persons at the regularly scheduled times; otherwise the fee is \$10. No fee will be charged for the engineering test where applicants are required to take both it and the College Entrance Examination Board Scholastic Aptitude Test.

#### *Admission at the Freshman Level*

While most applicants will take their first two years in engineering at a junior college, an applicant may qualify for admission to the University in freshman standing under any one of the several plans of admission described on pages 8 C-11 C of this bulletin, including the College Entrance Examination Board Scholastic Aptitude Test and the *Engineering Examination, Lower Division*. It is important for applicants expecting to enter the College of Engineering to include the following subjects in the list of high school courses taken to satisfy the University admission requirements:

Algebra .....	2 units	Chemistry or physics	
Plane geometry .....	1 unit	(both are desirable) .....	1 unit
Trigonometry .....	½ unit	Mechanical drawing .....	1 unit

Students lacking the above preparation will find it necessary to make up equivalent courses while in college, thereby delaying graduation.

#### *Admission at the Junior Level*

In general, students will be admitted to the College of Engineering only at the freshman and junior levels. The *Engineering Examination, Upper Division*, but not the College Entrance Examination Board Scholastic Aptitude Test, is required of students entering at the junior level. Prerequisite to all upper division engineering courses is upper division standing in the College of Engineering. Upper division standing for both new and continuing students is determined by a combination of lower division grades and the score in the *Engineering Examination, Upper Division*.

In place of the first two years of the engineering curriculum given below, transfer students should complete a program which is recommended for transfer students by the junior college, or other institution attended, and which also includes the following minimum requirements for junior standing in Engineering at the University:

	<i>Minimum Number of Units</i>
Analytic geometry and calculus .....	12
Chemistry (for engineering and science students) .....	8
Physics (for engineering and science students) .....	10
Engineering (which must include some units in each of the following subject areas: graphics, properties of materials, surveying or engineering measurements, and statics) .....	10
Humanities and social studies .....	6
Unspecified subjects (3 units may be humanities and social studies; the remainder to be in engineering and scientific subjects, which may include units, in addition to required units, in mathematics, chemistry, physics and engineering subjects; none may be in military science and/or physical education) .....	10
	<hr style="width: 10%; margin-left: auto; margin-right: 0;"/> 56

Students who enter with *only* these 56 units will require more than 4 semesters to complete the upper division of the engineering curriculum.

Students transferring from other colleges and universities to the University of California for the study of engineering should have adequate training in subjects basic to the level at which transfer is planned. The full senior year, comprising a minimum of 30 units, in all cases must be completed at the University of California.

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

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

### ENGINEERING CURRICULUM

All requirements for the degree of Bachelor of Science are met upon completion of: (1) the required courses and elective program of the engineering curriculum listed below, together with the attainment of at least a grade C average in all courses of upper division level offered in satisfaction of subject requirements and required electives of the student's curriculum, and (2) the general University requirements, including American History and Institutions, military science, physical education, minimum scholastic standing, and senior residence.

	<i>Freshman Year*</i>	Units First Semester	Units Second Semester
Subject A (if required) .....			
†Military science or air science .....		1½	1½
Physical education .....		½	½
Engineering 4A-4B .....		3	3

\* See asterisk (\*) footnote on the next page.

† See dagger (†) footnote on the next page.

	Units First Semester	Units Second Semester
Chemistry 1A-1B .....	5	5
Mathematics 5A-5B .....	5	3
Physics 1A .....	..	3
Electives .....	..	2‡
	<hr/> 15	<hr/> 18‡

*Sophomore Year\**

†Military science or air science .....	1½	1½
Physical education .....	½	½
Engineering 4C-4D .....	3	3
Engineering 15A-15B .....	3	3
Mathematics 6A-6B .....	3	3
Physics 1C-1D .....	3	3
Electives .....	4‡	4‡
	<hr/> 18‡	<hr/> 18‡

*Junior Year\**

Engineering 100A-100B .....	3	3
Engineering 102B .....	3	..
Engineering 103A .....	..	3
Engineering 104A-104B .....	3	3
Engineering 105A-105B .....	3	3
Engineering 108B .....	2	..
Mathematics 110C .....	3	..
Electives .....	1‡	6‡
	<hr/> 18‡	<hr/> 18‡

*Senior Year\**

Engineering 104C-104D .....	4	4
Engineering 109A .....	2	..
Electives .....	12‡	13‡
	<hr/> 18‡	<hr/> 17

*Requirement in English*

Proficiency in written English is a requirement of the College of Engineering. Students entering the upper division who did not make a satisfactory score in the English portion of the Upper Division Engineering Examination are required to undertake remedial work in English composition.

All written work in engineering courses, both lower and upper division, is required to be of acceptable quality in English. Engineering instructors systematically report deficiencies to the Dean, who then prescribes appropriate remedies.

Students required to take remedial English courses may thereby have their graduation delayed.

\* See pages 85-86 for freshman and sophomore requirements for transfer students.

† Naval science may be substituted for military or air science if approved. Additional elective courses are to be substituted for military or air science by those students who are exempt from the requirement.

‡ Will vary depending on elective courses selected.

§ Will vary normally from 17 to 19 units depending on elective courses selected.

¶ Admission to junior status in the College of Engineering is determined on the basis of lower division grades and the score on the *Engineering Examination, Upper Division*. Applicants for junior status from all sources, including applicants from the University's lower division, will be required to meet the same standard.

*Electives in the Engineering Curriculum*

The engineering curriculum provides for an individualized program based on 42 units of elective work chosen by the student with the approval of his adviser and of the Dean of the College of Engineering. The 42 units are divided into two types of elective, as follows.

1. **The Major Field Electives:** A minimum of 18 units must be devoted to a field of engineering endeavor selected by the student. At least 15 of these units must be in upper division courses. This program should contain a reasonable balance of courses in the practice and in the science of engineering and may include appropriate advanced courses in other departments of the University. Each student, in consultation with faculty advisers, selects a program suited to his individual needs and interests and directed toward his particular engineering objective. Three units of work in engineering design and 3 units in engineering economy are required of all students and may be accomplished within the upper division major field electives.

Three units of study must be in the life sciences and may be accomplished within either the major field or the nonmajor field electives. Subjects such as psychology, physiology, bacteriology, etc., are acceptable, as are the applied life science courses, Engineering 130A, 130B.

2. **The Humanistic Electives:** A minimum of 21 units must be devoted to humanistic social subjects such as literature, philosophy, the arts, and the social studies. Of these, a minimum of 9 units must be in upper division courses. The 21 units must include at least one coherent group of 8 to 10 units. In general, the group should contain a minimum number of lower division or introductory courses and a maximum number of upper division or advanced courses. The University requirement in American History and Institutions may be satisfied within this category, but students are strongly urged to meet this requirement by examination (see page 25 C of this bulletin).

Three units of the 42 units of elective subjects may be chosen from either major field or humanistic field courses.

*Credit for Military, Air, or Naval Science*

Lower division: six units are acceptable toward the baccalaureate.

Upper division: six units are acceptable in lieu of 6 units lower division humanistic elective; three additional units are acceptable in lieu of the 3 optional elective units.

To be eligible to receive the degree of Bachelor of Science, in addition to meeting the University scholarship requirement, a student must have achieved at least a grade C average in all courses of upper division level offered in satisfaction of subject requirements and required electives of the student's curriculum.

*Optional Senior Year at Berkeley or Davis*

Students desiring to take advantage of the wide variety of senior courses on the Berkeley campus or of the senior agricultural engineering offerings on the Davis campus may elect to complete part or all of the senior year of the engineering curriculum, not exceeding 36 units of work, on one of those campuses. In consultation with faculty advisers and with approval of the Dean of the College of Engineering, Los Angeles, such students will substitute appropriate Berkeley or Davis offerings for courses Engineering 109A, 104C, and 104D. The major field electives of such students will be made up largely of Berkeley or Davis campus courses chosen from the offerings of two or more departments.

The College of Engineering on the Berkeley campus offers curricula in agricultural engineering, ceramic engineering, civil engineering, electrical engi-

neering, engineering science (engineering physics), geological engineering, industrial engineering, mechanical engineering, metallurgy, mineral engineering, and process engineering. These curricula are printed in the GENERAL CATALOGUE, DEPARTMENTS AT BERKELEY, and in the ANNOUNCEMENT OF THE COLLEGES OF ENGINEERING, BERKELEY AND LOS ANGELES. Students in the College of Engineering on the Los Angeles campus may elect to work toward a Bachelor of Science degree from the College of Engineering on the Berkeley campus. Such students will, with the aid of a Los Angeles faculty adviser, choose Los Angeles campus courses which satisfy the requirements of the Berkeley curriculum selected. Transfer to the Berkeley campus will be effected at the appropriate level, but at least the final 30 units must be completed in residence at Berkeley. The first three years of most, but not of all, of the Berkeley curricula may be completed at Los Angeles.

## COLLEGE OF APPLIED ARTS

THE COLLEGE OF APPLIED ARTS presently offers majors in art, music, and theater arts, leading to the degree of Bachelor of Arts; and an interdepartmental curriculum in apparel design leading to the degree of Bachelor of Science.

By completing additional requirements set up by the School of Education, students may secure *teaching credentials* in connection with the majors in art, music, and theater arts.

### REQUIREMENTS FOR GRADUATION

#### Lower Division

The work of the lower division comprises the studies of the freshman and sophomore years, while the upper division refers to the junior and senior years.

**Upper division standing** is granted to students who have:

- (1) completed at least 60 units of college work.
- (2) earned at least a C average in all University of California work.
- (3) satisfied requirements (A) to (D) below:

(A) *General University requirements.*†

Subject A.‡

Military, Naval, or Air Science, 6 to 12 units (four semesters), men.

Physical Education, 2 units (four semesters).

(B) **ETHER:**

- (B.) \**Foreign Language.* At least 16 units in one foreign language. Without reducing the total number of units required for upper division standing or the bachelor's degree, high school work with grades of C or better and not duplicated by college work§ will count as follows: 4 units for the first two years together, and 4 units each for the third and fourth years. The requirement may also be met by passing a proficiency examination in one language. Courses given in English by a foreign language department 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.)

† For information concerning exemption from these requirements, apply to the Registrar.

‡ 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 24 C of this bulletin.

§ See section (§) footnote on the next page.

¶ See degree (\*) footnote on the next page.

- (B<sub>2</sub>) *Natural Science*. At least 12 units chosen from the following list, including at least one course having 30 or more hours of laboratory work. Courses marked with an asterisk (\*) meet the laboratory requirement. Only college courses may apply on the natural science requirement.

Anthropology 1.  
 Astronomy 1, 2\*.  
 Bacteriology 1\*, 6.  
 Biology 12.  
 Botany 1\*, 2\*, 3\*, 6\*.  
 Chemistry 1A\*, 1B\*, 2, 2A\*, 5A\*, 5B\*, 8, 9\*, 10\*.  
 Geography 1, 3, 5A.  
 Geology 2, 2L\*, 3\*.  
 Life Sciences 1A-1B (both 1A and 1B must be completed to count on the science requirement).  
 Mathematics C, D, 1, 3A, 3B or 3H, 37, and Statistics 1.  
 Meteorology 3 (or Geography 3), 4.  
 Mineralogy 6A-6B\*.  
 Physics 1A\*, 1B\*, 1C\*, 1D\*, 2A\*, 2B\*, 10, 11, 21\*.  
 Psychology 1B.  
 Zoology 1A\*, 1B\*, 4\*, 15\*, 25\*.

OR

- (B<sub>2</sub>) A combination of *Foreign Language and Natural Science* to be distributed as follows:

\**Foreign Language*.—At least 16 units in not more than two languages. Without reducing the total number of units required for upper division standing or the bachelor's degree, high school work with grades of C or better and not duplicated by college work§ will count as follows: 4 units for the first two years together, and 4 units each for the third and fourth years. If a new language is begun in college, it may not apply on this requirement unless course 2 with its prerequisites is completed. The requirement may also be met by passing a proficiency examination in one language. Courses given in English by a foreign language department may not be applied on this requirement.

\**Natural Science*.—At least 9 units chosen from the natural science list set forth above, including at least one course having 30 or more hours of laboratory work.

- (C) *Matriculation Mathematics*.—Elementary algebra and plane geometry. If these subjects were not completed in the high school, they may be taken in University of California Extension, but will not be counted as a part of the 60 units.
- (D) *Three Year Courses*.—A year course chosen from three of the following seven groups, one sequence to be selected from group 1, 2, or 3. Only the courses specified below are acceptable.
1. English, Speech:  
 English 1A-1B, 46A-46B.

\* Courses offered in satisfaction of the language or natural science requirement may not be used on the year-course requirement.

§ Any student who because of lapse of time or other circumstances feels unable to continue successfully a language begun in high school may consult the department of the language concerned regarding the possibility of repeating all or a part of the work for credit. Such credit would count on the 60 units required for upper division standing and on the 120 units required for the bachelor's degree; but credit is not allowed toward the required 16 units in foreign language for both the high school courses and the college work duplicating them.

- Speech 1, 2, 3, 4.  
English 1A and either Speech 1 or 3.
2. Foreign language: No high school work may be counted on this requirement.
- Arabic 1A-1B.
  - Chinese, any two consecutive courses from the following: 1A, 1B, 18A, 18B.
  - French, any two consecutive courses from the following: 1, 2, 3, 4.
  - German, any two consecutive courses from the following: 1, 2, 3, 3PS, 4.
  - Greek 1, 2.
  - Hebrew 1A-1B.
  - Italian, any two consecutive courses from the following: 1, 2, 3, 4.
  - Japanese, any two consecutive courses from the following: 9A, 9B, 29A, 29B.
  - Latin, any two consecutive courses from the following: 1, 2, 3, 4.
  - Portuguese, any two consecutive courses from the following: 1, 2, 3.
  - Scandinavian 1, 2 or 11, 12.
  - Slavic Languages 1, 2, 3A, 3B.
  - Spanish, any two consecutive courses from the following: 1, 2, 3, 4, 25A, 25B.
3. Mathematics:  
Any two of the following courses: Mathematics C, D or 1, 3A, 3B, 3H, 37; Statistics 1.
4. Social Sciences:
- Anthropology 1, 2.
  - Economics 1A-1B.
  - Geography 1, 2, 5A-5B.
  - History 1A-1B, 5A-5B, 6A-6B, 7A-7B, 8A-8B.
  - Political Science 1, 2.
  - Sociology 1, and either 2 or 12.
5. Psychology:  
Psychology 1A, and either 1B or 33.
6. Philosophy:  
Philosophy 6A-6B, 20A-20B, 30-31.
7. Music, Art, Theater Arts (A student majoring in art, music or theater arts may not present a year course in his major department.):  
Art 1A-1B, 5A-5B, 10A-10B, 20A-20B, 30A, and either 30B or 30C.  
Integrated Arts 1A-1B.  
Music 1A-1B, 3A-3B, 20A-20B, 30A-30B.  
Theater Arts 5A-5B.

### **Upper Division \***

#### *Requirements for the Bachelor's Degree*

The bachelor's degree is granted to students who have:

1. Completed at least 120 units of college work.
2. Earned a C average in all University of California work.
3. Satisfied the following requirements:

Lower division requirements of the College of Applied Arts (see page 39).

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\* See page 39 for lower division requirements to be satisfied before taking upper division courses.

**American History and Institutions.**—This requirement may be met by passing an examination or by completing a minimum total credit of 4 units from courses accepted as satisfactory for this purpose. (See page 25 C of this bulletin or the HANDBOOK OF RULES AND REGULATIONS FOR STUDENTS for approved courses.)

**Minor.**—Not less than 20 units of coordinated courses, of which at least 6 units must be in closely related upper division courses. (See page 43.)

**Major.**—The candidate must complete, with a C average, a major or curriculum totaling at least 36 upper division units, and must be recommended by the appropriate department or curriculum committee.

Each student is required to take at least 6 units in his major (either 3 units each semester or 2 units one semester and 4 units the other) during his last or senior year.

*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 adjustments approved by petition when necessary.*

No student is permitted to change his major after the opening of the last semester of the year in which he intends to graduate.

Any upper division course in a student's major department is automatically applied on his major.

Students who fail in the lower division to attain at least a C average in any department may 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 his 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 Applied Arts may require from candidates for the degree a general final examination in the department.

**Residence.**—All candidates for the degree must be registered in the College of Applied Arts while completing the final 24 units. *Courses completed in University of California Extension are not considered work in residence.*

Students transferring from other institutions or from University of California Extension with senior standing must complete in the College of Applied Arts at least 18 units in upper division courses, including 12 or more units in the major department. This regulation does not apply to students transferring from other colleges within the University.

Courses taken at a junior college after the completion of 70 units toward the degree may satisfy lower division subject requirements, but they are not given unit credit toward the 120 units required for graduation. Junior college credits may not apply on any upper division requirement.

**University Extension.**—Courses in University of California Extension (either class of correspondence) may be offered in satisfaction of requirements for the bachelor's degree provided they bear the same number as acceptable courses in the regular session. (Equivalent courses bear the prefixes XL, XB, XR, XSB, or X.) Extension courses may not, however, be offered as a part of the residence requirement. Concurrent enrollment in resident courses and in University Extension courses is permitted only when the entire combined program has been approved in advance by the Dean's office.

**NOTE:** University Extension courses yield subject and unit credit but no grade-point credit toward the degree.



## HONORS

### *Honors with the Bachelor's Degree*

- A. Honors are granted at graduation only to students who have completed the major with distinction, and who have a general record satisfactory to the Committee on Honors. Departmental recommendations are reported to the Registrar.
- B. Students who in the judgment of their departments display marked superiority in their major subject may be recommended for the special distinction of Highest Honors. Departmental recommendations are reported to the Registrar.
- C. A list of students to whom Honors or Highest Honors in the various departments have been awarded is published in the COMMENCEMENT PROGRAM, and honors are designated on the University diplomas of students whose names appear on these lists.

## THE MINOR

A graduation\* minor in the College of Applied Arts consists of 20 units of coordinated courses, of which at least 6 units must be in closely related upper division courses. All courses in a given department are considered closely related. A minor may consist of courses chosen entirely from one department, or it may be a group minor including related courses from several fields.

With a group minor, the lower division work may include courses from several departments, although it is recommended that two year courses be included. The 6 units of upper division work must be from one department, normally a year sequence.

Possible group minors are listed below. Students planning other combinations must secure advance approval from the Dean's Office *before* taking the courses.

Business administration, economics.

English, speech, theater arts.

Humanities: art, folklore, humanities, integrated arts, literature, music, philosophy.

Life science: bacteriology, biology, botany, life sciences, physiological psychology, zoology.

Physical science: astronomy, chemistry, engineering, physical geography, geology, mathematics, meteorology, mineralogy, physics.

Social science: anthropology, economics, geography, history, political science, psychology, sociology.

Note: The minor may not include:

- a. Any course in the student's major department.
- b. Any course from another department applied on a student's major or specifically listed by number as applicable on the student's upper division major.
- c. Any Education courses applied on a teaching credential.
- d. Foreign language or other courses completed in high school.
- e. Lower division courses in the mother tongue of a foreign student.

## ORGANIZED MAJORS AND CURRICULA

A major or a curriculum consists of at least 36 units of coordinated upper division courses, together with the required prerequisites designated as "prep-

\* A graduation minor is not necessarily a "teaching" minor acceptable for the general secondary teaching credential. See ANNOUNCEMENT OF THE SCHOOL OF EDUCATION for definitions of approved teaching minors.

aration for the major." A major is composed of courses from one or more departments arranged and supervised by a department, whereas a curriculum is a program of study made up of courses from several departments and supervised by a special committee. The degree of Bachelor of Arts is granted with the majors in art, music, and theater arts; the degree of Bachelor of Science is granted with the majors in apparel design, apparel merchandising\* and business education\*.

Departmental *majors*, and interdepartmental curricula, with opportunities for specialization as indicated, are offered in the following fields:

**MAJOR IN ART**

History and Studio  
Pictorial Arts  
Design

**MAJOR IN BUSINESS EDUCATION\***

Office Administration  
Accounting  
General Business  
Merchandising

**MAJOR IN MUSIC****MAJOR IN THEATER ARTS**

Theater Arts  
Language Arts (Teaching)

**CURRICULUM IN APPAREL DESIGN****CURRICULUM IN APPAREL  
MERCHANDISING\***

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.

The major must, in its entirety, consist (1) of courses taken *in resident instruction* at this or another university, or (2) of courses with numbers having the prefix X, XB, XL, XR, or XSB taken in University of California Extension.

The student must attain an average grade of C (two grade points for each unit of credit) in all courses offered as part of the major (or curriculum).

**CURRICULUM IN APPAREL DESIGN**

*Preparation for the Major.* Art 10A-10B, 30A-30B, Economics 1A-1B, Home Economics 16.

*The Major.*—Thirty-six units of coordinated upper division courses, including Art 180 (8 units), 185A; Home Economics 161, 170, 172, 175, 176A, 177A-177B; and additional courses chosen from Art 185B, 187A-187B; Home Economics 162, 171A-171B.

**CURRICULUM IN APPAREL MERCHANDISING**

*Preparation for the Major.*—Art 30A-30B, Business Administration 1A-1B, Economics 1A-1B, Home Economics 16.

*The Major.*—Thirty-six units of coordinated upper division courses, including Art 180 (2 units), 185A; Business Administration 150, 160, 162, 163; Home Economics 161, 170, 172, 175; and additional courses chosen from Art 185B, 187A-187B; Business Administration 165, 168; Home Economics 162, 171A-171B, 176A; Psychology 180.

\* The majors in apparel merchandising and in business education are being discontinued, and no new students will be accepted into these programs after July 1, 1960. (Exceptions will be made for students who transfer with 60 or more units of advanced standing.) The Bachelor of Science degree in apparel merchandising and in business education will not be awarded after September, 1962.

## SCHOOL OF BUSINESS ADMINISTRATION

THE SCHOOL OF BUSINESS ADMINISTRATION at Los Angeles, replacing the College of Business Administration, was established in the spring of 1950. The School admits students of junior or higher standing and offers curricula leading to the undergraduate degree of Bachelor of Science. The School of Business Administration is a professional school of the University whose purpose is to provide for qualified students a well-balanced education for careers in business at the management and administrative levels. The general and specific requirements of the School are designed to furnish a broad preparation for careers of management rather than a highly specialized proficiency in particular occupations. The two-year curriculum leading to the degree of Bachelor of Science consists of a basic program of professional education for business management plus specialization in one field. The basic program attempts to create an understanding of the operation of the business enterprise within the whole economy; to develop proficiency in the use of such tools of management as accounting, business law, statistical and economic analysis; and to provide knowledge of the principles of management in several functional fields. Upon completing the basic program, students undertake a minimum of four courses in their chosen field of emphasis. Opportunity for concentration is offered in the fields of accounting, finance, insurance, production management, personnel management and industrial relations, marketing, transportation and traffic management, and real estate and urban land economics, business statistics and information processing.

### Admission

In accordance with the general objectives of the School of Business Administration, students are accepted on the basis of intellectual capacity and academic preparation as demonstrated by their work in the first two years of college. A student is eligible to apply for admission to the School of Business Administration if he (1) has been admitted to the University, and (2) has completed or has in progress a minimum of 60 units of college credit with at least a grade C average.

### Lower Division Requirements

An organized program of study in preparation for a professional curriculum in the School must satisfy the following requirements:

- (1) the general University requirements, listed in this bulletin.
- (2) the lower division requirements of one of the colleges of the University of California.

For example, these may be fulfilled by meeting the requirements for upper division standing in the College of Letters and Science (Berkeley or Los Angeles), the prebusiness curriculum in the College of Letters and Science (Los Angeles), or upper division standing in the College of Applied Arts (Los Angeles). Organized programs of study offered by departments within such colleges as Engineering, Agriculture, or Letters and Science, at any campus of the University of California, are acceptable if junior standing is achieved.

- (3) The following specific requirements or their equivalents:
  - (a) Business Administration 1A-1B, Elementary Accounting.
  - (b) Economics 1A-1B, Principles of Economics.
  - (c) Mathematics 32B, Introductory Mathematical Analysis for Business, or Mathematics 3B, First Course in Calculus.
  - (d) English 1A, English Composition.
  - (e) Completion of course 2 (or the equivalent) in a foreign language.

Students who have completed 60 units, including work in progress, with a grade C average should apply immediately for admission to the School even though they may have lower division course deficiencies in the above categories. If possible, these must be removed during the student's first semester in residence in the School.

Application for acceptance by the School of Business Administration (Los Angeles) should be filed with the Office of Admissions not later than August 15 for the fall semester and not later than January 15 for the spring semester.

Students who wish to transfer from other colleges or schools of the University of California, Los Angeles, to the School of Business Administration must file an application in the Office of the Assistant Dean, BAE 250, not later than July 15 for the fall semester and not later than December 1 for the spring semester.

Students who are in the prebusiness curriculum in the College of Letters and Science and who have achieved junior standing but who do not transfer into the School cannot take upper division business courses.

### **Requirements for the Degree of Bachelor of Science**

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

1. A minimum of 128 units. A candidate must have attained at least a grade C average or twice as many grade points as units attempted.
2. A candidate for the degree must be registered in the School of Business Administration while completing the final 24 units of work and must have followed organized semester programs approved by the Dean. This regulation applies both to students entering the School of Business Administration from another university and to students transferring from other divisions of this University.

Students admitted to senior standing in the School of Business Administration (Los Angeles) on the basis of credit from other institutions or on the basis of credit from University Extension, must complete in residence, subsequent to such admission, a minimum of 24 units composed of at least 18 units of upper division Business Administration courses, including at least 6 units in their chosen field of concentration.

The faculty of the School of Business Administration expects its graduates to be well-rounded individuals who possess not only an understanding of the fundamentals of business, but also, a sound foundation in the sciences and humanities. Students who come to the School with highly specialized backgrounds will be required, therefore, to take appropriate courses in other areas of knowledge. The Department of Business Administration also regards proficiency in the use of written and spoken English as one of the requirements for the satisfactory completion of every course.

3. Completion of requirements (a) to (e) below is required of all candidates.
  - a. *University requirement of American History and Institutions.*
  - b. *Basic Courses:* All students in the School of Business Administration must complete the following courses in their proper sequence:
    - Business Administration 100. Business Economics.
    - Business Administration 101. Business Fluctuations and Forecasting.
    - Business Administration 108. Legal Analysis for Business Managers.

Students who transfer to the School of Business Administration with 3 units credit for law must take Business Administration 105B to meet their business law requirement.

Business Administration 115. Business Statistics.  
 Business Administration 120. Intermediate Accounting or Business Administration 120M. Managerial Accounting.  
 Business Administration 190. Organization and Management Theory.  
 Economics 135. Money and Banking.

Students must select three of the following four courses to complete their basic course requirement.

Business Administration 131. Business Finance.  
 Business Administration 140. Elements of Production Management.  
 Business Administration 150. Elements of Personnel Management.  
 Business Administration 160. Elements of Marketing.

It is the policy of the School of Business Administration to require courses 100 and 115 to be taken concurrently, and to require courses 100, 115, and 120 or 120M to be taken in the student's first semester in the School, followed immediately by a second semester program that includes course 101 and Economics 135. In addition, students must meet their business law requirement in the junior year. Thus, the basic tools of economic analysis, business law, statistics, and accounting are acquired before the senior work begins in the functional areas of concentration. Any adjustments in the programs of entrants, necessitated by subject deficiencies from lower division, or any other reason, may be made only by the Assistant Dean for Student Affairs.

c. *The field of concentration*: At least three courses aggregating not less than 9 units in one of eight following fields (may not include basic required courses listed under (b) above):

Accounting (4 courses—12 units)  
 Finance  
 Insurance  
 Production Management  
 Personnel Management and Industrial Relations  
 Marketing  
 Transportation and Traffic Management  
 Real Estate and Urban Land Economics

With the approval of the Dean, a student may change his field of concentration. At least two courses must be taken after the field has been specified.

Students who wish to elect a different field of concentration may propose an area comprised of four or more courses selected either inside or outside the department, or partially inside and partially outside the department. It is expected that the proposed group of courses be appropriately integrated with the general program which the student wishes to follow. This privilege is extended to students who demonstrate academic ability and a particular interest in a special area. Selection of a special field and the specific courses therein must have the written approval of the Assistant Dean for Student Affairs before the work is undertaken.

Students who are interested in agricultural management should consult page 31 of this bulletin for particulars concerning a specialization in this area.

d. *Electives*: At least 17 units in departments other than Business Administration of which 9 units must be in upper division courses.

e. *Scholarship requirements*

1. At least a C average in all work undertaken in the University.
2. At least a C average in a upper division courses taken under re-

- quirements (b) and (c) above and any other upper division courses in business administration, business education, and economics.
3. At least a C average in all subjects undertaken in the field of concentration (c) above.

#### TYPICAL PROGRAM

The typical program for a student entering the School of Business Administration might be as follows:

JUNIOR YEAR			
<i>First Semester</i>	<i>Units</i>	<i>Second Semester</i>	<i>Units</i>
Business Administration 100.....	3	Functional course .....	3
Business Administration 115.....	3	Functional course .....	3
Business Administration 108.....	4	Field of Concentration course.....	3
Business Administration 120 or 120M .....	3	Economics 185 .....	3
Functional course .....	3	Electives .....	5
	<hr/>		<hr/>
	16		17
SENIOR YEAR			
<i>First Semester</i>	<i>Units</i>	<i>Second Semester</i>	<i>Units</i>
Functional course .....	3	Business Administration 190.....	3
Field of Concentration course.....	3	Field of Concentration course.....	3
Electives .....	12	Field of Concentration course.....	3
		Electives .....	3
	<hr/>		<hr/>
	18		17

There may be minor adjustments in this program to permit the early completion of the first course in the student's field of concentration.

#### HONORS

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

## GRADUATE SCHOOL OF BUSINESS ADMINISTRATION

THE GRADUATE SCHOOL OF BUSINESS ADMINISTRATION was established in August, 1955, and assumes responsibility for the graduate curricula formerly under the jurisdiction of the School of Business Administration. The Graduate School of Business Administration offers curricula leading to the degrees of Master of Business Administration and Doctor of Philosophy in business administration.

The broader directives of the Graduate School include the following: (1) to provide professional education which will develop in qualified students the intellectual and personal attributes that are prerequisite for successful careers in management or as staff specialists in public or private enterprises; (2) to prepare the exceptionally qualified, mature students for careers as teachers and research scholars in business and business management; (3) to offer management development programs for experienced businessmen who may profit from an intensive study of management theory and practices; and (4) to enlarge 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.

The School recognizes the importance of improving management of the economy through the preparation of persons who will have responsibility for making decisions. In a free, competitive, enterprise society, the combined

judgments of business managers probably constitute the greatest single influence upon the economic welfare of society. Success in business is increasingly the result of risk-taking enterprise and innovation, backed by systematic intelligence about available technology, markets, finance, and people. The graduate business school faculty in a university properly strives to understand and to influence these changes, and to transmit to mature students a systematic approach to business problem-solving.

### Admission.

Applicants for both the M.B.A. and the Ph.D. programs follow the same procedures. The degree programs of the School are under the jurisdiction of the Dean of the Graduate Division. The regulations of the Graduate Division as well as those of the Graduate School of Business Administration should be observed.

Application forms must be filed by each student for both the Graduate Division and the Graduate School of Business Administration not later than August 1 for the fall semester, and not later than December 1 for the spring semester. The Graduate business application must be accompanied by a money order or bank draft of \$5 in payment of application fees. Payment must be for the exact amount of the fee and should be made payable to The Regents of the University of California.

*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) the candidate's previous college record and (2) his performance on the Admission Test for Graduate Study in Business.

1. To be admitted in graduate status in the department a student is required to have an undergraduate scholarship record of at least the equivalent of 2.5 grade-point average (halfway between grade B and C) in all courses taken in the junior and senior years and in junior-senior courses in business administration and economics; and a B average or better in all postbaccalaureate course work.

In an exceptional case an applicant who fails to meet this requirement may, at the discretion of the Assistant Dean of the Graduate School of Business Administration, be recommended for admission on a trial basis. Such a recommendation will be made only when the applicant's qualifications give promise that he may pursue the degree program with success. It will not be made for an applicant who has already completed the equivalent of the first year of the Master of Business Administration program or by an applicant for admission to the Ph.D. program. For departmental restrictions applying to students so admitted see the ANNOUNCEMENT OF THE GRADUATE SCHOOL OF BUSINESS ADMINISTRATION.

2. All applicants are required to take the Admission Test for Graduate Study in Business. The test is given four times a year in various locations in the United States and several foreign countries. Students must write to the Educational Testing Service, 20 Nassau Street, Princeton, New Jersey, for information regarding application and the time and place of the examination, and they should request the service to forward the test results to the Graduate School of Business Administration. If an applicant does not take the examination before filing applications for admission he must explain this failure when filing; and if otherwise eligible, he will be admitted and will be required to take the examination at the next scheduled date.

An application for readmission is required for students formerly registered in a regular session as a graduate student who may wish to return after an absence. A renewal of application is required for persons who were admitted to a fall or spring semester but did not register. Attendance in a Summer Session does not constitute admission to graduate status, nor to the Graduate School of Business Administration.

### Requirements for the Degree of Doctor of Philosophy

The following information supplements the statement of general requirements for the Doctor of Philosophy degree in the ANNOUNCEMENT OF THE GRADUATE DIVISION, SOUTHERN SECTION, and the ANNOUNCEMENT OF THE GRADUATE SCHOOL OF BUSINESS ADMINISTRATION.

*Program of Study.*—The program of study leading to the Ph.D degree in business administration embraces five fields of study. Two of these fields, management theory and policy and general economic theory, are included in every doctoral program. The other fields may be chosen from the list currently offered by the Department of Business Administration: accounting, finance, personnel management, production management, marketing, insurance, real estate, transportation, and statistics and operation's analysis. With the approval of the guidance committee, a candidate may elect two of the above fields in the Department of Business Administration, and a third field from another department in the University.

Normally a student will be expected to complete at least three courses in each of the five fields of concentration in preparation for the Qualifying Examinations.

In addition to the work outlined above, effective July 1, 1958, all students must satisfy the following course requirements, or their equivalent.

Business Administration 120 or 120M or 120G, plus one advanced course (graduate or undergraduate) in accounting.

Business Administration 115, plus one advanced course (graduate or undergraduate) in statistics.

Business Administration 118.

Business Administration 299R (must be completed by the second year of graduate work).

Students should consult the Assistant Dean concerning the appropriate amount of formal educational preparation necessary for the successful completion of the program of study.

*Foreign Language.*—Reading proficiency in the two foreign languages most useful in the conduct of the candidate's studies will be required.

*Notice of Ph.D. Candidacy.*—As early as possible, preferably at the end of the first semester of graduate study, the student should declare his intention of proceeding to candidacy for the Ph.D. degree. This statement of intention should be made in duplicate, on Form 1, which is available at the Office of the Dean of the Graduate Division.

*Guidance Committees.*—On approval of the notice of Ph.D. candidacy, the student enters the formal Ph.D. degree program. A guidance committee will be appointed to assist the student in the preparation of his *proposed program for residence study*, to make a report to the department chairman of the progress of the candidate, and to make recommendation of the candidate for his qualifying examinations and to conduct the written qualifying examination.

*Qualifying Examinations.*—Students must pass written qualifying examinations on the five fields of concentration. Examinations in each field are scheduled once every semester. No student may sit for a qualifying examination until the language requirement is satisfied. On the completion of the five written examinations, students must pass an oral examination embracing the entire field of business administration. The oral examination supplements the written examinations by permitting the faculty to examine the students' general knowledge of business administration as well as permitting further exploration of his knowledge in any individual field on which he has already written an examination.



Effective July 1, 1958, students must complete the written and oral qualifying examinations within a period of eighteen months. The time will be measured from the date on which the first examination is written.

**Doctoral Committees.**—On recommendation of the guidance committee and upon nomination of the department to the Graduate Council, a doctoral committee for each candidate is appointed. This committee conducts the written and oral Qualifying Examinations, and is responsible for making nominations for advancement to candidacy.

**Advancement to Candidacy.**—At least two semesters prior to the date the degree is anticipated, the candidate must file with the Graduate Division his *Application for Candidacy for the Degree, Doctor of Philosophy* (Form 4).

**The Dissertation.**—The candidate files with the Department of Business Administration a *proposal for a doctoral dissertation* and proceeds under the guidance of his doctoral committee. The dissertation must be prepared in accordance with the instructions furnished by the Graduate Division.

**Final Examination.**—The final examination, conducted by the doctoral committee, is oral and deals primarily with the subject matter of the dissertation.

### Requirements for the Degree of Master of Business Administration

#### FIRST-YEAR PROGRAM

The first year of the M.B.A. program requires the mastery of five required fields and five elective fields. These fields are defined below in terms of the courses offered in the Department of Business Administration on the Los Angeles campus (course numbers refer to courses in the Department of Business Administration unless otherwise indicated):

##### *Required Fields*

1. Business Economics (100 and 101, or 102G).
2. Business Law (108 or 108G).
3. Business Statistics (115 or 115G).
4. Accounting (120, 120G, or 120M).
5. Organization and Management Theory (190, or 190G).

##### *Elective Fields* (any five)

1. Money and Banking (Economics 135).
2. Finance (131 or 133 or 131G).
3. Insurance (135, or 135G).
4. Production Management (140, or 140G).
5. Personnel Management (150, or 150G).
6. Marketing (160, or 160G).
7. Transportation and Traffic Management (170).
8. Real Estate and Urban Land Economics (180).

(Explanation of course numbers: Courses numbered without the G suffix are offered regularly in the Department of Business Administration for undergraduate students, and are generally available for students in the Graduate School of Business Administration. Courses numbered with the suffix G are offered exclusively for students in the Graduate School, regardless of their degree objective or status.)

First-year graduate students may satisfy parts of this requirement by independent study and examination with special permission of the Assistant Dean of Student Affairs.

Graduate students who are already prepared in one or more of the above fields, as evidenced by satisfactory completion of the above courses or their equivalent, may elect to begin a part of the program of the second year of the M.B.A., with the approval of the Dean.

## SECOND-YEAR PROGRAM

The second-year program consists of a minimum of 24 units of work of which 3 units are required in the area of business economics and 3 units in the area of management. At least 9 and no more than 15 units are required in a major field of concentration and from 3 to 9 units are electives.

*Required Courses*

Business Economics: Business Administration 200, 201 or 202.... 3 units

Management: Business Administration 290, 291 or 292..... 3 units

*Major Field of Concentration.*—A minimum of 9 units and no more than 15 units of graduate courses and seminars must be completed in the major field of concentration.

If a student elects a major field in which only two graduate courses are available, he may be advised by his faculty adviser to elect an undergraduate course in that field or a graduate course in a related field to complete the 9 units required in the major. The 6 units of required courses may not be substituted in the major field of concentration.

*Electives.*—A minimum of 3 units and no more than 9 units of electives are chosen from graduate and/or undergraduate courses approved by the faculty of the Graduate School of Business Administration. Approved courses are indicated by an asterisk (\*) in the ANNOUNCEMENT OF THE GRADUATE SCHOOL OF BUSINESS ADMINISTRATION, LOS ANGELES. (See the *explanatory note* on page 51.) At least one of the elective courses must be in a field other than that represented by the major field of concentration.

A written comprehensive examination is given in the major field of concentration.

Effective July 1, 1959, all new and continuing students who have not started the second-year program will be required to follow the above program.

Residence of at least one academic year on the Los Angeles campus is required for the M.B.A. degree candidate. The 24 units of the second-year program must be completed on the Los Angeles campus, and a minimum of 4 units must be taken for two semesters.

Fields of concentration available in the M.B.A. program are as follows:

- a. Business Statistics and Operations Analysis
- b. Accounting
- c. Finance
- d. Production Management
- e. Personnel Management and Industrial Relations
- f. Marketing
- g. Real Estate and Urban Land Economics
- h. Management Theory and Policy
- i. Insurance
- j. Transportation and Traffic Management

The candidate for the degree of Master of Business Administration must pass an integrated comprehensive examination based upon his major field of graduate study. The examination is given in the fourteenth week of each semester. There is no language requirement. The candidate must maintain a grade-point average of 3.0 or better in all work taken in graduate standing, including undergraduate courses taken in restricted status; on the second-year program, in addition, a 3.0 or better grade-point average must be maintained in total work taken in the University subsequent to the bachelor's degree.

## SCHOOL OF EDUCATION

THREE ADVANCED DEGREES are offered by the School of Education: Master of Education, Master of Arts (with a major in education), and Doctor of Education. The function of the master's degree programs is the development of leadership in such educational fields as administration, supervision, curriculum development, guidance and counseling, audio-visual communications, and teaching. The doctoral program is provided to develop high-level specialists in these fields as well as to prepare students for college teaching and for educational research. Comprehensiveness and flexibility are especially noteworthy characteristics of the advanced degree programs. The graduate student in the School of Education is thus given both depth and specialization in his program.

The School of Education offers curricula leading to certificates of completion and state credentials authorizing service in the following fields: kindergarten-primary; general elementary; junior high school; special secondary\* in the fields of art, business education, homemaking, music, physical education, and trade and industrial education;† general secondary; junior college; teaching exceptional children (speech correction and lipreading, mentally retarded); general pupil personnel services (counseling, child welfare and attendance, school social work, school psychometry, school psychology); supervision; elementary school administration; secondary school administration and general school administration. In addition to maintaining the foregoing curricula, the School of Education provides opportunity for individual programs of study meeting the requirements of the State Board of Education for credentials in certain other fields.

### Admission to Undergraduate and Professional Programs

To be eligible for enrollment in undergraduate and professional courses in the School of Education (education courses in the 100 or 300 series) a student must meet the following requirements:

Any student in good standing in the University of California, who has completed the lower division requirements in one of the colleges of the University, or the equivalent, may enroll in one or more introductory courses, but for one semester or for one Summer Session only

To be eligible for enrollment during a second semester a student must satisfy additional requirements in four areas:

**Academic Achievement.**—Before mid-term of the first semester or Summer Session the student must have forwarded directly to the Office of Student Services, official up-to-date transcripts of all college credits. His transcripts must show (a) an over-all grade-point average of 2.0 or higher, (b) a grade-point average in education courses of 2.0 or higher, and (c) a grade-point average in standard subject matter courses, not including courses in "performance" fields, of 2.0 or higher.

**Communication Skills.**—Under the auspices of the Office of Student Services, during his first semester or Summer Session the student must pass standardized tests in English (e.g., reading comprehension and mechanics of expression), and in arithmetic concepts. The student must also demonstrate that he is free of gross speech defects, such as stuttering or lisping.

\* Recommended programs on the Los Angeles campus leading to the special secondary credentials are being discontinued, effective September 15, 1961.

† Provided primarily in Summer Sessions under the supervision of the Division of Vocational Education.

**Physical and Mental Health.**—During his first semester or Summer Session in education courses the student must report to the Student Health Service in order to obtain preliminary approval for the study of education, indicating that his physical and mental health is such that he can perform the duties normally expected of teachers at the academic level he plans to teach.

**Personal Fitness.**—An individual with a criminal record, or one incapable of normal personal-social relationships, is barred by law from teaching in the schools of California. If a student's history is such that there is doubt on this matter, he should consult a counselor in the Office of Student Services.

**NOTE:** Ordinarily a student will be informed of the above requirements and corresponding deadlines during the first week of his first semester in education courses. However, it is the student's responsibility to be aware of and comply with these requirements.

### **Counseling**

The Office of Student Services helps prospective students in education to discover the fields and levels of vocational opportunities and to decide the program to follow in order to achieve their chosen professional objectives. Students may request: (a) interpretation of test results; (b) referral to a credentials adviser; (c) referral to community agencies for preteaching experience with children; (d) referral to a remedial program for reading or spelling; and (e) counseling on personal and professional problems. Students may seek appointments on such matters at any time.

In addition, the Office of Student Services serves as a screening agency, to determine eligibility for professional programs. It operates under policies determined by the Committee on Professional Fitness.

Graduate advisers are available to assist candidates for the M.A., M.Ed., and Ed.D. in the early stages of planning for their work, and to refer them to appropriate faculty sponsors.

The Office of Student Services is maintained as a professional advisory service of the School of Education to render assistance in the interpretation and application of requirements, and in the planning of programs leading to teaching credentials and certification for other public school services. It serves as a central depository for technical and professional information on credential matters and certification procedures. Services are available to students, faculty, in-service teachers, counselors in other colleges, and school administrators. The counselors serve as program advisers for all students working toward basic teaching credentials, for special teacher training programs such as the program for retired military personnel, and for provisional credential holders qualifying for a credential renewal through this University. Preliminary evaluations and general information relative to advanced credentials for specialized services in the schools are also prepared by the counselors. Consultations are available by appointment to students from the freshman year through graduate standing.

A complete statement of curricula, requirements, and procedures in the School of Education will be found in the ANNOUNCEMENT OF THE SCHOOL OF EDUCATION, LOS ANGELES, which may be obtained at the office of the Dean of the School of Education, Los Angeles campus, or by mail upon application to the Registrar of the University of California, Los Angeles 24, California.

## **SCHOOL OF LAW**

THE SCHOOL OF LAW on the Los Angeles campus of the University of California opened in September, 1949. The School occupies the Law Building, which provides the most modern facilities for the teaching and study of law and for legal research.

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 School of Law, University of California, Los Angeles 24, California, 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 School of Law, University of California, Los Angeles 24. 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, 20 Nassau Street, Princeton, New Jersey, requesting an application blank and bulletin of information listing places where the test may be taken.

Admissions will be on a competitive basis. Official notice of admission, or denial of admission, will be sent at the earliest possible date.

## **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. The curriculum, of 24 to 30 units (depending upon previous academic preparation of the student), is a graduate program which normally requires two regular semesters and a Summer Session to complete. 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, college, university, school, children's, and special library service. In addition to required courses offered by the School of Library Service, elective courses in library service and in other University departments are recommended to provide a basis for specialized preparation.

Requirements for admission include admission to graduate status by the Graduate Division, an undergraduate course of study appropriate to graduate study in librarianship, a grade-point average accepted by both the Graduate Division and the School of Library Service, and a reading knowledge of at least two modern foreign languages, preferably German and French. Applicants are also required to have a score submitted on the Aptitude Test of the Graduate Record Examination. Information concerning further requirements, age limitations, and exclusions due to physical handicaps may be obtained from the Office of the School of Library Service. See also prelibrarianship curriculum, page 16 in this bulletin.

## **SCHOOL OF MEDICINE**

THE SCHOOL OF MEDICINE on the Los Angeles campus, which opened in 1951, admits a first-year class of candidates for the M.D. degree each fall. Applications for the class entering in September, 1961, together with all transcripts of record and other necessary documents, must be filed between May 1, 1960, and November 30, 1960, with the Office of Admissions, University of California, Los Angeles 24. Application forms and information may be secured from that office.

The requirements for admission to the first-year class of the School of Medicine meet or exceed those set by the Association of American Medical Colleges.

*Basis of Selection.*—Enrollment is limited and highly selective. Candidates will be chosen on the basis of the following considerations: (1) undergraduate and, where applicable, graduate scholarship; (2) score on the Medical College Admissions Test which should have been taken preferably in May and in any case not later than October of the year during which application is made (this test is administered for the Association of American Medical Colleges by the Educational Testing Service); (3) interview of the applicant by a member or members of the Admissions Committee of the School of Medicine; and (4) letters of recommendation.

Preference is given to students who, in the opinion of the Committee on Admissions, present evidence of broad training and high achievement in their college training, of capacity for establishment of effective working relations with people in extracurricular activities and employment, and of possessing in greatest degree those traits of personality and character essential to success in medicine.

Except under extraordinary circumstances, no more than seven candidates (10 per cent) who are not California applicants will be admitted. To be considered a California applicant, a student must meet one of the following requirements: (1) he must have completed 60 units or more in an accredited college or university in the State of California, or (2) he must be a legal resident of the State of California, who lived in the State immediately prior to beginning his premedical work and who left the State temporarily for completion of all or part of his premedical work.

Successful candidates must pass a physical examination before registration. The faculty has the right to sever at any time the connection with the School of Medicine of any student who is considered physically, morally, or mentally unfit for a career in medicine.

*Premedical Training.*—Ordinarily the requirement for admission to the first-year class of the School of Medicine is a baccalaureate degree but in exceptional instances students who have completed at least three full academic years (90 semester units toward a baccalaureate degree) at an approved college or university may be admitted.

The academic years should be devoted to obtaining as broad an education as possible. The major objectives should be: (1) facility in the use of English, written and spoken; (2) facility in quantitative thinking, represented by mastery of at least elementary mathematics; (3) such training in physical and biological science as will make possible ready comprehension of medical science and result in a thorough comprehension of the scientific method; (4) a foundation for an ever-increasing insight into human behavior, thought, and aspiration through study of individual man and his society, as revealed both 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:

1. English composition or literature, 6 units.
2. Mathematics, 3 units.
3. Physics, 8 units.
4. Chemistry, two semesters of inorganic chemistry and one semester each of organic chemistry and quantitative analysis.
5. An additional semester of chemistry (e.g., organic or physical), or mathematics at the level of calculus, or physics. Elementary biochemistry will not satisfy this requirement.
6. Zoology, including vertebrate embryology, 12 units.

7. A classical or modern foreign language, 12 units of college work, or its high school equivalent,\* or attainment of facility in reading a foreign language achieved by other means. If work has been done in two languages, 8 units of each will be acceptable.

Under exceptional circumstances consideration will be given applicants not fully satisfying these requirements. In addition, students working for baccalaureate degrees must fulfill the specific requirements for such degrees.

In the time not occupied by the required courses, students should undertake studies directed to the fourth objective stated above, guided by their own interests. Preference will not be given students who major in natural science since intensive study in the social sciences and in the humanities is considered at least equally valuable.

*Completion of Requirements.*—The student must, with the occasional exceptions cited above, complete all 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.

*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 should apply to the Office of Student Affairs of the School of Medicine for instructions. Applications will be received after May 1, but not later than July 15. In no case will applications for transfer to the fourth-year class be considered.

*Graduate Work.*—Graduate work leading to the degrees of Master of Science and Doctor of Philosophy is authorized in anatomy, biophysics, infectious diseases, pharmacology, physiological chemistry, physiology, and radiology. See the ANNOUNCEMENT OF THE GRADUATE DIVISION, SOUTHERN SECTION, for further information. For details concerning the professional curriculum, consult the ANNOUNCEMENT OF THE SCHOOL OF MEDICINE, LOS ANGELES.

## SCHOOL OF NURSING

THE REGENTS OF THE UNIVERSITY OF CALIFORNIA authorized the establishment of a School of Nursing at Los Angeles in the summer of 1949. The School admits students of junior or higher standing, and offers curricula leading to the degrees of Bachelor of Science and Master of Science in nursing.

Three curricula are available:

1. *The Basic Nursing 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 practice under the guidance of faculty members is provided in hospitals, outpatient clinics, schools, homes, and community health centers.

Requirements for admission:

Admission to the University.

Completion of 60 units 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.

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\* In a single language, the first two years of high school work are credited with 4 units, and the third and fourth years are credited with 4 units each.

2. *The Program for Registered Nurses* leading to the Bachelor of Science degree provides for a close interweaving of general and professional education. Nursing laboratory practice under the guidance of faculty members is provided in hospitals, outpatient clinics, schools, homes, and community health centers.

**Requirements for admission:**

Graduation from an accredited school of nursing and evidence of the fulfillment of the legal requirements for the practice of nursing.

Personal and professional recommendations as required by the School of Nursing.

Eligibility for the study of nursing as measured by the Graduate Nurse Qualifying Examination and other tests administered by the University.

Completion of the lower division requirements or transfer credit evaluated as the equivalent. (See the ANNOUNCEMENT OF THE SCHOOL OF NURSING.)

3. Under the jurisdiction of the Graduate Division, Southern Section, the School of Nursing administers *programs leading to the Master of Science degree*. These programs are designed to prepare professional nurses for administrative, supervisory, and teaching positions in schools of nursing, hospitals, and public health agencies. For further information about the graduate programs in nursing, consult the ANNOUNCEMENT OF THE GRADUATE DIVISION, SOUTHERN SECTION, and the ANNOUNCEMENT OF THE SCHOOL OF NURSING.

**Requirements for admission:**

Graduation from a recognized college or university having an accredited basic nursing program satisfactory to the School of Nursing, Los Angeles, and the Graduate Division, Southern Section.

or

Graduation from an accredited school of nursing offering satisfactory basic preparation in nursing and from a recognized college or university with a major satisfactory to the School of Nursing, Los Angeles, and Graduate Division, Southern Section.

Evidence of the fulfillment of the legal requirements for the practice of nursing.

Satisfactory completion of the National League for Nursing, Inc. Graduate Nurse Qualifying Examination, Plan C.

An undergraduate scholarship record satisfactory to the School of Nursing, Los Angeles, and to the Graduate Division, Southern Section.

Personal and professional recommendations as requested by the School of Nursing, Los Angeles.

**Admission.**—Applications for admission to the Registered Nurse Program in the School of Nursing should be filed not later than August 15 for the fall semester and not later than January 14, for the spring semester; for the Basic Program these dates are August 15 for the fall semester and January 14 for the spring semester. Applications for admission to the Graduate Program should be filed not later than August 1 for the fall semester and not later than January 2 for the spring semester. The number of students who can enroll in the School is limited. 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 programs (accompanied by a \$5 application fee) should be filed with the Office of Admissions, University of California, 405 Hilgard Avenue, Los Angeles 24, California.



Applications for admission to the graduate programs (accompanied by a \$5 application fee) should be filed with the Graduate Division, Southern Section, University of California, Los Angeles 24, California.

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.

#### *For the Student in the Basic Program*

1. The candidate shall have completed the courses required in the nursing curriculum, and shall have satisfied the general University requirements.
2. The candidate shall have completed satisfactorily the prenursing curriculum.
3. After admission to the School of Nursing, the candidate shall have completed the specified units of college work acceptable to the faculty of the School.
4. The candidate shall have maintained at least a C average.
5. The candidate shall have completed all required nursing courses in the School of Nursing and must have maintained a grade of at least a C in all clinical nursing courses.

#### *For the Student in the Registered Nurse Program*

1. The candidate shall have completed at least 126 units of college work, and shall have satisfied the general University requirements. Not more than 30 units toward the required total will be granted the registered nurse for work completed in a hospital school of nursing.
2. The candidate shall have maintained at least a C average and must have maintained a grade of at least C in all clinical nursing courses.
3. The candidate must have completed the major in nursing and additional upper division college work acceptable to the faculty of the School of Nursing, and shall have been registered in the School while completing the final 24 units of work.

### **HONORS**

The faculty of the School of Nursing or a duly authorized committee thereof shall recommend for Honors or Highest Honors such senior students as it may judge worthy of that distinction.

### **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, Southern Section. (See page 66.)
2. The candidate shall have completed in graduate or upper division courses: at least 20 units for Plan I of which 14 shall be graduate courses in nursing; at least 24 units for Plan II of which 14 shall be graduate courses in nursing. The additional units required for the degree may be distributed among courses in the 100 or 200 series subject to approval by the student's faculty adviser.

For further information concerning graduate work consult the ANNOUNCEMENT OF THE GRADUATE DIVISION, SOUTHERN SECTION.

## SCHOOL OF PUBLIC HEALTH

*General Purpose.*—The purpose of the programs of education offered in public health is to provide the student with a thorough understanding of the principles and theory of public health, and a working knowledge of research methods. Courses of study are designed to present administration and research within the concepts described by Winslow's definition of public health—"the art and science of prolonging life, preventing disease and promoting physical and mental efficiency, through organized community effort."

The graduate programs of study are open to physicians, dentists, engineers, veterinarians, clinical psychologists, nurses, statisticians, and to persons with certain other academic or professional preparation.

*Degrees Offered.*—Five degrees are offered, as follows: Bachelor of Science, Master of Science, Master of Public Health, Doctor of Public Health, Doctor of Philosophy in biostatistics.

### BACHELOR OF SCIENCE DEGREE

A four-year undergraduate program leading to a Bachelor of Science degree in public health is offered in the University. The lower division curriculum of 60 units may be taken in the College of Letters and Science. Undergraduate students who have satisfactorily completed at least 60 units of work in one of the colleges of the University, or who have transfer credits evaluated as equivalent, may apply for admission to the School of Public Health.

Premedical and predoctoral requirements can be met while satisfying the requirements for the Bachelor of Science in public health. By proper planning and selection of electives, prepharmacy and predoctoral hygiene curriculum students can also satisfy the admission and degree requirements of the School.

In the general framework of academic study in public health, students may wish to choose particular courses as background to specialization, either in graduate study or in their future professions. Some such graduate areas of concentration are: biostatistics, epidemiology, health administration, occupational health, medical records library science, public health education, and environmental health. Interested students are urged to discuss this with their adviser.

Candidates for the degree of Bachelor of Science must have completed at least 120 units of college work, of which at least the last 24 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 units of work undertaken in the University.

#### PREPARATION FOR THE MAJOR

Courses recommended for the first two years of college work in preparation for upper division study in the School of Public Health will be found under the Prepublic Health Curriculum in the College of Letters and Science, page 24 of this bulletin.

#### THE MAJOR

- (1) Required public health courses: Public Health 100, 110, 147, 160A, 170.
- (2) In addition to the above requirements, those of one of the following *pregraduate curricula* must be met. In each case electives approved by the department adviser should be added to make a total of at least 120 units, including at least 42 units in upper division.

*Biostatistics.*—Mathematics 4A-4B, Statistics 131A-131B, Public Health 160B, 160C, 161. Every student will be required to take courses and study in depth at upper division level an additional subject area as a basis for application of statistical methods and theories.

**Health Administration.**—A year course at lower division level, or 6 units at upper division level, from anthropology, economics, psychology, or sociology; Mathematics 3A-3B; Physics 2A-2B; Zoology 25; Business Administration 135, 150 (or Political Science 185), 152 (or Sociology 161), 190; Zoology 130A; Public Health 160B.

**Occupational Health.**—Chemistry 8; Speech 1, 2; Zoology 25; Engineering 131A, 172; Psychology 187; Sociology 131; Public Health 134, 160B. Recommended electives include: Business Administration 150, 152 (or Sociology 161); Psychology 145A-145B; Public Health 160C.

**Environmental Health.**—Chemistry 1B, 5A, 8 (or 112A); Physics 2A-2B; Engineering 172; Entomology 126; Public Health 112, 134, 153, 160B. Three units from Economics 101, Psychology 101, Sociology 101 (if the equivalent courses were not taken in lower division). Suggested electives: Anthropology 2, Mathematics 3A, Zoology 100A.

**Health Education.**—Business Administration 152 (or Sociology 161); Home Economics 111; Zoology 25; Public Health 134. Electives to include an additional 18 units from at least four of the following areas: anthropology, economics, education, philosophy, political science, psychology, sociology.

### MASTER OF SCIENCE DEGREE

The Master of Science degree in public health is intended for persons without previous professional education or experience who have achieved a good academic record, or who attain a high score in an approved graduate study aptitude test, and who present other satisfactory evidence of suitability for advanced study in public health. In view of the waiver of prior professional education, the length of the program is two years, one of which must be a full academic year in residence. The remainder of the program will be planned on an individual basis, according to the student's need, and will include formal courses, research leading to a master's thesis, or supervised work and study in the field. A student who has completed part or all of an undergraduate major in public health may find it possible to satisfy the requirements for this degree in a shorter period of time.

**Requirements.**—For general requirements, see pages 66 to 68 of this bulletin or the ANNOUNCEMENT OF THE GRADUATE DIVISION, SOUTHERN SECTION. The department normally follows Plan I for the Master of Science degree, but Plan II may be approved in exceptional cases.

A student is required to specialize in one of the following areas: biostatistics, environmental health, epidemiology, health administration, occupational health, public health education.

**Elective Courses for Specialization** (With the approval of the adviser, comparable courses may be included.)

**Biostatistics.**—Anthropology 150, 151; Mathematics 119A, 122A-122B, 135, 139, 140; Statistics 131A-131B, 231, 232, 233, 260; Psychology 105B, 106A, 106B, 146; Sociology 117; Zoology 130A, 131A, 131B, 131C, 159, 230 or 231.

**Environmental Health.**—Bacteriology 103, 107; Botany 119, 126; Chemistry 108A-108B, 109, 112A; Engineering 130A, 131A, 172; Entomology 100, 126, 126C; Geography 165; Geology 101; Home Economics 113; Physics 121, 124A, 124B; Psychology 187; Zoology 101A, 101B, 111, 111C, 115, 125, 139, 159.

**Epidemiology.**—Anthropology 102; Bacteriology 103; Entomology 126; Geography 100; Infectious Diseases 251A-251B; Psychology 109, 144; Sociology 101, 117, 122, 186; Zoology 125, 140, 159.

*Health Administration.*—Business Administration 105B or 108, 135, 150, 152, 190; Economics 131, 132, 152; Political Science 166, 172, 181, 185, 214, 218, 228.

*Occupational Health.*—Psychology 145A–145B, 186; Radiology 200, 201; Sociology 131, 161.

*Public Health Education.*—Anthropology 102, 110, 125, 276; Business Administration 292; Sociology 117, 124, 145, 161, 216, 217, 218, 229; Art 140A, 148; Education 100A–100B, 139; Home Economics 111, 113; Journalism 152; Nursing 144, 109, 225; Philosophy 181, 184A–184B, 187A–187B, 240, 241; Political Science 146, 148; Psychology 131, 134, 139, 142, 145A–145B, 180, 267; Speech 106; Theater Arts 145, 270.

### MASTER OF PUBLIC HEALTH DEGREE

The Master of Public Health degree is intended for persons with prior professional training in medicine, dentistry and veterinary medicine.

*Admission.*—Candidates to be admitted for the degree of Master of Public Health may be either

1. Holders of the degree of M.D. or D.D.S. from an acceptable medical or dental school;\* or
2. Holders of a bachelor's degree from an approved college or university with adequate preparation in the sciences basic to public health.

Candidates should also be qualified in some professional capacity for postgraduate education in public health, and should in addition have either

- a. Professional academic qualifications in engineering, nursing, education, or other fields of public health; or
- b. Normally, not less than three years of experience in some field of public health practice or teaching of a type acceptable to the School.

#### GENERAL REQUIREMENTS FOR THE DEGREE

1. At least one year of graduate residence and a program including not less than 24 units of acceptable course work, of which at least 12 units must be in strictly graduate courses in the major subject. The student must maintain at least a grade B average in all work completed in graduate standing. By special permission, a candidate may be authorized to present an acceptable thesis in lieu of 4 of the 24 units required.
2. A comprehensive final examination either in the student's field of specialization or in the general field of public health, as determined by the faculty.
3. At least twelve weeks of approved field service in a public health agency. This may be waived for those presenting evidence of previous qualifying experience. In several areas of study, additional periods of supervised field work or clinical training are required—see the descriptions of the specialized curricula in the ANNOUNCEMENT OF THE SCHOOL OF PUBLIC HEALTH.

A student is required to concentrate in one of the following areas: epidemiology, general health administration (public health administration, maternal and child health, public health psychiatry, survey methods, international health), medical care administration, mental hospital administration, general hospital administration, or occupational health.

### DOCTOR OF PUBLIC HEALTH DEGREE

The Doctor of Public Health degree is offered to students who qualify in either of two ways. The length of the program will vary according to the student's

\* Holders of other acceptable doctoral degrees may qualify under special action.

qualifications. In these programs the emphasis will be on research, planning and development. A doctoral dissertation based on original work is one of the essential requirements for completion of either program.

*Prior Master's Degree.*—Students who hold a master's degree in public health may be admitted as doctoral candidates if otherwise qualified. A full year in residence is required. The length of the course will vary according to the student's qualifications but, as a rule, will be two or more years. Preference will be given to full-time students.

*Integrated Two-Year Course.*—A limited number of students who hold doctor's degrees in medicine and other fields may be admitted directly to a two-year Doctor of Public Health program that integrates enrollment in formal courses, research, and the preparation of a doctoral dissertation.

The doctorate in public health is offered primarily as an advanced study and research degree, in the attainment of which students who are already well advanced in a related fundamental field will carry on intensive work in the advancement of this knowledge as related to public health. The areas of specialization follow the pattern of the master's program in public health.

### DOCTOR OF PHILOSOPHY DEGREE IN BIOSTATISTICS

A program of study leading to the degree of Ph.D. in biostatistics is offered. Reference should be made to the ANNOUNCEMENT OF THE GRADUATE DIVISION, SOUTHERN SECTION, 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, 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.

### NONDEGREE COURSES AND SPECIAL STUDENTS

Persons employed in responsible positions in public health, and other qualified persons, who wish to attend certain courses without applying for a degree, may be admitted as special students—space, time, and circumstances permitting.

Students preparing for foreign assignments may also enroll in courses offered by other departments, for example: government, philosophy, sociology, anthropology, and linguistics, as related to selected countries or regions of the world. Joint programs may be arranged with other departments to meet specific needs, for example: engineering, nuclear medicine and biophysics, radiology, nutrition, psychiatry, infectious diseases, public administration. See course offerings of other departments listed in this bulletin.

## SCHOOL OF SOCIAL WELFARE

THE SCHOOL OF SOCIAL WELFARE offers a two-year graduate program in social welfare which is fully accredited by the Council on Social Work Education. In addition, the psychiatric specialization is also fully accredited. The degree of Master of Social Welfare is awarded to students who successfully complete the prescribed two-year program (four semesters) of 48 units, including field work, and who comply with additional specified requirements.

Because of the highly integrated nature of the School's program and the consequent necessity of taking together at least certain groups of courses, part-time study (other than carefully arranged work-study programs and courses for advanced students) is usually not encouraged.

Certain courses offered by the School are, however, open to a limited num-

ber of part-time students who qualify for admission to the School. Part-time students are not admitted to methods courses, to certain related courses, or to field work. Part-time students, with the permission of the School, may enter either in the fall or the spring semester.

Full-time students are admitted to the School in the fall semester and are expected to continue in attendance throughout the academic year. Students who have successfully completed their first year of training within the past seven years in another accredited school of social work may be admitted for a second year of training if they otherwise qualify for admission to the School. Students who have previously attended an accredited school of social work may have certain courses counted toward the degree provided they have been completed within the past seven years. A maximum of 24 such units may be applied toward the Master of Social Welfare degree.

The School of Social Welfare offers courses on the graduate level only. Completion of the University's program in presocial welfare or its equivalent is most desirable as preparation for graduate study in social welfare. Applicants who have not had this preparation will, however, be considered if they have completed a broad undergraduate program in the biological and social sciences and psychology.

Applications for admission should be filed by April 15 of the year in which the applicant wishes to enter the School. 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. To qualify for admission to the first-year program an applicant must: (1) have a bachelor's degree from an accredited college or university, and establish his eligibility for admission to regular graduate status at the University of California, Los Angeles; (2) have maintained at least a 2.5 grade-point average in upper division work. Applicants with a lower grade-point average may be considered if it can be demonstrated that the applicant's potential achievement in the field of social welfare is higher than was demonstrated in undergraduate work; (3) have completed at least 15 semester hours in the social sciences and/or psychology; (4) be not over 35 years of age, unless capacity for professional development in the field of social welfare has been demonstrated in social work or in a closely related field; (5) be physically able to meet the demands of the graduate curriculum, as evidenced by a physical examination conducted by the Student Health Service immediately prior to registration; (6) satisfy the School that he possesses the personal attributes essential for professional education and for successful social work practice.

To qualify for admission to the second-year program, an applicant must:

1. Have successfully completed in an accredited school of social work and within seven years immediately preceding his request for admission to the second-year program, a first-year graduate program equivalent to that offered by the School. First-year students at the School of Social Welfare who successfully complete their work and have a grade-point average of at least 3.0 (B average), automatically qualify for advancement to the second-year program. Applications of other first-year students of the School are considered upon an individual basis.
2. Be physically able to meet the demands of the graduate curriculum, as evidenced by a physical examination conducted by the Student Health Service immediately prior to registration.
3. Satisfy the School that he possesses the personal attributes essential for further professional education and for successful social work practice.

Agencies having stable and progressive programs capable of providing students with educational as well as practical experience are utilized for field instruction. While the overwhelming majority of placements are in the Los

Angeles area, a few may be as far away as Camarillo State Hospital to the north and San Diego to the south. Students are assigned to placements on the basis of their particular educational needs and are expected to work within agency policy including the observation of employment practices and, where stipulated by the agency, the signing of oaths sometimes required of agency employees. In a few agencies stipends are paid to students for field work.

Total enrollment in the School of Social Welfare is limited to the number for whom suitable field work placement can be arranged. As a result, it may not be possible to accept some applicants, even though they may otherwise meet all the qualifications for admission. Preference in the selection of students will be given to those applicants who appear to be best qualified as indicated by their previous experience, scholastic achievements, personal fitness, and aptitude for the social work profession.

### **GRADUATE COURSES**

Admission to courses is by specific approval of the School. Inasmuch as the social work profession is a discipline primarily based upon interpersonal relationships, the School reserves the right to exclude from courses students who have not demonstrated in class, practice, and professional relationships the personal attributes regarded as essential to the successful practice of social work even though the academic work done by such students may be satisfactorily performed. The School reserves the right to exclude from courses any student whose performance as reflected in grades falls below the requirement for the master's degree.

## **THE GRADUATE DIVISION**

### **SOUTHERN SECTION**

THE UNIVERSITY OF CALIFORNIA offers on its southern campuses advanced study leading to the degrees of Master of Arts, Master of Business Administration, Master of Education, Master of Engineering, Master of Library Science, Master of Public Administration, Master of Public Health, Master of Science, Master of Social Welfare, Doctor of Philosophy, Doctor of Education, Doctor of Public Health, and to the certificates of completion for the general secondary and junior college teaching credentials and the supervision and administration credentials. For more complete information concerning the work of the Division, and concerning the requirements for higher degrees, consult the ANNOUNCEMENT OF THE GRADUATE DIVISION, SOUTHERN SECTION, which may be had upon application to the Dean of the Graduate Division, Southern Section, University of California, Los Angeles 24, California.

### **DEFINITION OF ACADEMIC RESIDENCE**

Every graduate student must register for, attend, and complete upper division courses (courses in the 100 series) or graduate course (200 series) amounting to at least 4 units for each semester or 2 units for each summer session, in order to satisfy the minimum residence requirement in candidacy for any higher degree or certificate issued by the University.

### **STUDY-LIST LIMITS**

In order to counteract the tendency to accumulate credits by sacrificing thoroughness and the high scholarly attainment which comes only through intense application, the University restricts the number of units in which a student may enroll.

A graduate student in a regular semester is limited to 16 units when he takes only upper division courses, to 12 units when he takes only graduate courses, and to a total made up in the proper proportion of 12 to 16—as for example, 6 graduate and 8 upper division—when he takes both upper division and graduate courses.

Teaching assistants and others employed for approximately half time are limited to three-fourths of these totals. Graduate students engaged full time in other occupations are limited to 6 units of graduate and/or undergraduate courses.

### REQUIREMENTS FOR THE MASTER'S DEGREE

*Preparation.*—The candidate's preliminary training for the master's degree should be substantially the equivalent of that represented by the corresponding bachelor's degree. In the University of California, the bachelor's degree indicates eight years of systematic high school and college work distributed according to the University's requirements for the particular college or course in which the degree is offered.

If the candidate's undergraduate course has been deficient in breadth of fundamental training and fails to provide a proper foundation for advanced work in the department or departments of his choice, it probably will be necessary for him to take specified undergraduate courses before proceeding to the degree program or concurrently with it.

*The Degree.*—The degree of Master of Arts is awarded for the completion of requirements in any of the major subjects of graduate study at the University of California, Los Angeles, except anatomy, applied physics, biological chemistry, biophysics, chemistry, earth sciences, engineering, health education, home economics, horticultural science, infectious diseases, marine biology, medical physics, nursing, oceanography, pharmacology, physical education, physiological chemistry, physiology, preventive medicine and public health, psychiatry, public health, and radiology, in which the degree of Master of Science is given. In addition to work leading to the degree of Master of Arts in political science and in international relations, the Department of Political Science also offers work leading to the degree of Master of Public Administration.

Work is offered in the School of Business Administration leading to the degree of Master of Business Administration, in the School of Education leading to the degree of Master of Education, in the College of Engineering leading to the degree of Master of Engineering, in the School of Library Service leading to the degree of Master of Library Science, in the School of Public Health leading to the degree of Master of Public Health, and in the School of Social Welfare leading to the degree of Master of Social Welfare.

*Major Fields.*—The major fields for the master's degree are:

Anatomy	Economics	Infectious Diseases
Anthropology	Education	International Relations
Anthropology-Sociology	Engineering	Italian
Applied Physics	English	Journalism
Art	French	Latin
Astronomy	Geography	Latin-American Studies
Biological Chemistry	Geology	Library Science
Biophysics	German	Linguistics
Botanical Science	Greek	*Marine Biology
Business Administration	Health Education	Mathematics
Chemistry	History	Meteorology
Classics	Home Economics	Microbiology
*Earth Sciences	Horticultural Science	Music

\* At University of California, La Jolla.



Near Eastern Studies	Physiological Chemistry	Radiology
Nursing	Physiology	Slavic Languages
*Oceanography	Political Science	Social Welfare
Oriental Languages	Preventive Medicine and	Sociology
Pharmacology	Public Health	Spanish
Philosophy	Psychiatry	Speech
Physical Education (in-	Psychology	Theater Arts
cluding Recreation)	Public Administration	Zoology
Physics	Public Health	

*Application for Advancement to Candidacy.*—Advancement to candidacy must occur not later than one semester prior to the completion of requirements for the degree. Students are warned that such advancement is not automatic, but requires a formal application distinct from registration. A date approximately two weeks after the opening date is set each semester for application for candidacy by those who hope to qualify for degrees at the close of that session.

*Amount and Distribution of Work.*—A student must pursue one of the following plans at the option of the department of his major field for fulfillment of the requirements for the master's degree. Under either plan all requirements for the degree must be satisfied within a calendar year from the time of completion of the course requirement.

*Plan I: Thesis Plan.*—At least 20 units and a thesis are required. The units must be taken in graduate or upper division undergraduate courses, and at least 8 of the 20 must be strictly graduate work in the major subject. No unit credit is allowed for the thesis. It is expected that the work of the graduate course, or courses, together with the thesis will not be less than half of the work presented for the degree. After these general and the special departmental requirements are met, the student may take any course in the 100 or 200 series, although he is subject to his major department's guidance in the distribution of his work among the departments. In addition, the major department may require any examination which seems necessary to test the candidate's knowledge of his field.

*Plan II: Comprehensive Examination Plan.*—Twenty-four units of upper division and graduate courses are required, of which at least 12 units must be in strictly graduate courses in the major subject. After these general and the special departmental requirements are met, the student may take any course in the 100 or 200 series, although he is subject to his major department's guidance in the distribution of his work among the departments. A comprehensive final examination in the major subject, its kind and conduct to be determined by the department concerned, is taken by each candidate.

*Scholarship.*—Only courses in which the student is assigned grades A, B, or C are counted in satisfaction of the requirements for the master's degree. Furthermore, the student must maintain an average of at least three grade points a unit in those courses and also in all others elected at the University subsequent to the bachelor's degree; this includes upper division or lower division courses taken in unclassified status. Four grade points for each unit of credit are given to grade A, three points to grade B, two points to grade C, one point to grade D, none to grades E and F.

*Foreign Language.*—Each department shall determine at its option whether a reading knowledge of a foreign language shall be required of a candidate for the master's degree. The examination in all cases is to be administered by an examiner under the supervision of a committee of the Graduate Council.

*Residence.*—The minimum period of academic residence required is two

\* At University of California, La Jolla.

semesters, of which at least one semester must be spent at Los Angeles in graduate status. The requirement may be satisfied in part by residence in the Graduate Division, Northern Section.

For degree purposes, a student is not regarded as in residence unless he is registered in graduate status and is actually attending regularly authorized University exercises amounting to at least 4 units of upper division or graduate work in a regular session, or 2 units in a summer session.

Ordinarily all the work for the master's degree is expected to be done in residence, but a graduate of this University or any other approved candidate may complete part of his work in absence, subject to the approval of the Graduate Council, the regulations on study in absence, and the minimum residence requirement of one year.

*The Thesis.*—The thesis is the student's report, in as brief a form as possible, of the results of his original investigation. Although the problems for master's degree candidates are of limited scope, they must be attacked in the same systematic and scholarly way as problems of greater magnitude, as, for example, one under investigation by a candidate for the doctor's degree. Before beginning his work on a thesis, the student must receive the approval of his major department and the instructor concerned, on the subject and general plan of investigation. Detailed instructions concerning the physical form in which theses must be submitted may be had upon application to the Dean of the Graduate Division.

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

Students who desire to become candidates for the doctor's degree should bear in mind that the degree of Doctor of Philosophy is granted by the University of California not for the fulfillment of technical requirements alone, such as residence and the completion of fundamental courses within a chosen field, but more for the student's general grasp of the subject matter of a large field of study and his distinguished attainments within it, for his critical ability, his power to analyze problems and to coordinate and correlate the data from allied fields to serve the progress of ideas. In addition, he must demonstrate, through his dissertation, the ability to make an original contribution to the knowledge of his chosen field, and throughout his career as a graduate student must prove himself capable of working independently.

*Fields of Study.*—The fields of study open to candidates for the degree of Doctor of Philosophy are:

Anatomy	Geology	Languages and Literatures
Anthropology	Germanic Languages	†Oceanography
Anthropology-Sociology	Hispanic Languages and Literature	Pharmacology
Art History	History	Philosophy
Biological Chemistry	Horticultural Science	Physics
Biophysics	Infectious Diseases	Physiological Chemistry
Biostatistics	Islamic Studies	Physiology
Botanical Science	†Marine Biology	Political Science
Business Administration	Mathematics	Psychology
Chemistry	Medical Physics (Radiology)	*Public Health
†Earth Sciences	Meteorology	Romance Languages and Literatures
Economics	Microbiology	Sociology
Engineering	Music	Speech
English	Near Eastern	Zoology
French		
Geography		

Other fields and departments will be added as circumstances warrant.

\* Leading also to the degree of Doctor of Public Health.

† At University of California, La Jolla.

**Preparation.**—A prospective candidate for this degree must hold a bachelor's degree from one of the colleges of this University, based on a curriculum that includes the requirements for full graduate status in the department of his major subject, or must have pursued successfully an equivalent course of study elsewhere.

**Residence.**—The minimum residence requirement for the doctor's degree is two academic years (or four semesters), in graduate status, one of which, ordinarily the second, must be spent in continuous residence at the University of California, Los Angeles. (See also *Program of Study*, below.)

**Foreign Language.**—Before taking the qualifying examinations for advancement to candidacy for the Ph.D. degree the student must pass examinations in two foreign languages acceptable to the department of the candidate's major and the Dean of the Graduate Division. The examinations must show that he is able to read and understand the written form in these languages. These examinations will be administered by an examiner under supervision of a committee of the Graduate Council. A student's native language will not count as satisfying one of the language requirements above.

**Program of Study.**—The student's program of study must be approved by the Graduate Council, must embrace a field of investigation previously approved by his department or interdepartment group, and must extend over the full period of study. However, recommendation for the degree is based on the attainments of the candidate rather than duration of his study, and ordinarily not less than three full years will be needed to finish the work.

**Notice of Ph.D. Degree Candidacy.**—As early as possible, preferably at the end of the first semester of graduate study, the student should declare his intention of proceeding to candidacy for the Ph.D. degree. Statement of such intention should be made in duplicate on Form 1, which is available at the Office of the Dean of the Graduate Division. One copy of the form should be filed with the department or interdepartment group of the student's field of study and the other with the Dean.

**Guidance Committees.**—On receiving such notification an informal guidance committee will be appointed by the department or interdepartment group of the student's field of study to assist the student in making out his program and in preparing him for the qualifying examinations. This committee must give its written approval to the department before the student is permitted to take these examinations and it ceases to exist as soon as he has passed the qualifying examinations.

**Doctoral Committees.**—Upon nomination of the department or interdepartment group of the student's field of study a doctoral committee will be appointed by the Graduate Council. Nomination of the doctoral committee should be made on Form 2, which is available at the Graduate Division Office. This committee shall consist of not fewer than five members, three of whom shall be from the department of the candidate's major and two from a department or departments other than the major. The doctoral committee conducts the qualifying oral examination (in some cases also the written examinations), and conducts the final oral examination. For this final oral examination additional members may be appointed to the committee by the Dean of the Graduate Division in consultation with the department. With the unanimous consent of all members of the committee, three members of the committee may be designated to supervise and pass upon the student's dissertation,\* but all members of the committee shall have the opportunity to read the dissertation and shall participate in the final oral examination.

\* At the time of filing the dissertation with the Graduate Division, a certificate of unanimous consent, signed by the committee chairman, must accompany all approval pages carrying only three signatures.

**Qualifying Examinations.**—Before he is admitted to candidacy, the student must pass a series of qualifying examinations, both written and oral. The written examinations may be administered by the department of the student's field of study, but the oral examination must be conducted by his doctoral committee. The qualifying oral examination is never open to the public. The report on the qualifying examinations should be made on Form 3, which is available at the Graduate Division Office. The report form must be signed by the members of the doctoral committee.

**Advancement of Candidacy.**—Upon receipt of the report on the qualifying examinations an application form for advancement to candidacy (Form 4) will be sent to the candidate. The candidate must file his application, properly approved by the chairman of his doctoral committee, and the Dean of the Graduate Division will determine whether all formal requirements have been met.

A minimum period of resident study approximately equivalent to two semesters must intervene between the date of formal advancement to candidacy and the date of the final examination. The semester in which the student is advanced to candidacy will be counted as a full semester for the purpose of the residence requirement, provided advancement to candidacy occurs at or before midterm and the student is registered for 4 or more units.

**The Dissertation.**—A dissertation on a subject chosen by the candidate, bearing on his principal study and showing his ability to make independent investigation, is required of every candidate for the degree. In its preparation the candidate is guided by his doctoral committee, which also passes on the merits of the completed dissertation, and the approval of this committee, as well as that of the Graduate Council, is required before he is recommended for the degree. Special emphasis is laid on this requirement. The degree is never given merely for the faithful completion of a course of study, however extensive.

The dissertation must be typewritten† or printed. Specific instructions concerning the form may be obtained from the Dean of the Graduate Division.

**Final Examination.**—The candidate's final examination is conducted by his doctoral committee. The examination is oral and deals primarily with the relations of the dissertation to the general field in which its subject lies. Admission to the final examination may be restricted to committee members, members of the Academic Senate, and guests of equivalent academic rank from other institutions. The report on the final examination should be made on Form 5, which is available at the Graduate Division Office. The report form must be signed by the members of the doctoral committee.

## REQUIREMENTS FOR THE DEGREE OF DOCTOR OF EDUCATION

The requirements for the degree of Doctor of Education are similar in general outline to those of the degree of Doctor of Philosophy; for a detailed statement consult the ANNOUNCEMENT OF THE SCHOOL OF EDUCATION, LOS ANGELES.

## MULTIPLICATION OF BACHELOR'S DEGREES

In general, the University of California discourages candidacy for a second bachelor's degree, even if the proposed major is in a new field; at the same time, it recognizes that there are cases in which such a degree may legiti-

† If the thesis is typewritten, both the original and first carbon must be on bond paper of one hundred per cent rag content. Onionskin paper is not acceptable. If the thesis is prepared by Ozalid process, the candidate is required to submit to the Dean of the Graduate Division the original copy on vellum and two Ozalid copies. Candidates for degrees in engineering and oceanography are required to submit the original on vellum and three Ozalid copies.

mately be sought. *Students wishing to become candidates for a second bachelor's degree will apply to the Admissions Office for admission as undergraduate students.* Admission is subject to the approval of the Director of Admissions and of the dean of the appropriate college who shall also set requirements and make recommendations for the degree. No persons will be recommended for the bachelor's degree who have not satisfied substantially, at the time of procedure to the degree, the conditions imposed upon other undergraduate students at the University of California, including the completion of at least 24 units of course work in continuous residence.

## **SCHOOL OF SCIENCE AND ENGINEERING**

### **La Jolla Campus**

THE SCHOOL OF SCIENCE AND ENGINEERING, recently established on the La Jolla campus, will accept applications for admission in the year 1960-1961. Curricula leading to the degrees of Master of Science, and Doctor of Philosophy will be offered in several departments and others will be added as soon as possible.

General requirements for admission and for degrees will be the same as in other parts of the Graduate Division, Southern Section, and special requirements are listed in the departmental announcements.

The School of Science and Engineering will occupy two large buildings recently completed on the portion of the La Jolla campus also occupied by the Scripps Institution of Oceanography. Construction will begin within the next year of buildings to be occupied by the School on the upper part of the campus. The location is approximately 100 miles south of Los Angeles, by the shore of the Pacific Ocean. For the present, there are no housing facilities on the La Jolla campus but adequate living quarters may be found in the neighboring communities. With the expansion of the campus, however, more convenient student housing will be provided.

A limited amount of financial aid will be available to students, in the forms of fellowships, research assistantships, and loans.

Announcement of offerings in the fields of oceanography and marine biology, at the Scripps Institution of Oceanography, will be found, as heretofore, under the departmental heading of Oceanography.

Inquiries, and requests for application forms, may be directed to the Admissions Office, University of California, La Jolla, California.

# COURSES OF INSTRUCTION OFFERED AT LOS ANGELES, FALL AND SPRING SEMESTERS, 1960-1961

The course offerings listed in this bulletin are subject to  
change without notice

## CLASSIFICATION AND NUMBERING

COURSES ARE CLASSIFIED and numbered as follows:

*Undergraduate Courses.*—These are of two kinds, lower division and upper division.

A lower division course (numbered 1-99, or sometimes indicated by a letter if the subject is one usually given in high school) is open to freshmen and sophomores.

An upper division course (numbered 100-199) is advanced study in a field which has been pursued in the lower division, or elementary work in a subject of sufficient difficulty to require the maturity of upper division students.

*Graduate courses* (numbered 200-299) are open only to students accepted 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; adequate preparation will consist normally of the completion of at least 12 units of upper division work basic to the subject of the graduate course.

*Professional teacher-training courses* (numbered 300-399) are highly specialized courses dealing with methods of teaching, and are acceptable toward academic degrees only within the limitations prescribed by the various colleges or schools.

*Professional courses* (numbered 400-499), other than teacher-training courses, are acceptable toward academic degrees only within the limitations prescribed by the various colleges, schools, or Graduate Division, Southern Section.

*University Extension courses* bearing numbers prefixed by X, XB, XL, XR, XSB yield credit towards an academic degree. Such courses are rated, with respect to the general and specific requirements for the bachelor's 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.

## ABBREVIATIONS

In the following list of courses, the credit value of each course in semester units is indicated by a number in parentheses after the title. A unit of registration is one hour of the student's time at the University, weekly, during one semester, in lecture or recitation, together with the time necessary in preparation therefor; or a longer time in laboratory or other exercises not requiring preparation. The session in which the course is given is shown by Roman numerals: I for the fall semester, and II for the spring semester. A course given throughout the period September to June is designated Yr. The assign-

ment of hours is made in the SCHEDULE OF CLASSES to be obtained at the time of registration.

*Year Courses.*—A course designated by a double number (for example, Economics 1A-1B) is continued through two successive semesters, ordinarily beginning in the fall semester. Each half of the course constitutes a semester's work. The first half is prerequisite to the second unless there is an explicit statement to the contrary. The instructor makes a final report on the student's work at the end of each semester. Unless otherwise noted, the student may take the first half only and receive final credit for it.

## AGRICULTURE

Daniel G. Aldrich, Jr., Ph.D., *Professor of Soils, Berkeley (University Dean of Agriculture)*.

Claude B. Hutchison, M.S., LL.D., D.Agr. (hon.c), *Professor of Agriculture, Emeritus, Berkeley, and Dean, Emeritus*.

Robert W. Hodgson, M.S., *Professor of Subtropical Horticulture, Emeritus (Dean of the College of Agriculture, Emeritus)*.

*Letters and Science List.*—Agricultural Economics 120, 130, 177; all undergraduate courses in botany; Entomology 100, 105, 112A, 126; Floriculture and Ornamental Horticulture, 146A-146B; Horticultural Science 111; Irrigation and Soil Science 101, 108, 110A; and Plant Pathology 120. For regulations governing this list, see page 2.

*Upper Division Courses.*—All upper division courses announced by the College presuppose at least junior standing, through sophomore students may take certain upper division courses. Juniors and seniors in colleges other than Agriculture may elect such courses in the College of Agriculture as they are qualified to pursue.

*Curricula Offered.*—Two curricula are offered on the Los Angeles campus—Agricultural Business Management, and four majors in the Plant Science curriculum; namely, botany, floriculture and ornamental horticulture, general horticulture, and subtropical horticulture (for requirements see sections under the College of Agriculture and the departments of Botany, Horticultural Science, and Floriculture and Ornamental Horticulture). For requirements of the major in botany in the College of Letters and Science see sections under the College of Letters and Science and the Department of Botany.

*Preparation for Other Majors in the Plant Science Curriculum and for Other Curricula in the College of Agriculture.*—See the BULLETIN OF THE COLLEGE OF AGRICULTURE and consult the appropriate advisers for students in agriculture.

*Course Offerings.*—On the Los Angeles campus courses are offered by the following departments of the College of Agriculture:

Agricultural Economics (see below). Agricultural Engineering (see page 77). Botany (see page 111). Entomology (see page 218). Floriculture and Ornamental Horticulture (see page 220). Horticultural Science (see page 267). Irrigation and Soil Science (see page 271). Plant Pathology (see page 386).

## AGRICULTURAL ECONOMICS

(Department Office, 346 Physics-Biology Building)

———, *Professor of Agricultural Economics.*

George L. Mehren, Ph.D., *Professor of Agricultural Economics (Chairman of the Department), Berkeley.*

———, *Assistant Professor of Agricultural Economics.*

———, *Assistant Professor of Agricultural Economics.*

Completion of the curriculum in Agricultural Economics requires final two years of residence on the Berkeley or Davis campus. See the BULLETIN OF THE COLLEGE OF AGRICULTURE and consult the appropriate adviser.

*Agricultural Business Management.*—With the assistance of an advisory committee, the department administers the new curriculum in Agricultural Business Management (for details see pages 31–32).

#### UPPER DIVISION COURSES

##### \*117. Elements of Agricultural Management. (3) I.

Lecture and discussion, three hours. Prerequisite: junior standing.

Organization of production units including relationships with supply, service and marketing agencies. Economics of enterprise selection, size, intensity, and mechanization. Introduction to agricultural credit, labor management, and cost analysis. Agricultural applications of motion and time study. Individual student planning project.

##### \*117C. Elements of Agricultural Management, Laboratory. (1) I.

Laboratory, three hours. Prerequisite: course 117 (may be taken concurrently).

Intensive planning study of one or two enterprises to be selected on the basis of class interest and of availability of necessary information.

##### 120. Agricultural Policy. (3) II.

Lecture and discussion, three hours. Prerequisite: Economics 1A.

The evolution of agricultural policy in the United States. Historical and analytical treatment of principal farmer movements, legislative provisions for the betterment of agriculture, and current policy problems.

##### 130. Agricultural Marketing. (3) II.

Lecture and discussion, three hours. Prerequisite: Economics 1A. Three field trips to be arranged.

Survey of determinants of agricultural markets and trade. Organization and operation of agricultural markets. Cooperative marketing. Costs of marketing. Government in marketing. Changes in agricultural marketing and markets.

##### \*177. Water and Land Economics. (3) II.

Lectures and discussions, three hours. One field trip required. Prerequisite: Economics 1A–1B.

Economic principles in utilization of water and resources. Legal and institutional factors governing use. Problems in development, reclamation, conservation, and allocation. Project area studies.

##### 198. Special Courses. (1–3) I, II.

The Staff

Prerequisite: advanced standing and consent of the instructor.

##### 199. Special Studies. (2–4) I, II.

The Staff

Prerequisite: senior standing and consent of the instructor.

## AGRICULTURAL ENGINEERING

(Department Office, 2066 Engineering Building)

Russell L. Perry, M.E., *Professor of Agricultural Engineering (Vice-Chairman of the Department).*

*The Major.*—The major is offered by the Colleges of Engineering, Los Angeles and Berkeley, with the senior year given only on the Davis campus. See the ANNOUNCEMENT OF THE COLLEGES OF ENGINEERING and the BULLETIN OF THE COLLEGE OF AGRICULTURE.

\* Not to be given, 1960–1961.



## LOWER DIVISION COURSE

## 1. Introduction to Agricultural Machinery, Structures and Processing.

(2) II.

Mr. Perry

Lecture, two hours. Field trips may be scheduled.

Development of mechanization of farming. Principles of operation of farm machinery and power equipment. Functional and structural requirements of farm buildings. Unit operations of processing farm products.

## AIR SCIENCE

(Department Office, 141 Building 1M)

John W. Oberdorf, B.S., Colonel, U. S. Air Force, *Professor of Air Science (Chairman of the Department)*.

James D. Deatherage, Ed.D., Major, U. S. Air Force, *Associate Professor of Air Science*.

Mervin M. Taylor, B.S., Major, U. S. Air Force, *Associate Professor of Air Science*.

Eugene A. Gray, B.S., Captain, U. S. Air Force, *Assistant Professor of Air Science*.

James B. Lamb, B.S., Captain, U. S. Air Force, *Assistant Professor of Air Science*.

Thomas J. Phillips, B.S., 1st Lieutenant, U. S. Air Force, *Assistant Professor of Air Science*.

*Letters and Science List.*—All undergraduate courses in this department up to a total of 12 units are included in the Letters and Science List of Courses.

**NOTE:** This in no way prejudices counting additional Department of Air Science courses up to the 12 units of non-Letters and Science credit accepted toward the degree. For regulations governing this list, see page 2.

*College of Engineering.*—6 units of lower division credit and 9 units of upper division credit for Department of Air Science courses are accepted toward a degree in the College of Engineering.

## Air Force Reserve Officers' Training Corps

The mission of the Air Force R.O.T.C. is to develop in selected college students, through a program of instruction, those qualities of leadership and other attributes essential to their progressive advancement to positions of increasing responsibility as commissioned officers in the United States Air Force. The purpose and objectives of the program are:

1. To develop in cadets an understanding of the Air Force mission, organization, operations, problems and techniques.

2. To develop in cadets the ability to work with others on group activities and assume a leadership role when required.

3. To educate and prepare cadets to discharge the responsibilities required of them as Air Force officers.

**Basic Course—Foundations of Air Power.**

## LOWER DIVISION COURSES

The lower division or basic courses in either Military or Air Science are prescribed for all first- and second-year undergraduate male students who are citizens of the United States, have not reached their twenty-fourth birthday, and are physically fit for military service. Students other than those required to take R.O.T.C. training may be informally enrolled in Air Force R.O.T.C. on application. The professor of Air Science may, at his discretion, allow credit for portions or all of the Air Science I and II courses for equivalent training obtained from active service in one of the Armed Forces. The Air

Science basic course consists of two hours of formal academic instruction and one hour of Leadership and Command laboratory per week for the first two academic years. The Air Force loans a formally enrolled basic student, without charge, all the required Air Science textbooks, instructional equipment, and regulation Air Force uniforms. Air Force equipment is to be returned in good condition on completion of the course and students are held liable for loss or damage. Informally enrolled Air Force R.O.T.C. students may be supplied Air Force texts and training equipment if available, but not a uniform.

**1A. Foundations of Air Power—1. (1½) I.** The Staff  
Elements and potentials of air power; air vehicles and principles of flight. Leadership laboratory.

**1B. Foundations of Air Power—1. (1½) II.** The Staff  
Military instruments of national security; professional opportunities in the U.S.A.F. Leadership laboratory.

**21A. Foundations of Air Power—2. (1½) I.** The Staff  
Prerequisites: courses 1A and 1B.  
The evolution of aerial warfare; elements of aerial warfare to include targets, weapons, delivery systems, bases and facilities. Leadership laboratory.

**21B. Foundations of Air Power—2. (1½) II.** The Staff  
Prerequisites: courses 1A and 1B.  
General and operational considerations; peacetime and combat operations; operations in space.

**Advanced Course—Air Force Officer Development.**

#### UPPER DIVISION COURSES

Students who will successfully complete, or are credited with, the basic course may apply for enrollment in the advanced course of Air Science during their sophomore year. Selection of students for the advanced course is determined by academic standing on the campus, aptitude for officer training as determined by written examination, interest as demonstrated while enrolled in the basic course, physical examination, and Air Force quota allocations received by the University. Quotas are allotted to the University according to Air Force requirements at the time cadets will be placed on active duty. Those selected will then be required to contract with the Air Force for the officer training as pilots or navigators, for technical positions, or for general service. Each cadet will serve in the position for which he is trained on entering active duty.

The advanced Air Science program comprises four hours of formal academic instruction and one hour of leadership laboratory per week for two academic years. One hour of the four academic hours is taught by the department. Three hours are selected standard University courses. The advanced course students organize and operate an Air Force training activity. Advanced students are expected to devote a part of their study time, in addition to scheduled instruction, to planning, administering, and managing the cadet activities. The advanced course of Air Force R.O.T.C. includes a summer camp of four weeks' duration, normally following the Air Science III academic year.

A student, to qualify for formal enrollment in the advanced course, must:

1. Not have reached his twenty-fifth birthday at the time of admission, and be able to graduate with four semesters of academic work, and must graduate in two academic years.

2. Make application to appear before a board of officers appointed for selecting students for the advanced course. This board normally meets during March and November of each year.

3. Have completed satisfactorily a written aptitude-test battery.
4. Successfully pass a physical examination prescribed for Air Force officers.
5. Execute a written agreement with the Air Force to complete the Air Force R.O.T.C. advanced courses, to attend the prescribed summer training, and to accept a commission as an Air Force officer, if offered.

Advanced Air Force R.O.T.C. formally enrolled cadets may be enlisted members of the Air Force Reserve, and as such must retain their reserve status during the advanced course. They may not hold a commission in any of the Armed Forces in any capacity.

Applicants must be physically sound, well-informed, and of robust constitution. Applicants desiring to enter flying training as pilots must have 20-20 vision, uncorrected, in each eye. Normal color perception is required. Applicants for training as navigators must have uncorrected distant vision of better than 20-50 bilaterally, correctible to 20-20 bilaterally, and near vision of 20-20 bilaterally, uncorrected.

Advanced-course appointments are available to outstanding students who are unable to qualify physically or do not desire flying training. These applicants must have at least distant-vision of 20-200 or better bilaterally, correctible to 20-20 in one eye and 20-30 in the other.

Formally enrolled advanced course Air Force R.O.T.C. students are issued Air Force officer-type uniforms, which they may be permitted to retain upon acceptance of a commission. These students receive a government commutation of ration allowance amounting to \$81 per quarter during the two advanced academic years, in addition to a major portion of the required Air Science texts and training equipment. Students attending summer training are paid at the rate of \$78 a month, in addition to rations, quarters, and travel expenses.

#### JUNIOR YEAR

**131A. Air Force Commander, His Staff and the Air Base. (1) I.** The Staff  
Prerequisite: completion of basic course. Concurrent enrollment in Speech 1 or credit for successful completion of the course.

Air Force Commander, his staff, the air base staff study. Leadership laboratory.

**131B. The Military Justice System. (1) II.** The Staff  
Prerequisite: completion of the basic course. Concurrent enrollment in Psychology 181 or credit for successful completion of the course.

An introduction to military law. Leadership laboratory.

#### SUMMER TRAINING

Summer training is required of all Air Force Advanced Course Cadets before commissioning. Attendance at a summer training unit is normally accomplished during the summer months between the junior and senior years of college.

**Summer Training. (3) 232 hours of four weeks' duration.**

Prerequisite: courses 131A and 131B. Summer Training Unit Staff  
Processing in and out; physical training; individual weapons; familiarization flying; field exercises; United States Air Force Base experience.

This course is held at selected Air Force Bases.

#### SENIOR YEAR

**141A. Weather and Navigation. (1) I.** The Staff  
Prerequisite: Courses 131A and 131B. Concurrent enrollment in Political Science 127 or credit for satisfactory completion of the course.

An introduction to flying-type Air Force duty. Leadership training.

**141B. Briefing for Commissioned Service. (1) I.**

The Staff

Prerequisites: Courses 131A and 131B.

Briefing for commissioned service. Leadership laboratory. Concurrent enrollment in Geography 181 or credit for satisfactory completion of the course.

**RELATED COURSES IN OTHER DEPARTMENTS****Speech 1. Introduction to Speech. (3)****Psychology 181. Applied Human Relations. (3)****Political Science 127. International Relations. (3)****Geography 181. Political Geography. (3)**

These courses are required of all cadets before commissioning. It is recommended that they be taken during the junior and senior years in the order shown.

**ANATOMY**

(Department Office, 13-276 Medical Center)

**W. Ross Adey, M.D., Professor of Anatomy and Physiology.****John D. French, M.D., Professor of Anatomy and Director of the Brain Research Institute.****John D. Green, M.D., Professor of Anatomy.****H. W. Magoun, Ph.D., Professor of Anatomy and Lecturer in Medical History.****C. Donald O'Malley, Ph.D., Professor of Medical History.****Daniel C. Pease, Ph.D., Professor of Anatomy.****Charles H. Sawyer, Ph.D., Professor of Anatomy (Chairman of the Department).****Robert D. Tschirgi, M.D., Ph.D., Professor of Anatomy and Physiology.****Carmine D. Clemente, Ph.D., Associate Professor of Anatomy.****Earl Eldred, M.D., Associate Professor of Anatomy.****Richard E. Ottoman, M.D., Associate Professor of Radiology and Anatomy.****Arnold B. Scheibel, M.D., Associate Professor of Anatomy and Psychiatry.****Charles A. Barraclough, Ph.D., Assistant Professor of Anatomy.****Richard C. Greulich, Ph.D., Assistant Professor of Anatomy.****David S. Maxwell, Ph.D., Assistant Professor of Anatomy.****Richard W. Young, Ph.D., Assistant Professor of Anatomy.****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 pre-medical curriculum. Other degrees may be acceptable for those students specializing in medical illustration. 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 to full graduate status.

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 graduate student undertaking to enter the profession of anatomy should apply himself directly to attaining the Ph.D. degree. The Department of Anatomy offers the Master of Science degree only for the restricted purposes of individuals whose major interests lie in allied fields such as medical

illustration, paramedical subjects, and the postgraduate programs of doctors of medicine.

- A. Candidates for the master's degree may elect to follow either the thesis or examination plan. Under either plan a candidate may count no more than 6 units of Anatomy 290 (research) toward the required credit-unit total.
- B. Courses required.
- Two of these courses:  
Anatomy 101, Microscopic Anatomy (5 units)  
Anatomy-Physiology 103, Basic Neurology (6)  
Anatomy 207, Gross Anatomy (8)
  - One departmental seminar course.
- C. A candidate taking the master's degree on the examination plan must pass a written examination upon: (1) general aspects of anatomy; (2) a restricted field of anatomy or kindred subject matter. These examinations cannot be substituted for the departmental examination required of the Ph.D. candidate.
- D. No foreign language is required.

*Requirements for the Doctor of Philosophy Degree.*

- A. These courses are required of all doctoral candidates in anatomy:  
Anatomy 101, Microscopic Anatomy (5 units)  
Anatomy-Physiology 103, Basic Neurology (6)  
Anatomy 207, Gross Anatomy (8)  
Anatomy 290, Research  
Physiology 101, Mammalian Physiology (8)
- Participation in at least two different graduate seminar courses of the Department of Anatomy.  
Courses selected by the student and his adviser as necessary to his program.
- B. Further requirements:
- A reading knowledge of (a) German and (b) French or Russian, unless it can be demonstrated that another language or another field of study substituted for one of the languages would be more valuable for the program.
  - Successful completion of oral qualifying examinations.
  - Presentation and defense of a thesis.
  - All doctoral candidates are expected to gain teaching experience by assisting in one of the major anatomy courses for a minimum of one semester.
  - The graduate student may upon option of the department be required to take English 106S (3 units), Advanced Composition for Majors in the Physical and Life Sciences.

UPPER DIVISION COURSES

101. Microscopic Anatomy. (5) I.

Mr. Pease, Mr. Green, Mr. Greulich, Mr. Young

Prerequisite: admission to School of Medicine or consent of the instructor.  
Microscopic study of the tissues and organs of the human body.

103. Basic Neurology. (3) II.

Mr. Magoun, Mr. Adey, Mr. Tschirgi, Mr. Scheibel

Prerequisite: admission to School of Medicine or consent of the instructor.  
Must be taken concurrently with Physiology 103.

Lectures, conferences, demonstrations, and laboratory procedures necessary to an understanding of the function of the human nervous system.

## GRADUATE COURSES

- 207. Gross Anatomy.** (8) I. Mr. Sawyer, Mr. Clemente, Mr. Barraclough, Mr. Maxwell  
Prerequisite: consent of the instructor.  
Lectures and dissection of the human body.
- 240. History of Medicine.** (1) II. Mr. O'Malley in charge  
Survey of the development of scientific and medical thought from ancient times to the present.
- 241. History of the Clinical Sciences.** (1) II. Mr. O'Malley in charge  
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.
- 250. History of the Biological Sciences.** (1) I, II. Mr. O'Malley in charge  
Discussions of current outlook, methods, and ideas in the biological sciences in the light of the general history of these sciences.
- 251. Seminar in Microscopic Anatomy.** (1-2) I, II. Mr. Pease, Mr. Green  
Prerequisite: consent of the instructor.
- 253. Seminar in Experimental Neurology.** (1-2) I, II. Mr. Magoun in charge  
Prerequisite: consent of the instructor
- 254. Research Seminar in Mental Health.** (1) I, II. The Staff  
Prerequisite: Anatomy-Physiology 103 or the equivalent.  
Interdisciplinary seminars by senior research workers and staff dealing with problems related to mental health.
- 255. Seminar in Endocrinology.** (1-2) I, II. Mr. Sawyer, Mr. Barraclough  
Prerequisite: consent of the instructor.
- 256. Survey of the Basic Neurological Sciences.** (2) I, II. The Staff  
Prerequisite: Anatomy-Physiology 103 or the equivalent.  
Lectures and laboratory exercises dealing with the most recent advances in the study of the central and peripheral nervous system.
- 290. Research.** (1-6) I, II. The Staff

## ANTHROPOLOGY AND SOCIOLOGY

(Department Office, 360 Haines Hall)

- Ralph L. Beals, Ph.D., *Professor of Anthropology and Sociology.*  
Joseph B. Birdsell, Ph.D., *Professor of Anthropology.*  
Donald B. Cressey, Ph.D., *Professor of Sociology (Chairman of the Department).*  
Walter B. Goldschmidt, Ph.D., *Professor of Anthropology and Sociology.*  
Harry Hoijer, Ph.D., *Professor of Anthropology.*  
Svend Riemer, Ph.D., *Professor of Sociology.*  
Ralph H. Turner, Ph.D., *Professor of Sociology and Anthropology.*  
Constantine Panunzio, Ph.D., *Professor of Sociology, Emeritus.*  
Eshref Shevky, Ph.D., *Professor of Sociology and Anthropology, Emeritus.*  
<sup>1</sup>Wendell Bell, Ph.D., *Associate Professor of Sociology and Anthropology.*  
<sup>1</sup>Melville Dalton, Ph.D., *Associate Professor of Sociology.*  
William A. Lessa, Ph.D., *Associate Professor of Anthropology.*  
Clement W. Meighan, Ph.D., *Associate Professor of Anthropology.*  
Richard T. Morris, Ph.D., *Associate Professor of Sociology.*

<sup>1</sup> Sabbatical leave in residence, fall semester, 1960-1961.

\*William S. Robinson, Ph.D., *Associate Professor of Sociology and Anthropology.*

Melvin Seeman, Ph.D., *Associate Professor of Sociology.*

Charles R. Wright, Ph.D., *Associate Professor of Sociology.*

———, *Associate Professor of Sociology.*

William O. Bright, Ph.D., *Assistant Professor of Anthropology.*

Pedro Carrasco, Ph.D., *Assistant Professor of Anthropology.*

Johannes Wilbert, Ph.D., *Research Associate in Anthropology.*

Oscar Grusky, Ph.D., *Assistant Professor of Sociology.*

Joel M. Halpern, Ph.D., *Assistant Professor of Anthropology.*

John T. Hitchcock, Ph.D., *Assistant Professor of Anthropology.*

Raymond J. Murphy, Ph.D., *Assistant Professor of Sociology.*

Henry B. Nicholson, Ph.D., *Assistant Professor of Anthropology.*

Wendell Oswald, Ph.D., *Assistant Professor of Anthropology.*

Councill S. Taylor, Ph.D., *Assistant Professor of Anthropology.*

———, *Assistant Professor of Sociology.*

John E. Horton, Ph.D., *Instructor in Sociology.*

Jack H. Prost, M.A., *Acting Instructor in Anthropology.*

John Takeshita, M.A., *Acting Instructor in Sociology.*



Ruth Riemer Ellersieck, Ph.D., *Research Associate in Sociology.*

Harold Garfinkel, Ph.D., *Assistant Professor of Sociology in the Department of Psychiatry.*

C. Wayne Gordon, Ph.D., *Associate Professor of Sociology in the School of Education.*

Leo G. Reeder, Ph.D., *Lecturer in Sociology in the School of Public Health.*

Eleanor Bernert Sheldon, Ph.D., *Research Associate in Sociology.*

Roy T. Simmons, M.A., *Research Associate in Anthropology.*

Claude Warren, M.A., *Graduate Research Archaeologist I.*

John Greenway, Ph.D., *Visiting Assistant Professor of Anthropology.*

*Letters and Science List.*—All undergraduate courses in anthropology and sociology are included in the Letters and Science List of Courses. For regulations concerning this list, see page 2.

#### FIELD OF CONCENTRATION IN ANTHROPOLOGY

*Preparation.*—Required: Anthropology 1, 2, Sociology 1 or 101, 12, 18 or an equivalent approved by the Department; any 6 units chosen from Psychology 1A-1B, Geography 1-2 or 101, History 1A-1B, 8A-8B, Life Science 1A-1B, Zoology 1A-1B, 15, Geology 2, 3, Oriental Languages 32, 42, Spanish 42, 44; and fulfillment of the general requirements of the University and the College of Letters and Science.

*The Field of Concentration.*—Thirty upper division units distributed as follows:

1. Anthropology 102, 103, 125, and 9 additional units in anthropology. Linguistics 170 may be used to satisfy 3 units of this requirement.

2. Six units of upper division sociology. Any course except 101, 142, 185.

3. Six additional units chosen from one of the following fields: Sociology; Linguistics 170; Psychology 120, 126, 137, 139, 143, 145A-145B, 147; Folklore 101, 105, 190; any course in regional or cultural geography; Geology 107, 117; any upper division history course in regional history; any upper division course in Near Eastern languages or Oriental languages; any political science course in Group IV (comparative government); Paleontology 101, 111, 137; Zoology 100A-100B, 106.

\* In residence spring semester only, 1960-1961.

Upper division courses in sociology will apply toward the requirement that at least 12 upper division units shall be outside a single department.

The student must also meet the requirements of the University and the College of Letters and Science for graduation.

**FIELD OF CONCENTRATION IN SOCIOLOGY**

*Preparation.*—Required: Sociology 1 or 101, 12 and 18, Anthropology 1 and 2, Psychology 1A or 101, and fulfillment of the general requirements of the University and the College of Letters and Science. The student should consult a detailed statement of requirements and recommendations available at the departmental office. Each student must apply to the department for assignment to an adviser.

*The Field of Concentration.*—Thirty upper division units distributed as follows:

1. Eighteen upper division units in sociology, not including courses 101 and 142. Students planning graduate study or a professional career in sociology should include course 117.

2. Six units chosen from anthropology.

3. Six additional upper division units selected with advance written approval of the adviser from one of the following groups: anthropology; economics; folklore (may be combined with 3 units of history or 3 additional units of anthropology); geography; history; philosophy; political science; psychology.

Upper division courses in anthropology will apply toward the requirement that at least 12 upper division units shall be outside a single department.

*Candidates for the General Secondary Credential.*—The undergraduate requirements for a teaching major in social science may be fulfilled by completing the preparation as outlined in the ANNOUNCEMENT OF THE SCHOOL OF EDUCATION, and items 1 and 2 for the field of concentration in anthropology or items 1 and 2 for the field of concentration in sociology. Six upper division units in history selected with the approval of the adviser may be substituted for one of the lower division year courses in history and may also apply on the field of concentration.

*Graduate Work.*—Work leading to the M.A. and Ph.D. degrees is offered in both anthropology and sociology. An interdisciplinary program leading to a combined degree may also be arranged. For details of requirements for the degrees consult ANNOUNCEMENT OF THE GRADUATE DIVISION, SOUTHERN SECTION and a departmental adviser.

*Social Welfare.*—Students whose primary interest is in social welfare may either fulfill the requirements of the field of concentration in sociology or of the curriculum in presocial welfare (see page 17). Students planning on graduate training in social welfare at this University should consult the ANNOUNCEMENT OF THE SCHOOL OF SOCIAL WELFARE (see page 21).

**ANTHROPOLOGY AND SOCIOLOGY**

**GRADUATE COURSE**

274A-274B. Departmental Seminar. (1-1) Yr.

The Staff

Prerequisite: consent of the instructor.

**ANTHROPOLOGY**

**LOWER DIVISION COURSES**

1. General Anthropology. (3) I, II.

The Staff

Human biology and physical anthropology; the relation of man and the animals; the origin and antiquity of man; fossil man; anthropometry; the



criteria of race and racial classification; current racial theories; race problems.

**2. General Anthropology. (3) I, II.**

The Staff

Lecture, three hours; quiz, one hour. May be taken without Anthropology I.

The nature of culture; culture growth and history; a survey of the range of cultural phenomena, including material culture, social organization, religion, language, and other topics.

**3. Introduction to Archaeology: Prehistory and Culture Growth. (3) I.**

Mr. Meighan

Development of archaeology as an anthropological study; objectives and methods of modern archaeology; important archaeological discoveries throughout the world; contributions of archaeology toward understanding development of human culture.

**UPPER DIVISION COURSES**

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

**102. Ethnology. (3) I, II.**

Mr. Carrasco, Mr. Hitchcock, Mr. Taylor

Major theories of culture; survey of principal culture types and their distribution; discussion of ethnological problems.

**103. Culture History. (3) I.**

Mr. Nicholson

The birth of civilization as revealed by archaeology, with concentration on developments in the Near East and Asia since the Neolithic period; theories of cultural development based on these discoveries.

**104. Old World Archaeology. (3) II.**

Mr. Meighan

Early archaeological cultures of the Old World: Asia, Africa, and Europe. Primarily concentrated on the period from the Upper Paleolithic to the Neolithic.

**105. American Indians North of Mexico. (3) I, II.**

Mr. Oswalt

An introductory survey of the Indians of North America, north of Mexico; origins, languages, civilizations, and history.

**106. Archaeology of North America. (3) I, II.**

Mr. Meighan, Mr. Nicholson

Prehistory of North American Indians; prehistoric culture areas; relations with historic Indians.

**107. Indians of South America. (3) II.**

Mr. Oswalt

An introductory survey of the Indians of South America; origins, languages, civilizations and history.

**110. Language and Culture. (3) II.**

Mr. Bright, Mr. Hoijer

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

**\*123. Nomadic Societies. (3) II.**

Mr. Shevky

Prerequisite: upper division standing and consent of the instructor.

Pastoralism and tribal organization, with special reference to Central Asia and the Middle East. Relations of pastoral nomadic and peasant agricultural peoples. Conquest, sedentarization, and the transformation of organization.

**124. Comparative Religion. (3) I, II.**

Mr. Lessa

The origins, elements, forms, and symbolism of religion; the role of religion in society.

\* Not to be given, 1960-1961.

**125. Comparative Society. (3) I, II.**

Mr. Goldschmidt

Prerequisite: upper division standing and Anthropology 2, or Sociology 1 or 101, or consent of the Instructor.

The analytical study of organized social life in societies of varying degrees of complexity; group formation and function; the relation of value systems to organized interpersonal behavior; systems of status; economic institutions and the role of property; the problem of control and authority in society.

**126. Invention and Technology. (3) I.**

Mr. Meighan

Prerequisite: upper division standing.

A survey of the technologies of primitive peoples. Technological progress; the characteristics of invention; factors in the adoption of inventions.

**127. Primitive Art. (3) II.**

Mr. Taylor

Development and change of conventions in the visual art forms of various nonliterate peoples; effects of craftsmanship, materials, and local culture on primitive art.

**128. Kinship and Social Organization. (3) I, II.** Mr. Carrasco, Mr. Hitchcock

Kinship systems in primitive society and their significance in the organization of social life. Theories of kinship, marriage regulations, and kinship role patterns.

**129. Primitive Economies. (3) II.**

Mr. Carrasco

Economic life of primitive peoples and precapitalistic civilizations, with emphasis on the integration of the economy with technology and with social and political institutions.

**137. Indians of California. (3) I, II.**

Mr. Bright, Mr. Oswalt

Native peoples of California; their origins, languages, and culture.

**139. Peoples of Africa. (3) I.**

Mr. Taylor

The native cultures of Africa south of the Sahara; cultural history and diversity. Problems in cultural adjustment in modern Africa.

**140. Ancient Civilizations of Middle America. (3) I.**

Mr. Nicholson

Pre-Spanish culture history of Middle America as revealed by archaeology and early Spanish writings: Aztecs, Toltecs, Maya and their predecessors, with emphasis on social and political systems, economic patterns, art, architecture, and intellectual achievements.

**141. Indians of Modern Mexico. (3) I.**

Mr. Beals, Mr. Carrasco

The contemporary Indian groups in Mexico; the present cultures and their derivations; the problem of the mixed culture; Indian influences on modern Mexican culture.

**142. Ancient Civilizations of Andean South America. (3) II.** Mr. Nicholson

Pre-Spanish culture history of Andean South America as revealed by archaeology and early Spanish writings, with special emphasis on the Inca and their predecessors in Peru: social and political systems, economic patterns, religion, art, architecture, and intellectual achievements.

**144. Arctic Cultures. (3) I.**

Mr. Oswalt

A survey of arctic peoples, their prehistory, aboriginal life, and current cultural status.

**145. Peoples of Eastern Europe and the Soviet Union. (3) II.** Mr. Halpern

Social organization, religion, class structure and other topics dealing with the various ethnic groups in Eastern Europe and the U.S.S.R. both past and present. Agricultural, nomadic and urban societies in this area, including central Asia, will be studied.

- \*146. Peasant and Tribal Cultures of India. (3) I.** Mr. Hitchcock  
Indian civilization as revealed in the archaeological record and in peasant and tribal communities. Main issues in contemporary research.
- 147. Peoples of the Pacific. (3) I, II.** Mr. Lessa  
The aboriginal civilizations of Australia, Malaysia, Melanesia, Micronesia, and Polynesia in prehistoric and modern times; changes arising from European contact and colonization.
- 148. Cultures of Southeast Asia. (3) I.** Mr. Halpern  
Survey of civilizations and tribal peoples of the area between India and China. Emphasis on cultural interrelationships in the framework of both historical and contemporary problems.
- 150. Physical Anthropology. (3) II.** Mr. Prost  
Lecture, three hours; laboratory, two hours. Prerequisite: consent of the instructor.  
A general survey of human osteology in terms of racial variations. The methodology of measurements and observations will require laboratory work.
- 151. The Genetics of Race. (4) I.** Mr. Birdsell  
Prerequisite: Anthropology 1.  
A general survey of the techniques and problems of racial classification. Emphasis is on the genetic approach; and the methods of modern classical genetics and population genetics are applied to human evolution.
- 155. Fossil Man and His Culture. (3) I.** Mr. Prost  
The comparative anatomy of fossil man as examined against a framework of the available cultural remains and the ethnological aspects of the environment. The Paleolithic cultures of the Old World are reviewed as a part of the content.
- 162. History of Anthropology. (3) I, II.** Mr. Beals, Mr. Hitchcock  
Prerequisite: Anthropology 1 and 2, and senior standing. Prerequisite to graduate work in the theory and method of anthropology.  
A systematic survey of the development of anthropology as a scientific field, especially designed for majors in anthropology and sociology.
- 165. Acculturation and Applied Anthropology. (3) II.** Mr. Halpern  
Prerequisite: upper division standing and Anthropology 2 or Sociology 1 or 101. Recommended: Anthropology 125.  
The impact of Western civilization upon native societies; characteristic social and cultural adjustments to the impact; community disintegration and reintegration; anthropological problems in colonial and native administration.
- 195. Methods and Techniques of Field Archaeology. (2) II.** Mr. Meighan  
Lecture, one hour; laboratory, three hours. During part of the semester Saturday field work is substituted. Prerequisite: consent of the instructor.  
The organization of archaeological surveys and excavations, aims and working methods. Archaeological mapping, photography, and recording.
- 196. Methods and Techniques of Archaeology. (2) I.** Mr. Meighan  
Lecture, one hour; laboratory, three hours. Prerequisite: consent of the instructor.  
The interpretation and presentation of archaeological finds. Chronological sequencing; stylistic and statistical analysis; documentation, publication. Techniques of preservation, restoration and illustration of artifacts.
- 199. Special Studies in Anthropology. (1-4) I, II.** Mr. Carrasco in charge  
Prerequisite: senior standing and consent of the instructor.

\* Not to be given, 1960-1961.

## GRADUATE COURSES

250. **Theory and Method of Anthropology.** (2) I. The Staff
- 251A-251B. **Myth and Ritual.** (2-2) Yr. Mr. Lessa
- 256A-256B. **Social Anthropology.** (2-2) Yr. Mr. Goldschmidt
- 257A-257B. **Problems in Cultural Anthropology.** (2-2) Yr.  
Mr. Beals, Mr. Hitchcock
- 265A-265B. **Cultures of Latin America.** (2-2) Yr. Mr. Carrasco
- 266A-266B. **African Cultures.** (2-2) Yr. Mr. Taylor
- 267A-267B. **Seminar in Directed Culture Change.** (2-2) Yr.  
Mr. Halpern, Mr. Murphy
- 269A-269B. **Problems in Archaeology.** (2-2) Yr. Mr. Meighan
- 273A-273B. **Human Population Genetics.** (2-2) Yr. Mr. Birdsell
276. **Man and His Ecological Relations.** (2) II. Mr. Birdsell
299. **Research in Anthropology.** (1-6) I, II. Mr. Goldschmidt in charge
400. **Museum Methods.** (2) II. Mr. Meighan in charge  
Lecture, one hour; laboratory, two hours. Prerequisite: consent of the instructor. Not counted toward the major in anthropology.  
Care and recording of museum specimens; design and installation of museum exhibits; use of photographs, dioramas, and similar displays. Field trips to local museums and experience in processing and installation of museum exhibits.

## RELATED COURSES IN ANOTHER DEPARTMENT (see page 282)

- Linguistics and Philology 170. **Introduction to Linguistics.** (3) I. Mr. Hoijer

## SOCIOLOGY

## LOWER DIVISION COURSES

1. **Introductory Sociology.** (3) I, II. The Staff  
Survey of the characteristics of social life, the processes of social interaction, and the tools of sociological investigation.
2. **American Social Problems.** (3) I, II. The Staff  
Identification and analysis of contemporary social problems in the United States; an attempt to establish criteria by which the educated layman can judge the probable effectiveness of various schemes for social betterment.
12. **Sociological Analysis.** (3) I, II. The Staff  
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.
18. **Interpretation of Quantitative Data.** (3) I, II. The Staff  
Prerequisite: course 1 or 101, or may be taken concurrently. Satisfies the statistics requirement for the major in sociology and anthropology.  
The interpretation of statistical measures, tables, and graphs of the types most frequently encountered in sociological literature.

## 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. (3) I, II.** The Staff

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.

**117. Introduction to Sociological Research Methods. (3) II.** Mr. Robinson

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.

**118. Intermediate Quantitative Methods. (3) I.** Mr. Robinson

Prerequisite: courses 12 and 117, and Sociology 18, Statistics 1, or some other course in statistics approved by the department. Required for the M.A. in sociology.

A brief systematic course in the logic and practice of statistical methods of use to sociologists.

**119. Advanced Quantitative Methods. (3) II.** Mr. Robinson

Prerequisite: course 118. Required for the Ph.D. in sociology.

A continuation and elaboration of course 118. Designed for students with professional objectives.

**120. Social Disorganization. (3) I, II.** Mr. Grusky, Mr. Takeshita

An examination of various symptoms of social disorganization, such as individual maladjustment, and a general survey of the processes through which societies become disorganized.

**122. Social Change. (3) II.** Mr. Murphy

A study of patterns of social change, resistance to change, and change-producing agencies and processes.

**124. Collective Behavior. (3) II.** Mr. Turner

Characteristics of crowds, mobs, publics, social movements, and revolutions, their relation to social unrest and their role in developing and changing social organization.

**126. Culture and Personality. (3) I.** Mr. Turner

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.

**128. Formal Organizations. (3) I.** Mr. Dalton, Mr. Grusky

Institutional analysis of administrative structures and voluntary associations; informal organization, ideology, bureaucracy, decision-making, and morale.

**129. Mass Communications. (3) I.** Mr. Wright

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.

**131. Industry and Society. (3) I, II.** Mr. Dalton

Prerequisite: upper division standing.

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 social systems; the interplay between official and unofficial action, and between industry and community.

**135. Social Class in America. (3) I.** Mr. Murphy

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.

**142. Marriage and the Family. (3) I, II.** Mr. Riemer, Mr. Turner

Prerequisite: upper division standing. May not be counted toward the field of concentration in sociology. No credit will be given for this course if credit has been received for Sociology 162.

The marriage-family system; development, modern functions, characteristics, and maladjustments.

**143. Urban Sociology. (3) I, II.** Mr. Riemer, Mr. Wright

Urban and rural cultures; the characteristics of cities in Western civilization, with emphasis on the American metropolis.

**144. Rural Society. (3) II.** Mr. Shevky

The characteristics of rural social systems in contrast to urban; the nature of folk societies; development of major agricultural traditions in America, with emphasis upon the effects of industrialization of rural life; problems in policy and administration of agriculture in modern America.

**\*145. Community and Ecology. (3) I.** Mr. Bell

Comparative studies of community structure and organization. Application of the ecologic, sociometric and similar techniques to community research.

**147. Social Aspects of Housing and City Planning. (3) II.** Mr. Riemer

Prerequisite: course 143.

Implications for family and urban social relationships of housing floor plans and plans for neighborhoods and cities.

**150. Latin-American Societies. (3) II.** Mr. Beals

Prerequisite: upper division standing.

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.

**161. Group Processes. (3) I.** Mr. Morris

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.

**162. Process and Socialization in the Family. (3) I.** Mr. Turner

No credit will be given for this course if credit has been received for Sociology 142.

Examination of the processes of interaction, decision-making, role differentiation, conflict, integration, and socialization within the family and their interrelations with society.

**166. Population and Society in the Middle East. (3) I.** Mr. Shevky

Prerequisite: upper division standing and consent of instructor.

A survey of the Middle Eastern societies; their historic and environmental bases; the contemporary demographic and cultural situation.

\* Not to be given, 1960-1961.

- 167. Comparative Sociology of the Middle East.** (3) II. Mr. Shevky  
Prerequisite: upper division standing and consent of 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.
- \*170. Backgrounds of Sociological Thought.** (3) I. Mr. Dalton  
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.
- 171. Development of Sociological Theory.** (3) I. Mr. Horton, Mr. Morris  
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.
- 172. Contemporary Sociological Theory.** (3) II. Mr. Morris  
A critical examination of significant theoretical formulations, 1920 to the present; an analysis of the relation between theoretical development and current research emphases.
- 180. Sociology of Education.** (3) I, II. Mr. Gordon  
(Same as Education 108.)  
Studies 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, formal and informal groups, school culture, roles of teachers, students, and administrators.
- 181. Sociopathic Behavior.** (3) I. Mr. Garfinkel  
Prerequisite: course 120.  
Various types of sociopathic behavior analyzed from the standpoint of social isolation and social control.
- 182. Criminology.** (3) I. Mr. Cressey  
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.
- 183. Social Control.** (3) I. Mr. Grusky  
Theories of social control; consideration of the agencies and means involved in the control of social deviation.
- 184. Control of Crime.** (3) II. Mr. Cressey  
Theories of punishment; methods of dealing with convicts; social organization of police, courts, prisons, probation, and parole.
- 185. The Field of Social Welfare.** (3) II. Mr. Riemer  
Prerequisite: course 120.  
A sociological analysis of social work as an institution. Attention given to agency organization and functions.
- 186. Population Problems.** (3) I. Mr. Takeshita  
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.

\* Not to be given, 1960-1961.

**187. Political Sociology. (3) II.**

Mr. Bell

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.

**189. Ethnic and Status Groups. (3) I, II.**

Mr. Seeman

A study in social stratification; the statuses of the chief minorities in the continental United States with comparisons drawn from Jamaica, Hawaii, and other areas; the development, operation, and effects of such policies as selective immigration, assimilationism, ethnic pluralism, and racism.

**190. American Ethnic Problems. (3) II.**

A topical study, especially of Southern California. The characteristics of the "visible" ethnic groups, e.g., Japanese, Mexican, and Negro; their organization, acculturation, and differentiation. The operation of segregation, discrimination, and programs of counteraction.

**199. Special Studies in Sociology. (1-4) I, II.**

Mr. Bell in charge

Prerequisite: senior standing and consent of the instructor.

## GRADUATE COURSES

**\*214. The Measurement of Sociological Variables. (2) II.**

Prerequisite: courses 117 and 118.

Theory and technique of measurement in sociology. Construction, application, and interpretation of measurement techniques, especially the forms of scaling.

**216. Questionnaire and Schedule Construction. (2) I.**

Mr. Wright

Prerequisite: graduate standing and consent of the instructor.

Procedures, methods, and problems in the collection of data by means of interview and questionnaire.

**217. Interviewing and Interviewer Training. (2) I.**

Mr. Morris

Prerequisite: graduate standing and consent of the instructor.

Problems and methods of sociological interviewing; development of interview skills; the selection and training of interviewers; the administration of interview studies.

**\*218. Sample Survey Methods in Sociological Research. (2) I.**

Prerequisite: courses 117 and 118.

Mr. Robinson

Principles and procedures of the sample survey from design through administration and analysis; relation of the survey to other methods of data collection; sampling procedures, practice in punch-card processing of actual surveys.

**\*219. Factor Analysis as a Sociological Research Tool. (2) I.**

Prerequisite: courses 117 and 118.

Mr. Robinson

The principles of factor analysis and its application to sociological problems; use of traditional R-technique in analysis of complexes of statistical variables and in testing conceptual hypotheses in sociology; Q-technique and the determination of types; recent developments.

**224. Problems in Social Psychology. (2) II.**

Mr. Grusky

**226. Leadership and Social Structure. (2) I.**

Mr. Bell

A comparative analysis of types of leadership in different social structures with particular attention to the recruitment and career patterns of leaders.

\* Not to be given, 1960-1961.



229. Selected Problems in Communications. (2) II.	Mr. Wright
236. Social Change in the Middle East. (2) I.	Mr. Shevky
237. Social Stratification in the Middle East. (2) II.	Mr. Shevky
250. Methodological Problems. (2) I.	Mr. Seeman
251. Social Maladjustment. (2) II.	Mr. Garfinkel
252. Criminology. (2) I.	Mr. Cressey
253. Quantitative Methods in Sociology. (2) II.	Mr. Robinson
254. Penology. (2) II.	Mr. Cressey
*255A-255B. Systematic Sociological Theory. (2-2) Yr.	Mr. Morris
*256A-256B. Demography. (2-2) Yr.	————
*258. Marriage and the Family. (2) II.	Mr. Riemer
260. Industry and Society. (2) II.	Mr. Dalton
261A*-261B. Ethnic Minorities. (2-2) Yr.	Mr. Seeman
*262. Selected Problems in Urban Sociology. (2) II.	Mr. Bell
263. Social Stratification. (2) II.	Mr. Morris
264. Professions in the American Society. (2) II.	Mr. Murphy
269. Collective Behavior. (2) II.	Mr. Turner
270. Selected Problems in Socialization. (2) I.	Mr. Turner
299A. Research in Sociology for M.A. Degree Candidates. (1-3) I, II.	Mr. Seeman in charge
299B. Research in Sociology for Ph.D. Candidates. (1-6) I, II.	Mr. Turner in charge

## ARABIC

For courses in Arabic, see under Department of Near Eastern Languages.

## ARCHAEOLOGY

For courses in archaeology, see under Departments of Anthropology and Sociology, Classics, and Oriental Languages.

## ART

(Department Office, 1118 Dickson Art Center)

Laura F. Andreson, M.A., *Professor of Art.*

Annita Delano, *Professor of Art.*

Henry Dreyfuss, *Visiting Professor of Art.*

Lester D. Longman, Ph.D., L.H.D., *Professor of Art (Chairman of the Department).*

Carl D. Sheppard, Jr., Ph.D., *Professor of Art.*

\* Not to be given, 1960-1961.

- <sup>1</sup> Frederick S. Wight, M.A., *Professor of Art and Director of Art Galleries.*  
 Karl E. With, Ph.D., *Professor of Art.*  
 Robert S. Hilpert, M.A., *Professor of Art, Emeritus.*  
 Louise Pinkney Sooy, *Professor of Art, Emeritus.*  
 S. Macdonald Wright, *Professor of Art, Emeritus.*  
 Karl M. Birkmeyer, Ph.D., *Associate Professor of Art.*  
 William J. Brice, *Associate Professor of Art.*  
 \* Dorothy W. Brown, A.B., *Associate Professor of Art.*  
 Warren G. Carter, A.B., *Associate Professor of Art.*  
 † Archine V. Fetty, M.A., *Associate Professor of Art.*  
 Thomas Jennings, M.A., *Associate Professor of Art.*  
 † John Paul Jones, M.F.A., *Associate Professor of Art.*  
 Gordon M. Nunes, M.A., *Associate Professor of Art (Vice-Chairman of the Department).*  
 Josephine P. Reys, M.A., *Associate Professor of Art.*  
 Jan Stussy, M.F.A., *Associate Professor of Art.*  
 Helen Clark Chandler, *Associate Professor of Fine Arts, Emeritus.*  
 Clara Bartram Humphreys, M.A., *Associate Professor of Fine Arts, Emeritus.*  
 Samuel Amato, B.F.A., *Assistant Professor of Art.*  
 Oliver W. Andrews, A.B., *Assistant Professor of Art.*  
 E. Maurice Bloch, Ph.D., *Assistant Professor and Curator of Prints and Drawings.*  
 Donald W. Chipperfield, M.A., *Assistant Professor of Art.*  
 Naomi G. Dietz, M.A., *Assistant Professor of Art.*  
 Elliot Elgart, M.F.A., *Assistant Professor of Art.*  
 Alice M. Everett, M.A., *Assistant Professor of Art.*  
 J. Bernard Kester, M.A., *Assistant Professor of Art.*  
 \* John Maguire, B.S., *Assistant Professor of Art.*  
 David B. Manzella, Ed.D., *Assistant Professor of Art.*  
 \* John Rosenfield, Ph.D., *Assistant Professor of Art.*  
 Jack D. Stoops, Ed.D., *Assistant Professor of Art.*  
 Madeleine Boyce Sunkees, B.E., *Assistant Professor of Art.*  
 Jerrold Ziff, M.A., *Assistant Professor of Art.*  
 Ralph C. Altman, *Lecturer in Art.*  
 Mary A. Holmes, M.A., *Lecturer in Art.*  
 Margaret T. Lecky, *Lecturer in Art.*  
 Anne C. B. McPhail, M.S., *Lecturer in Art.*  
 Carlo Pedretti, *Lecturer in Art.*  
 Phyllis M. Beacom, M.A., *Associate in Art.*  
 Jack B. Carter, M.A., *Associate in Art.*  
 Christian Choate, A.B., *Associate in Art.*  
 James A. Cross, A.B., *Associate in Art.*  
 John E. Demaree, B.S., *Associate in Art.*  
 Greta M. Grossman, *Associate in Art.*  
 Elizabeth M. Hayes, M.A., *Associate in Art.*  
 Jack M. Hooper, M.A., *Associate in Art.*  
 Bramwell Lieber, *Associate in Art.*  
 Maurice Nemoy, *Associate in Art.*  
 Gerald Samuelson, M.A., *Associate in Art.*  
 Simon D. Steiner, M.S., *Associate in Art.*



Charles F. Bridgman, M.S., *Chief of Visual Aids, Medical Center.*  
 Ted Bloodhart, *Principal Medical Illustrator, Medical Center Visual Aids.*

† Sabbatical leave, 1960-1961.

\* In residence fall semester only, 1960-1961.

\* In residence spring semester only, 1960-1961.

The student may select a major from among the three majors offered in the College of Applied Arts or the major in the history of art in the College of Letters and Science; each of these majors leads to the degree of Bachelor of Arts. For information concerning teaching credentials, consult the ANNOUNCEMENT OF THE SCHOOL OF EDUCATION, LOS ANGELES.

The department reserves the right to hold for exhibition purposes examples of any work done in the classes and to retain for the permanent collection of its galleries such examples as may be selected.

### College of Applied Arts

A maximum of 54 units of courses in the Department of Art is credited toward the Bachelor of Arts degree.

*Preparation for the Major.*—Eighteen units of lower division art courses, including 1A, 1B, 10A, 10B, 20A, 30A, and 4 additional units selected from courses 20B, 25, 30B, and 30C.

#### 1. History and Studio.

*The Major.*—Twenty units of history of art selected in consultation with the departmental adviser from courses 101 to 116; theory and criticism courses 118A, 118B, 4 units; and 12 units of studio courses selected from courses 120 to 199, including 2 units of 127 and 2 units from courses 150 to 197.

#### 2. Pictorial Arts.

*The Major.*—Eighteen units of pictorial arts, selected from courses 120 to 147, including 2 units each of 128, 130, 140, and 145; 6 units of history of art selected from courses 101 to 116; theory and criticism courses 118A–118B, 4 units; and 8 units of art electives, including 2 units from courses 150 to 197.

#### 3. Design

*The Major.*—Eighteen units of design courses selected from courses 150 to 197, including at least 2 units in each of three of the following groups of courses numbered in (a) the 150's, (b) the 160's, (c) the 170's, (d) the 180's, (e) 190 to 197; 6 units of history of art from courses 101 to 116; theory and criticism courses 118A–118B, 4 units; 2 units of 127; 6 units of art electives, including 2 units from courses 120 to 147.

Prospective elementary school teachers should register for courses 5A, 5B, and 330. Prospective high school teachers should register for course 370 and major in design or pictorial arts. In order to obtain a certificate they must elect in lower and upper division courses at least 10 units in pictorial arts, and 12 units in design of which 4 must be in courses numbered from 187A to 197.

### College of Letters and Science

*Art History.*—The Department of Art offers a major in art history in the College of Letters and Science; students electing this major must be enrolled in the College of Letters and Science, not in the College of Applied Arts.

*Preparation for the Major.*—Courses 1A, 1B, 5A. Recommended: 6 units from lower division studio courses; also recommended for Letters and Science requirements E, F, and G: History 1A–1B, Philosophy 6A–6B or 20A–20B, Anthropology 1, 2, and Psychology 1A–1B.

*The Major.*—Thirty-four units, including courses 118A, 118B, 127, and selections in consultation with the student's adviser from courses 101 to 116 and Classics 102A–B–C–D. The curriculum must include at least 4 units from

each of four of the following six fields: Oriental, Classical, Medieval, Renaissance, Seventeenth and Eighteenth Centuries, Nineteenth and Twentieth Centuries. Related courses in anthropology, English literature, foreign languages and literatures, history, philosophy, music, and theater arts are recommended.

*Letters and Science List.*—The following courses are included in the Letters and Science List of Courses (for regulations governing this list, see page 2): 1A, 1B, 5A, 5B, 100A, 100B, 101A, 101B, 101C, 103A, 103B, 104A, 104B, 105A, 105B, 106A, 106B, 107, 108, 109, 110A, 110B, 112, 113A, 113B, 113C, 113D, 115, 116, 117, 118A, 118B, 148, 149A-B-C-D, and 199.

### Graduate Division

*Admission to Graduate Status.*—In addition to meeting the requirements of the Graduate Division, the student must have a bachelor's degree or its equivalent, and should have a major in art and a field of specialization: history and theory of art, pictorial arts, or design. Students whose 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. For more detailed information, write to the Chairman of the Department of Art and enclose a transcript or summary of academic record.

*Requirements for the Master's Degree.*—For the general University requirements, see page 66. The Department of Art offers graduate study in three areas of specialization: (1) History and Theory of Art, (2) Pictorial Arts, (3) Design. When applying for admission, it is advisable to designate the major field of specialization and, whenever possible, present examples of previous work in the field.

*Master of Arts Degree in Pictorial Arts or Design.*—The program follows Plan II, a minimum of 24 units of graduate work, including 4 units of an advanced project in the field of specialization. The final comprehensive examination is oral. Those majoring in pictorial arts may stress painting, sculpture, or printmaking in their advanced project and are expected to have a good general knowledge of the history and theory of art. Those majoring in design may stress graphic, industrial, interior, costume, ceramic, or metal design, but the ideal degree candidate is the comprehensive designer rather than the specialist. 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. Those going into high school teaching or college teaching of art education should major in pictorial arts or design and consult the professor in charge of art education in planning their curriculum for the degree.

*Master of Arts Degree in Art History.*—The program for the Master of Arts degree in art history follows Plan I, a minimum of 20 semester units 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 second semester. A final written examination covers four of the following fields, two of them major and two minor: (1) Primitive and Pre-Classical Art, (2) Classical Art, (3) Medieval Art, (4) Renaissance Art, (5) Baroque Art, (6) Art of the Eighteenth and Nineteenth Centuries, (7) Modern Art, (8) American Art, (9 and 10) Oriental Art, (11) Theory of Art. Following submission of the thesis the candidate must pass an oral examination.

*Doctor of Philosophy Degree in Art History.*—In addition to the general University regulations for the Doctor of Philosophy degree, a candidate must satisfy the following departmental requirements:

1. Foreign Language. A reading knowledge of French and German is requisite for all candidates except those specializing in Oriental art who may substitute an Oriental language for one of the above. The requirements for the

first language should 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.

2. **Qualifying Examination.** Preparation for the qualifying examination, which advances the student to candidacy, will include a minimum of four 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.

3. **Dissertation.** See the General University Regulations.

4. **Final Examination.** This will consist of the candidate's oral defense of his thesis and his demonstration of a satisfactory knowledge of the historical and general cultural context of the period within which his thesis topic is developed.

#### LOWER DIVISION COURSES

- 1A. History of Art. (3) I.** Mr. Sheppard  
Painting, sculpture, and architecture from prehistoric times to the end of the Middle Ages.
- 1B. History of Art. (3) II.** Mr. Sheppard  
Painting, sculpture, and architecture from the Renaissance to the present.
- 5A. Fundamentals of Art. (2) I, II.** Miss Holmes  
(Former number, 5.)  
A lecture course for the general student in the principles of art appreciation and criticism. Study of terminology and criteria of value. Illustrated with examples of modern and historic painting, sculpture, and architecture.
- 5B. Fundamentals of Art. (2) I, II.** Mr. Manzella, Miss McPhail  
(Former number, 10.)  
Credit not applicable on the art major.  
A studio course for the general student in the appreciation of art through studies in drawing and painting and the application of aesthetic principles to daily life.
- 10A. Drawing. (2) I, II.** Mr. Brice, Mr. Elgart, Mr. Stussy  
(Former number, 2A.)  
Beginning course in representational drawing.
- 10B. Drawing. (2) I, II.** Mr. Nunes  
(Former number, 44.)  
Prerequisite: course 10A or consent of the instructor.  
Beginning course in figure drawing.
- 20A. Painting. (2) I, II.** Mrs. Brown, Miss Delano  
(Former number, 2B.)  
Prerequisite: course 10A or consent of the instructor.  
Beginning course in representational painting.
- 20B. Painting. (2) I, II.** Miss Delano  
(Former number, 3.)  
Prerequisite: courses 10A, 10B, and 20A or consent of the instructor.  
Composition and color.
- 25. Sculpture. (2) I, II.** Mr. Andrews  
Modeling and basic sculptural form.

- 30A. Design. (2) I, II.** Mr. Kester, Mr. Samuelson, Mrs. Beacom  
(Former number, 6A.)  
Elements of design in the visual arts; theory and studio projects.
- 30B. Design. (2) I, II.** Mr. Nemoy, Mr. Samuelson, Mrs. Sunkees  
(Former number, 6B.)  
Prerequisite: course 30A.  
Two-dimensional studies of line, value, and color.
- 30C. Design. (2) I, II.** Mr. J. Carter, Mr. Samuelson, Mr. Demaree  
(Former number, 7A.)  
Prerequisite: course 30A.  
Three-dimensional studies in materials, form, and structure.

RELATED COURSE IN ANOTHER DEPARTMENT

- Integrated Arts 1A-1B. Man's Creative Experience in the Arts. (3-3) Yr.**  
Mr. With

UPPER DIVISION COURSES

**I. History and Theory of Art**

- 100A. History of Art. (2) I.** Mr. Ziff  
(Former number, 118A.)  
Not open to students having credit for 1A. Does not count toward the major in art. Painting, sculpture, and architecture from prehistoric times to the end of the Middle Ages.
- 100B. History of Art. (2) II.** Mr. Ziff  
(Former number, 118B.)  
Not open to students having credit for 1B. Does not count toward the major in art. Painting, sculpture, and architecture from the Renaissance to the present.
- 101A. Prehistoric and Primitive Art. (2) I.** Mr. Altman  
(Former number, 100A.)
- 101B. Pre-Classical Art. (2) II.** Mr. Altman  
(Former number, 100B.)  
Ancient art and architecture in the Near and Far East.
- 101C. Pre-Columbian Art. (2) II.** Mr. Altman  
(Former number, 119A.)  
The prehistoric arts of the Americas.
- 103A. Medieval Art. (3) I.** Mr. Sheppard  
Art and architecture from the Early Christian to the Romanesque period.
- 103B. Medieval Art. (3) II.** Mr. Sheppard  
Art and architecture from the Romanesque through the Gothic periods.
- 104A. Italian Renaissance Art. (3) I.** Mr. Birkmeyer  
Art and architecture of the Early Renaissance.
- 104B. Italian Renaissance Art. (3) II.** Mr. Ziff  
(Former number, 104A.)  
Art and architecture of the sixteenth century.
- 105A. Northern Renaissance Art. (2) I.** Mr. Birkmeyer  
(Former number, 104B.)  
Flemish and Dutch painting from 1400 to 1600.

- 105B. Northern Renaissance Art. (2) II.** Mr. Birkmeyer  
Painting in Northern Europe (exclusive of Flanders and Holland) from 1400 to 1600.
- 106A. Baroque Art. (2) I.** Mr. Bloch  
(Former number, 104C.)  
Art and architecture in Italy and Spain in the late sixteenth and seventeenth centuries.
- 106B. Baroque Art. (2) II.** Mr. Birkmeyer  
(Former number, 104D.)  
Seventeenth-century art and architecture in Flanders, Holland, France, Germany, Austria, and England.
- 107. Art of the Eighteenth Century. (2) II.** Mr. Ziff  
Art and architecture in Europe in the eighteenth century.
- 108. Art of the Nineteenth Century. (3) I.** Mr. Ziff  
(Former number, 108A.)  
Art and architecture in Europe in the nineteenth century.
- 109. Modern European Art. (3) II.** Mr. Wight  
(Former number, 108B.)  
Art and architecture of the twentieth century in Europe.
- 110A. American Art. (2) I.** Mr. Bloch  
(Former number, 119B.)  
Art and architecture from the Colonial period to 1900 in the United States.
- 110B. American Art. (2) II.** Mr. Bloch  
(Former number, 119C.)  
Twentieth-century art and architecture in the United States.
- 112. Oriental Art. (3) I.** Mr. Rosenfield  
(Former number, 120.)  
Indian, Chinese, Japanese, and Islamic art and architecture from prehistoric times to the present.
- 113A. Art of India. (3) I.** Mr. Rosenfield  
(Former number, 121C.)  
Art and architecture of India and Indonesia from prehistoric times to the present.
- 113B. Art of China. (3) II.** Mr. Rosenfield  
(Former number, 121A.)  
Art and architecture of China from prehistoric times to the present.
- 113C. Art of Japan. (2) II.** Mr. Rosenfield  
(Former number, 121B.)  
Art and architecture of Japan from prehistoric times to the present.
- 113D. Islamic Art. (2) II.** Mr. Rosenfield  
(Former number, 121D.)  
Architecture, painting, and minor arts of those regions dominated historically by the Moslem religion, with emphasis on the Arabic cultures of Iran and the Near East, North Africa, and Spain.
- 115. History of Prints and Drawings. (3) II.** Mr. Bloch  
(Former number, 123.)  
Development of techniques and history of style and expression from the late Middle Ages to the present.

- 116. Design Morphology.** (2) I, II. Mr. With  
(Former number, 115.)  
A study of basic forms as determined by human needs, physical functions, aesthetic appeal, and symbolic significance.
- 117. Research Methods in Art History.** (2) I. Mr. Sheppard  
(Former number, 124.)
- 118A. Theory and Criticism of Art.** (2) I. Mr. Longman  
(Former number, 114A.)  
Lecture, two hours; discussion, one hour. Prerequisite: courses 1A-1B or 100A-100B or consent of the instructor.  
Theoretical foundations of criticism. Analysis of works of historic and modern art. Elements of psychology and sociology of art.
- 118B. Theory and Criticism of Art.** (2) II. Mr. Longman  
(Former number, 114B.)  
Lecture, two hours; discussion, one hour. Prerequisite: courses 1A-1B or 100A-100B or consent of the instructor. It is recommended that 118A be taken before 118B.  
Definitions of terms and semantics of critical terminology. Relation of aesthetic meaning to reality and truth. Studies in the criticism of modern art.

## RELATED COURSES IN OTHER DEPARTMENTS

- Classics 102A. The Art of the Aegean Bronze Age.** (2) I. Mr. Clement
- Classics 102B. Greek and Roman Architecture.** (2) II. Mr. Clement
- Classics 102C. Greek and Roman Sculpture.** (2) I. Mr. Clement
- Classics 102D. Greek and Roman Painting.** (2) II. Mr. Clement
- Anthropology 127. Primitive Art.** (3) II. Mr. Taylor
- Oriental Languages 170. Archaeology of China.** (2) II. Mr. Rudolph
- Philosophy 136. Philosophy of Art.** (3) II. Mr. Kaplan

**II. Pictorial Arts**

Courses 120 to 147 are open to repeated registration, upon recommendation of the student's adviser, up to the maximum credit indicated in each course.

- 120. Life Drawing.** (2-4) I, II. Mr. Amato, Mr. Elgart, Mr. Stussy  
(Former number, 128A-128B.)  
Prerequisite: 10A, 10B, or consent of the instructor. Maximum credit, 6 units.  
Studies from the model.
- 125. Drawing.** (2-4) I, II. Mr. Brice  
(Former number, 127A-127B.)  
Prerequisite: 10A, 10B, and 2 units of 120 or consent of the instructor. Maximum credit, 6 units.  
Drawing as a terminal medium of artistic expression.
- 127. Drawing Laboratory.** (2) I, II. Miss Holmes  
May be repeated once for credit. Not open to students having credit for course 128.  
Studies in style, expression, and aesthetic quality based on historic precedent.



- 128. Advanced Drawing Laboratory.** (2-4) I, II. Mr. Brice  
Prerequisite: courses 10A, 10B, and 2 units of 120 or consent of the instructor. Maximum credit, 4 units. Primarily for majors in pictorial arts. Stylistic analysis and drawing based on historic precedent.
- 130. Painting.** (2-4) I, II. Mr. Amato, Mrs. Brown, Miss Delano, Mr. Elgart, Mr. Hooper  
(Former number, 126, 130A, 134A-134B, 135).  
Prerequisite: courses 10A, 20A, or consent of the instructor. Maximum credit, 8 units.  
Any medium or subject. Composition, interpretation, expression.
- 135. Life Painting.** (2-4) I, II. Mr. Brice  
(Former number, 130B.)  
Prerequisite: courses 10A, 10B, 20A; 2 units of 120; and 4 units of 130 or consent of the instructor. Maximum credit, 6 units.  
Any medium. Composition, interpretation, expression.
- 140. Prints.** (2-4) I, II. Mr. Jones  
(Former number, 125A-125B.)  
Prerequisite: courses 10A, 20A, or consent of the instructor. Maximum credit, 8 units.  
Engraving, etching, drypoint, aquatint, softground, lithography, woodcut, and mixed media. Traditional and experimental studies. Fine printing.
- 145. Sculpture.** (2-4) I, II. Mr. Andrews  
(Former number, 137A-137B.)  
Maximum credit, 8 units.  
Modelling or carving. Clay, plaster, wood, stone, metals, and welding. Plaster casting.
- 147. Photography.** (2) I, II. Mr. Chipperfield  
Prerequisite: consent of the instructor.  
Photography as a medium of artistic expression.
- 148. Scientific Illustration.** (2) I. Mr. Bridgman  
(Former number, 45.)  
Descriptive drawing adapted to the needs of scientists and recommended to students whose major is science; study of media for reproduction.
- 149A-B-C-D. Biological Illustration.** (1-1-1-1) I, II. Mr. Bridgman  
(Former number, 139A-B-C-D.)  
Prerequisite: course 148 or consent of the instructor.  
Descriptive drawing for biologists, with emphasis on scientific observation, interpretation, and rendering.

### III. Design

Courses 150, 160, 170, 175, 180, 190, and 195 are open to repeated registration, upon recommendation of the student's adviser, up to the maximum credit indicated in each case.

- 150. Graphic Design.** (2-4) I, II. Mr. Chipperfield, Mr. Cross, Mr. Jennings  
(Former number, 140A-140B, 145A-145B, 148, 149.)  
Prerequisite: course 30A or consent of the instructor. Maximum credit, 8 units.  
Experimental design in two dimensions, including processes of pictorial reproduction.

- 155. Lettering.** (2) I, II. Mr. Nemoy  
(Former number, 141A-141B.)  
Prerequisite: course 30A or consent of the instructor.  
Historical study and basic principles of lettering, typography, and calligraphy, with studio projects.
- 157. Illustration.** (2) I, II. Mr. Chipperfield  
(Former number, 146A-146B.)  
Prerequisite: courses 10A, 10B, 20A, 20B, and 2 units of 120, or consent of the instructor.  
Development of pictorial imagination and technical resources in the depiction of specified subject matter.
- 160. Industrial Design.** (2-4) I, II. Mr. J. Maguire, Mr. Demaree  
(Former number, 181A-B-C-D.)  
Prerequisite: course 30A. Maximum credit, 8 units. After a first registration in this course, the student should have college physics and engineering drawing or take courses in these subjects concurrently with 160.  
Design of objects for mass production which meet the requirements of aesthetic appeal, social need, and practical function.
- 165A-165B. Structural Design.** (2-2) Yr. Mr. W. Carter, Mr. Lieber, Mr. Stoops  
(Former number, 180, 181E.)  
Prerequisite: course 30A or consent of the instructor.  
Advanced studies in three-dimensional design.
- 167A-167B. Perspective and Rendering.** (2-2) Yr. Mr. Demaree, Mr. J. Maguire  
(Former number, 182A-182B.)  
Prerequisite: course 10A or consent of the instructor.
- 170. Interior Design.** (2-4) I, II. Mrs. Beacom, Mrs. Fetty  
(Former number, 152B, 158A-158B, 159A-159B.)  
Prerequisite: course 30A or consent of the instructor. Maximum credit, 8 units.
- 173A-173B. Introduction to Theory and Design of Architecture.** (2-2) Yr. Mr. Choate  
(Former number, 155A-155B.)  
Prerequisite: course 30A or consent of the instructor.
- 175. Furniture Design.** (2-4) I, II. Mrs. Grossman, Mrs. Sunkees  
(Former number, 150, 153A-153B.)  
Prerequisite: course 30A or consent of the instructor. Maximum credit, 6 units.
- 177. Landscape Design.** (2) I, II. Mrs. Fetty  
(Former number, 152A.)  
Prerequisite: course 30A or consent of the instructor.  
An introduction to the history, theory, and materials of landscape design; projects in contemporary design.
- 180. Contemporary Costume Design.** (2-4) I, II. Miss Everett, Mrs. Reps  
(Former number, 161, 163A-163B, 169A-169B.)  
Prerequisite: courses 10A, 10B, 30A, 30B, 30C, 185A, or consent of the instructor. Maximum credit, 8 units.
- 185A. History of Costume.** (2) I, II. Miss Everett  
(Former number, 160.)  
Two lectures per week.  
Western costume from ancient to modern times.

- 185B. Historic Costume Design.** (2) I, II. Miss Everett  
(Former number, 166.)  
Lecture, one hour; studio, three hours. Prerequisite: courses 10A, 10B, 30A, or consent of the instructor.  
Design of period costume.
- 187A-187B. Textile Design.** (2-2) Yr. Mrs. Sunkees, Mr. Kester  
(Former number 175A-175B, 176A-176B.)  
Prerequisite: course 30A or consent of the instructor.  
Design of printed and woven textiles.
- 190. Ceramics.** (2-4) I, II. Miss Andreson, Mr. Kester  
(Former number, 170A-170B, 171.)  
Prerequisite: course 30A or consent of the instructor. Maximum credit, 8 units.
- 195. Metal Design.** (2-4) I, II. Mr. W. Carter  
(Former number, 177A-177B.)  
Prerequisite: course 30A or consent of the instructor. Maximum credit, 8 units.
- 197. Book Design.** (2) I, II. Mrs. Lecky  
(Former number, 173A-173B.)  
Prerequisite: course 30A or consent of the instructor.

#### SPECIAL STUDIES FOR ALL MAJORS

- 199. Special Studies in Art.** (1-4) I, II. The Staff  
Prerequisite: consent of the instructor and adviser. Open to repeated registration upon recommendation of adviser. Maximum credit, 6 units.  
Projects may be in History and Theory of Art, Pictorial Arts, or Design.

#### GRADUATE COURSES

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

#### History of Art Seminars

- 250. Primitive Art.** (2) I. Mr. Altman
- 252. Medieval Art.** (2) II. Mr. Sheppard
- 253. Italian Renaissance Art.** (2) I, II. Mr. Pedretti
- 254. Northern Renaissance Art.** (2) I. Mr. Birkmeyer
- 255. Southern Baroque Art.** (2) I. Mr. Bloch
- 256. Northern Baroque Art.** (2) II. Mr. Birkmeyer
- 257. Art from 1700 to 1900.** (2) I. Mr. Ziff
- 258. Modern Art.** (2) II. Mr. Wight
- 259. American Art.** (2) I, II. Mr. Bloch, Mr. Wight
- 260. Oriental Art.** (2) I. Mr. With
- 262. Prints and Drawings.** (2) II. Mr. Bloch
- 263. Theory and Criticism of Art.** (2) I, II. Mr. Longman

## RELATED COURSES IN OTHER DEPARTMENTS

- Classics 251. Classical Art. (2) II. Mr. Clement  
 Philosophy 269. Seminar: Philosophy of Art. (3) II. Mr. Kaplan

## Studio Seminars

270. Drawing. (2-8) I, II. Mr. Amato, Mr. Brice, Mr. Elgart, Mr. Stussy  
 271. Painting. (2-8) I, II.  
 Mr. Amato, Mr. Brice, Mrs. Brown, Miss Delano, Mr. Elgart, Mr. Stussy  
 272. Prints. (2-8) I, II. Mr. Jones  
 273. Sculpture. (2-8) I, II. Mr. Andrews  
 278. Advanced Studies in Pictorial Arts. (1) I, II.  
 Mr. Longman and Pictorial Arts Staff  
 280. Graphic Design. (2-8) I, II. Mr. Jennings  
 281. Industrial Design. (2-8) I, II. Mr. J. Maguire  
 282. Interior Design. (2-8) I, II. Mrs. Fetty  
 283. Costume Design. (2-8) I, II. Mrs. Reps  
 284. Ceramics (2-8) I, II. Miss Andreson  
 285. Metal Design. (2-8) I, II. Mr. W. Carter  
 288. Advanced Studies in Design. (2) I, II. Mrs. Fetty

## Special Studies and Research

295. Advanced Studies and Research in Art Education. (2-4) I, II.  
 Mr. Manzella, Mr. Stoops  
 297. Individual Studies for Graduate Students. (1-6) I, II. The Staff  
 298. Directed Study and Readings for Master's Degree Candidates.  
 (1-4) I, II. The Staff  
 299. Research on Dissertation or Thesis. (1-6) I, II. The Staff

## PROFESSIONAL COURSES IN METHOD

330. Art in Elementary Education. (3) I, II.  
 Miss Dietz, Mrs. Hayes, Mr. Manzella  
 Lecture, one hour; studio, six hours.  
 A study of objectives and methods with correlated studio activities.  
 370. Principles of Art Education. (3) I, II. Mr. Stoops  
 Lecture, two hours; studio, four hours.  
 A study of philosophy, objectives, and methods in secondary education.

## UNIVERSITY ART GALLERIES

Located in the east wing of the Dickson Art Center are three well-equipped art galleries. The Willitts J. Hole Art Gallery and the James Kennedy Gallery are devoted to exhibition of the permanent art collections of the University; the East Gallery, to special loan exhibitions which are presented on a regular schedule. Inquiries regarding the galleries should be addressed to the Director of the Art Galleries, Department of Art.

## ART HISTORY

For courses in art history, see under Department of Art.

## ASTRONOMY

(Department Office, 8105 Mathematical Sciences Building)

Samuel Herrick, Ph.D., *Professor of Astronomy.*

Frederick C. Leonard, Ph.D., *Professor of Astronomy.*

Daniel M. Popper, Ph.D., *Professor of Astronomy (Chairman of the Department).*

George O. Abell, Ph.D., *Assistant Professor of Astronomy.*

Robert M. L. Baker, Jr., Ph.D., *Lecturer in Astronomy.*

*Letters and Science List.*—All undergraduate courses in astronomy are included in the Letters and Science List of Courses. For regulations governing this list, see page 2.

*Preparation for the Major.*—Required: Astronomy 2 and 4; Physics 1A-1B-1C-1D or, in exceptional cases, 2A-1C-1D or 2A-2B; Mathematics 1, 3A, 3B, and 4A, or 5A, 5B, and 6A. Recommended: English 106S, speech, and a reading knowledge of French, German, or Russian.

*The Major.*—Twenty-four upper division units of astronomy, physics, and mathematics, of which at least 18 must be in astronomy, inclusive of course 101 but exclusive of course 199, and all 24 in courses approved by the department.

*Majors in Astronomy-Mathematics and Astronomy-Physics.*—Attention is directed to the curricula in astronomy-mathematics and astronomy-physics on pages 9 and 10 of this bulletin.

*The Master's Degree.*—See page 66 for the requirements for the master's degree. The following undergraduate courses, or their equivalents, are required of all candidates for the master's degree in astronomy: Astronomy 4, 101, 112, 117A-117B (or, in exceptional cases, 102); Mathematics 119A, 125 (or Physics 105); Physics 121.

### LOWER DIVISION COURSES

#### 1. Elementary Astronomy. (3) I, II.

The Staff

Not open to students who have taken or are taking Astronomy 100 or 101. 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.

#### 2. Practice in Observing. (2) I.

Mr. Abell

Prerequisite: course 1 or 100 and plane trigonometry (Mathematics C or its equivalent); or credit or registration in course 4 or 101. Required of students preparing to major in astronomy.

Practical work for beginners, including constellation studies, telescopic observations of celestial objects, and laboratory exercises cognate to the material of course 4 or 101.

#### 3. Spherical Trigonometry with Applications. (2) II.

Mr. Leonard

Prerequisite: plane trigonometry (Mathematics C or its equivalent). Students who have credit for Astronomy 4 will receive only 1 unit of credit for course 3.

Spherical trigonometry, with applications to astronomy, meteoritics, navigation, crystallography, and other subjects.

**4. Spherical Astronomy. (3) I.**

Mr. Leonard

Prerequisite: plane trigonometry (Mathematics C or its equivalent). Required of students preparing to major in astronomy. Course 2 may be elected for observatory and laboratory work in connection with this course. Students who have credit for course 3 will receive only 2 units of credit for course 4.

The celestial sphere and its coordinate systems; time; spherical trigonometry and its astronomical applications.

**UPPER DIVISION COURSES**

Lower division courses in astronomy are not prerequisite to upper division courses unless specified.

**100. Historical Development of Astronomy. (3) II.**

Prerequisite: upper division standing. Not open to students who have taken or are taking course 1 or 101, and may not be counted on the major in astronomy.

A survey of astronomy, the historical development of its methods and ideas, and its relation to other fields of thought.

**101. General Astronomy. (3) I, II.**

Mr. Leonard, Mr. Popper

Prerequisite: plane analytic geometry (Mathematics 3A or its equivalent). Open to properly 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, and required of students majoring in astronomy.

**102. Stellar Astronomy. (3) II.**

Mr. Abell

Prerequisite: course 101 or its equivalent, or course 100 and consent of the instructor. Not open to students who have taken or are taking Astronomy 117A or 117B, and may not be counted on the major in astronomy if either of those courses is taken.

A review of modern stellar astronomy, with special emphasis on the results of recent researches.

**104. Positional Astronomy. (3) I.**

Mr. Popper

Lecture, two hours; observing period, three hours. Prerequisite: course 4 and Mathematics 3B.

Fundamental and differential stellar coordinates; time and latitude; star catalogs. Use of the astronomical transit-instrument and the equatorial telescope.

**105. Instrumental Astronomy. (3) II.**

Mr. Popper

Lecture, two hours; observing period, three hours. Prerequisite: Physics 1D; or Physics 2B and Mathematics 4A.

Astronomical optics, photography, spectroscopy, and photometry. Use of the equatorial telescope.

**107. Reduction of Observations. (3) II.**

Mr. Baker

Prerequisite: Mathematics 3B, 4A.

Astronomical photogrammetry and other techniques employed in the handling of observational data. The theory of errors and least squares.

**112. Astrodynamics and Rocket Navigation. (3) I.**

Mr. Baker

Prerequisite: Mathematics 3B, 4A.

The astronomical aspects of the rocket problem; celestial mechanics.

- 115. Determination of Orbits. (3) II.** Mr. Baker  
Prerequisite: course 112 or consent of the instructor.  
The theory and calculation of preliminary orbits and ephemerides of comets, minor planets, satellites, and rockets.
- 117A. Astrophysics and Stellar Astronomy. (3) I.** Mr. Popper  
Prerequisite: Mathematics through 4A and Physics 1A, 1B, 1C, 1D or their equivalents.  
Fundamental properties of the stars, atmospheres of the sun and stars, solar phenomena, and interstellar matter.
- 117B. Astrophysics and Stellar Astronomy. (3) II.** Mr. Abell  
Prerequisite: course 117A or Physics 121 or consent of the instructor.  
Stellar structure and evolution, the Galaxy, stellar systems, and cosmology.
- 118. Meteoritics. (3) II.** Mr. Leonard  
Open to students whose major subject is a physical science or mathematics, and to others with similar preparation.  
The science of meteorites and meteors.
- 199. Special Studies. (1 to 5) I, II.** The Staff  
Prerequisite: senior standing and consent of the instructor.

## GRADUATE COURSES

- 215. Advanced Orbit Theory. (3) I.** Mr. Herrick  
Prerequisite: course 115.
- 217A. Advanced Astrophysics and Stellar Astronomy. (3) I.** Mr. Abell  
Prerequisite: consent of the instructor.  
The structure and evolution of the stars.
- 217B. Advanced Astrophysics and Stellar Astronomy. (3) II.** Mr. Popper  
Prerequisite: consent of the instructor.  
Stellar photospheres; radiative transfer.
- 218. Advanced Meteoritics. (3) I.** Mr. Leonard  
Prerequisite: course 118.
- 225A-<sup>\*</sup>225B. Celestial Mechanics. (3-3) II.** Mr. Herrick  
Prerequisite: course 112.
- 297. Individual Studies for Graduate Students. (1 to 6) I, II.** The Staff
- 299. Research on Thesis or Dissertation. (2 to 6) I, II.** The Staff

## BACTERIOLOGY

(Department Office, 5205 Life Sciences Building)

- <sup>\*</sup> M. J. Pickett, Ph.D., *Professor of Bacteriology.*  
Anthony J. Salle, Ph.D., *Professor of Bacteriology.*  
\_\_\_\_\_, *Professor of Bacteriology.*  
Meridian Ruth Ball, Sc.D., *Associate Professor of Bacteriology (Acting Chairman of the Department).*

<sup>\*</sup> Not to be given, 1960-1961.<sup>\*</sup> In residence spring semester only, 1960-1961.

Gregory J. Jann, Ph.D., *Associate Professor of Bacteriology.*  
 Eric L. Nelson, Ph.D., *Assistant Professor of Bacteriology.*  
 William R. Romig, Ph.D., *Assistant Professor of Bacteriology.*



Benjamin G. Fishkin, M.D., *Lecturer in Bacteriology.*  
 ———, *Lecturer in Bacteriology.*  
 Gordon H. Ball, Ph.D., *Professor of Zoology.*  
 Orda A. Plunkett, Ph.D., *Professor of Botany.*

#### COLLEGE OF LETTERS AND SCIENCE

*Letters and Science List.*—All undergraduate courses in bacteriology are included in the Letters and Science List of Courses. For regulations governing this list, see page 2.

*Preparation for the Major.*—Bacteriology 1; Chemistry 1A, 1B, 5A, 8, 9; Physics 2A, 2B; Zoology 1A, 1B; a modern foreign language. Recommended: Bacteriology 11, Zoology 4.

*The Major.*—Bacteriology 103, 105, 106, 120; Chemistry 108A and 108B, or 135; together with enough upper division units in related subjects to total 24 units, these to be selected from the following lists: Bacteriology 106C, 107, 108, 109, 112, 114, 120C, 125, 130; Botany 119, 126; Chemistry 106, 107, 109, 136; Entomology 126; Zoology 101A, 101B, 111, 111C, 111H, 119, 132A. Courses are to be chosen with the approval of the department.

Bacteriology majors who plan a career in public health microbiology or clinical laboratory technology are required to take the following courses: Bacteriology 103, 105, 106, 107, 108, 109; Botany 126; Chemistry 108A, 108B, and Chemistry 106 instead of 9; Zoology 111, 111C, 111H.

Subsequent to graduation, an apprenticeship in an approved laboratory is required for eligibility to take the State examination for a license in either of the above fields.

#### LOWER DIVISION COURSES

1. **Introductory Bacteriology and Microbiology.** (4) I, II. Mr. Salle  
 Lecture, two hours; laboratory, six hours. Prerequisite: Chemistry 1A or 2A. Designed for students majoring in bacteriology and related fields. Students who have credit for course 6 will receive only 3 units for course 1.  
 A general introduction to microbiology.

6. **General Bacteriology.** (2) I, II. Mr. Jann, Mr. Salle  
 Lecture, two hours. Not open to students who have had course 1. No prerequisites.  
 A cultural course for nontechnical students, with emphasis on the significance of bacteria in our daily environment and as agents of disease.

11. **History of Microbiology.** (2) I. Mr. Romig  
 Lecture and discussion, two hours. Recommended as an introductory course for all microbiology majors, and as a cultural course for other majors. Does not satisfy Letters and Science requirement E2.  
 Early concepts dealing with the origin of life and the etiology of infectious diseases in relation to prevailing scientific thought, and the development of modern microbiological methods and theories.



## UPPER DIVISION COURSES

- 103. Advanced Bacteriology. (5) I.** Mr. Nelson  
Lecture and discussion, three hours; laboratory, six hours. Prerequisite: course 1; recommended: course 106.  
The more advanced principles of the life activities, growth, and morphology of bacteria. The etiology of disease.
- 105. Serology. (4) II.** Mrs. Ball  
Lecture, one hour; laboratory, nine hours. Prerequisite: course 103 and consent of the instructor.  
The theory and practice of serological methods.
- 106. Metabolism of Bacteria. (2) I.** Mr. Jann  
Lecture and discussion. Prerequisite: course 1 and Chemistry 8, 9.  
Chemical activities of microorganisms.
- 106C. Metabolism of Bacteria Laboratory. (2) I.** Mr. Jann  
Concurrent or prerequisite: course 106.
- 107. Public Health Bacteriology. (4) I.** Mrs. Ball  
Lecture, one hour; laboratory, nine hours. Prerequisite: course 103.  
Designed for students who plan careers in the fields of public health and clinical bacteriology.  
A study of diagnostic procedures.
- 108. Hematology. (2) II.** Mr. Fishkin  
Lecture, one hour; laboratory, two hours. Prerequisite: senior standing and consent of the instructor.  
Diagnostic procedures used for the study of normal and pathological blood cells.
- 109. General Virology. (2) II.** \_\_\_\_\_  
Lecture, two hours. Prerequisite: course 103.  
An introduction to the plant and animal viruses including the bacteriophages and the rickettsiae. Considerations of techniques, inclusion bodies, pathogenesis, immunity, and virus-host relationships.
- 112. Advanced Microbiology. (1) II.** Mr. Pickett  
Prerequisite: courses 106 and 107  
Lectures and discussions covering advanced topics in infectious diseases.
- 114. Industrial Microbiology. (4) II.** Mr. Jann  
Lecture and laboratory. Prerequisite: course 106.  
The study of microorganisms of industrial importance, including methods of growth, isolation, identification, and conditions affecting their efficiencies.
- 120. Bacterial Genetics. (2) II.** Mr. Romig  
Lecture, two hours. Prerequisite: course 106, Chemistry 108A and 108B, or consent of the instructor.  
A study of the occurrence, induction, and modification of mutations; the cytological basis of bacterial genetics; nature and action of the genetic material; and the modes for transfer of hereditary traits in microorganisms.
- 120C. Bacterial Genetics Laboratory. (2) II.** Mr. Romig  
Concurrent or prerequisite: course 120.
- \*125. Determinative Bacteriology. (3) I.** Mr. Romig  
Lecture, one hour; laboratory, six hours. Prerequisite: course 103.  
The basic biological characteristics and taxonomic relationships of the Schizomycetes.

\* Not to be given, 1960-1961.

**130. Immunochemistry.** (4) II. Mr. Nelson  
Lecture, two hours; laboratory, six hours. Prerequisite: course 103; recommended: Chemistry 108A and 108B.

Advanced studies in microbial parasitism, including factors affecting host resistance.

**195. Proseminar.** (2) I, II.

Prerequisite: course 103. Course 195, or equivalent, is a prerequisite for graduate research in microbiology (Microbiology 299).

Oral and written reports on current research in microbiology.

**199. Special Studies in Bacteriology.** (2-5) I, II.

The Staff

Prerequisite: senior standing and consent of the department prior to registration.

### MICROBIOLOGY

#### GRADUATE COURSES

**210. Advanced Bacterial Physiology.** (3-3) Yr. Mr. Salle

Prerequisite: Bacteriology 106.

Physiological activities of microorganisms in the light of more advanced principles.

**251A-251B. Seminar in Microbiology.** (1-1) Yr. Mr. Ball, Mr. Plunkett

**252. Seminar in Medical Microbiology.** (1) II. Mr. Pickett

**\*253. Seminar in Immunology.** (1) I. Mrs. Ball, Mr. Nelson

**\*254. Seminar in Microbial Physiology.** (1) I. Mr. Jann

**255. Seminar in General Virology.** (1) II.

**256. Seminar in Microbial Genetics.** (1) I. Mr. Romig

**299. Research on Thesis or Dissertation.** (2-6) I, II. The Staff

#### RELATED COURSE (see page 449)

**Life Sciences 370. Methods and Materials for Teaching Life Science.**

(3) II. \_\_\_\_\_, Mr. Herbst

## BIOPHYSICS AND NUCLEAR MEDICINE

(Department Office, B1-153 Medical Center)

Joseph F. Ross, M.D., *Professor of Biophysics and Nuclear Medicine (Chairman of the Department) and Professor of Medicine.*

Wilbur A. Selle, M.D., Ph.D., *Professor of Biophysics.*

Stafford L. Warren, M.D., *Professor of Biophysics and Dean of the School of Medicine.*

Albert W. Bellamy, Ph.D., *Professor of Biophysics, Emeritus.*

Thomas G. Hennessy, M.D., Ph.D., *Associate Professor of Biophysics in Residence and Associate Professor of Radiology in Residence.*

Kermit H. Larson, M.S., *Associate Biophysicist in Residence.*

Alexander Kolin, Ph.D., *Associate Professor of Biophysics.*

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

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

\* Not to be given, 1960-1961.

Marcel Verzeano, M.D., *Associate Professor of Biophysics.*

Jean D. Bath, Ph.D., *Assistant Professor of Biophysics.*

Saul D. Larks, Ph.D., *Assistant Professor of 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 completed the interdepartmental curriculum in biophysics (Los Angeles campus) or have equivalent training and experience.

#### *Requirements for the Degree of Master of Science*

1. For the general requirements, see pages 66-68.
2. A foreign language is not required for the master's degree.

#### *Requirements for the Doctor's Degree*

1. For the general requirements, see page 68-70.
2. Departmental requirements: The course of study for the doctor's degree will consist of upper division and graduate work in the fields of mathematics, physics, chemistry, biology, and biophysics, and will be arranged according to the needs of the individual student. (Detailed information will be provided by the department on request.)

### UPPER DIVISION COURSES

#### 101. Elements of Medical Biophysics. (2) II. Mr. Ross and the Staff

While designed for medical students, a limited number of qualified graduate students will be permitted to take the course with the consent of the instructor.

Lectures on the principles of physics in relation to normal physiology and to the diagnosis and treatment of disease.

#### 199. Special Studies. (1-3) I, II. The Staff

Prerequisite: graduate standing and consent of the instructor.

### GRADUATE COURSES

#### 240. Electrodiagnostic Techniques. (1) I. Mr. Selle

The principles of electrocardiography, electromyography, electroencephalography, electroplethysmography, and other electronic methods involving a consideration of electrophysics, action potentials, and techniques and procedures of taking records, together with a systematic description of mechanisms. Certain periods will be devoted to experimental work and to taking of records on hospital patients.

#### 241A-241B. Molecular Aspects of Protoplasm. (2-2) Yr. Miss Bath

An adaptation of our knowledge of molecular structure to biological concepts of protoplasm and extraneous cell parts. Molecular level considerations are related to the atomic level below and the micellar level above. Electrical aspects as well as structural are included.

#### 242A-242B. Advanced General Biophysics. (2-2) Yr. Mr. Kolin and the Staff

Biophysical principles and methods applied to the study of biological phenomena and medical research.

#### 251A-251B. Seminar in Biophysics. (1) I, II. The Staff

Prerequisite: consent of the instructor in charge.

A review and discussion of current literature on the use of biophysical methods in research, diagnosis, and therapy.

- 260. Seminar on the Physics of Viruses.** (1) I. Miss Bath  
A review of the results of the application of physical concepts and physical methods to the study of viruses.
- 262. Seminar on Molecular and Colloidal Aspects of Neurobiophysics.**  
(1) II. Miss Bath  
A study of the application of new concepts and methods in molecular and colloidal biophysics to the understanding of the ultrastructure and electrical properties of neurons.
- 265A-265B. Seminar in Cellular and Molecular Biophysics.** (1-2) I, II. Miss Bath  
A survey of living material on subcellular levels of organization, with emphasis on physical concepts. General topics covering the area of cellular and molecular biophysics, differing each semester for three consecutive years.
- 270. Seminar in Biomedical Aspects of Nuclear Radiation.** (1) I. Mr. Ross and the Staff  
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.
- 297. Special Problems for Graduate Students.** (1-4) I, II. The Staff  
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.
- 299. Research in Biophysics.** (2-8) I, II. The Staff

## BOTANY

(Department Office, 320 Botany Building)

- Fredrick T. Addicott, Ph.D., *Professor of Botany.*  
Carl C. Epling, Ph.D., *Professor of Botany and Curator of the Herbarium.*  
Karl C. Hamner, Ph.D., *Professor of Botany.*  
Arthur W. Haupt, Ph.D., *Professor of Botany.*  
F. Harlan Lewis, Ph.D., *Professor of Botany (Chairman of the Department).*  
Orda A. Plunkett, Ph.D., *Professor of Botany.*  
Samuel G. Wildman, Ph.D., *Professor of Botany.*  
Flora Murray Scott, Ph.D., *Professor of Botany, Emeritus.*  
Mildred E. Mathias (Mildred Mathias Hassler), Ph.D., *Associate Professor of Botany and Director of the Botanical Garden (Vice-Chairman of the Department).*  
Bernard O. Phinney, Ph.D., *Associate Professor of Botany.*  
Henry J. Thompson, Ph.D., *Assistant Professor of Botany (Life Sciences).*  
———, *Assistant Professor of Botany.*  
———, *Instructor in Botany.*



- David Appleman, Ph.D., *Professor of Plant Nutrition.*  
Jacob B. Biale, Ph.D., *Professor of Subtropical Horticulture.*  
George G. Laties, Ph.D., *Associate Professor of Horticultural Science.*  
Roy M. Sachs, Ph.D., *Assistant Professor of Ornamental Horticulture.*

### College of Agriculture

*Preparation for the Major.*—The lower division course requirements of the plant science curriculum (see page 30).

*The Major.*—Twelve units of approved upper division courses in botany.

*Required and Recommended Courses.*—Required: Chemistry 1A, 1B and 8; Botany 1, 2, 3, 6 and 107. Recommended: Bacteriology 1; Floriculture and Ornamental Horticulture 136A, 136B; Geology 101; Horticultural Science 110; Irrigation and Soil Science 108; Physics 2B; Zoology 1A and 1B.

### College of Letters and Science

*Preparation for the Major.*—Botany 1 or Life Sciences 1A–1B; Chemistry 1A–1B or the equivalent; and one or more of the following courses which are prerequisite to certain upper division courses in botany: Botany 2, 3, 6; Chemistry 8.

*The Major.*—Twenty-four units of upper division botany, of which 8 units may be replaced by upper division courses in related fields with the approval of the department. Upper division credit will be allowed for lower division botany courses taken in the upper division after completion of 13 units of lower division botany courses.

*Requirements for Advanced Degrees.*—For students who expect to become candidates for advanced degrees in botany, the following courses or their equivalents are required: Botany 2, 3, 6, 107, 140. Depending upon the special field of interest of the candidate, one or more of the following courses may be required: Bacteriology 1; Chemistry 5A, 9, 108A–108B, 109; Floriculture 146A–146B, 148; Geography 118; Geology 2, 3; Mathematics C, D, 1–3A, 5A; Horticultural Science 111; Zoology 1A–1B, 101A, 101C.

#### LOWER DIVISION COURSES

1. **General Botany.** (5) I, II. Miss Mathias, Mr. Hamner  
Lecture, three hours; laboratory, six hours.  
An introduction to the various fields of plant science, including anatomy, morphology, physiology, and genetics.
2. **The Plant Kingdom.** (4) II. Mr. Haupt  
Lecture, two hours; laboratory, six hours.  
An introductory course dealing with the structure, development, and life history of representative members of all the major plant groups, with emphasis on their relationships and evolution.
3. **Field Botany.** (4) II. Mr. Lewis  
Lecture, two hours; laboratory or field, six hours.  
An introduction to the life habits, interrelationships, and classification of native and ornamental plants.
6. **Plant Anatomy.** (4) I. \_\_\_\_\_  
Lecture, two hours; laboratory, six hours. Prerequisite: course 1 or Life Sciences 1A–1B or equivalent.  
The microscopic study of the structure and development of higher plants in relation to the functions of the tissues.

#### UPPER DIVISION COURSES

103. **Botany of Economic Plants.** (2) II. Mr. Addicott  
Designed for students of economics, geography, agriculture, and botany. Life Sciences 1A–1B is recommended.  
The general morphology, classification, ecology, and geographic distribution, origin, and uses of economic plants.

**105A. Algae and Bryophytes. (4) I.**

Mr. Haupt

Lecture, two hours; laboratory, six hours. Prerequisite: course 2 or equivalent.

A study of the structure, development, and phylogenetic relationships of the principal orders of fresh-water and marine algae, and of liverworts and mosses.

**105B. Morphology of Vascular Plants. (4) II.**

Mr. Haupt

Lecture, two hours; laboratory, six hours. Prerequisite: course 2 or equivalent.

Structure, development, and phylogenetic relationships of the principal groups of ferns, fern-allies, and seed plants.

**107. Introduction to Plant Physiology. (4) I.**

Mr. Wildman

Lecture, two hours; laboratory, six hours. Prerequisite: course 1 or Life Sciences 1A-1B and Chemistry 1A-1B and 8, or equivalent. Course 6 desirable.

The fundamental aspects of water relations, mineral nutrition, photosynthesis, respiration, metabolism, and growth, development and reproduction of higher plants, including biochemical mechanisms.

**113. Physiological Plant Anatomy. (3) II.**

Lecture, one hour; laboratory, six hours. Prerequisite: courses 6, 107. Offered in alternate years.

A survey of the tissues of the higher plants in relation to function.

**119. Mycology. (3) I.**

Mr. Plunkett

Lecture, one hour; laboratory, six hours. Prerequisite: course 2, or equivalent. For students in botany, bacteriology, agriculture, and forestry.

Structure, development, and classifications of the important genera and species of fungi.

**126. Medical Mycology. (4) II.**

Mr. Plunkett

Lecture, two hours; laboratory, six hours. Prerequisite: course 119 or Bacteriology 1. This course is designed for students in bacteriology, parasitology, and medicine.

An introduction to the morphology, physiology, and taxonomy of the pathogenic fungi which cause disease in man and the domestic animals.

**131. Physiology of Fungi. (3) I.**

Mr. Plunkett

Lecture, one hour; laboratory, six hours. Prerequisite: courses 119 or 126 and Chemistry 8.

A survey of the interrelation of fungi to their environment, including factors influencing growth, nutrition, metabolism, and reproduction.

**140. Plant Genetics. (4) II.**

Mr. Phinney

Lecture, three hours; laboratory, three hours. Prerequisite: course 1 or Life Sciences 1A-1B or Zoology 1A-1B or Bacteriology 1 or equivalent.

Principles of heredity, with special reference to plants. Laboratory work involving breeding experiments with plant and animal materials.

**141. Plant Cytogenetics. (2) I.**

Mr. Lewis

Lecture, two hours. Prerequisite: course 140 or Zoology 130A. Offered in alternate years.

The fundamentals of cytogenetics. Heredity as related to cytogenetical phenomena, with special reference to plants.

**141C. Plant Cytogenetics Laboratory. (1) I.**

Mr. Lewis

Laboratory, three hours. Prerequisite or concurrent: course 141. Offered in alternate years.

Laboratory in plant cytogenetics.

**142. Biochemical Genetics. (2) I.**

Mr. Phinney

Lecture, two hours. Prerequisite: introductory course in genetics, and Chemistry 8.

Aspects of gene action determined through the study of metabolic pathways in fungi and chemical systems in higher plants. The evaluation of the gene as a reduplicating unit at the chemical level.

**151. Taxonomy of Seed Plants. (3) I.**

Miss Mathias

Lecture, one hour; laboratory, six hours. Prerequisite: course 3 or equivalent.

The fundamentals of systematic botany. A survey of the orders and families commonly met with in the native and cultivated floras.

**\*152. Advanced Systematic Botany. (3) II.**

Mr. Lewis

Lecture, one hour; laboratory or field, six hours. Prerequisite: course 151, elementary genetics, and consent of the instructor. Offered in alternate years.

Field and laboratory study of natural variation in relation to systematics.

**\*153. Determinants of Evolution. (2) I.**

Mr. Epling

Lecture and discussion, two consecutive hours. Prerequisite: consent of the instructor.

The processes of evolutionary change in natural populations. A student may concurrently initiate an experimental project as Botany 199.

**155. Distribution and History of Angiosperms. (2) I.**

Mr. Epling

Lecture, two hours. Prerequisite: course 151.

A comparative study of the distributional patterns of angiosperm families and their historical development.

**160. Plant Physiology. (3) II.**

Mr. Biale, Mr. Sachs, Mr. Wildman

Lecture and discussion, three hours. Prerequisite: consent of the instructor. Recommended: course 107, Chemistry 108A.

A critical analysis of selected topics pertaining to metabolism and growth of plants, with emphasis on the experimental approach.

**161. Experiments in Plant Physiology. (2) II.**

Mr. Biale, Mr. Sachs, Mr. Wildman

Laboratory, six hours. Prerequisite: course 160 to be taken concurrently, and consent of instructor. Designed primarily for students expecting to do research in the botanical or horticultural sciences, or other research involving plant physiology and plant biochemistry.

An advanced course illustrating the experimental study of the topics considered in Botany 160.

**190. Research Methods in Morphology. (4) I.**

Mr. Haupt

Lecture, one hour; laboratory, nine hours. Prerequisite: consent of the instructor. Offered in alternate years.

The theory and methods of preparing plant tissues and materials for microscopic study.

**195A-195B. Proseminar in Botany. (2-2) Yr.**

Mr. Phinney

Lecture, two hours. Prerequisite: senior standing and consent of the instructor.

Oral reports and discussions on research topics of interest to biologists.

**199. Special Studies. (2-4) I, II.**

The Staff

Prerequisite: senior standing and consent of the instructor.

\* Not to be given, 1960-1961.

## GRADUATE COURSES

**201A-201B. Principles and Theories of Botany.** (2-2) Yr. Mr. Addicott  
Lecture, two hours. Prerequisite: major in botanical science. Required  
of graduate students in botany.

A point of orientation for advanced graduate research.

**211A\*-B\*-C\*-D\*-E-F. Advanced Plant Physiology.** (2) I, II.

Mr. Addicott, Mr. Appleman, Mr. Biale,  
Mr. Hamner, Mr. Laties, Mr. Wildman

Lectures, two hours. Open to all students interested in plant physiology;  
may be entered any semester.

A survey of the entire field of plant physiology, covering a period of  
three years. A. Structure of cells, water relations, absorption; B. Trans-  
location, mineral nutrition; C. Photosynthesis, respiration; D. Respiration  
(concluded), nitrogen metabolism, other metabolisms unique to plants;  
E. Growth and growth regulators; F. Development and reproduction, en-  
vironmental factors and plant growth.

**253A-253B. Seminar in Plant Anatomy.** (1-1) Yr. Miss Scott

**254A-254B. Seminar in Plant Physiology.** (1-1) Yr.

Mr. Addicott, Mr. Hamner, Mr. Wildman

**255A-255B. Seminar in Systematics.** (1-1) Yr.

Miss Mathias, Mr. Lewis, Mr. Thompson

**256A-256B. Seminar in Plant Morphology.** (1-1) Yr.

Mr. Haupt

**257A-257B. Seminar in Mycology.** (1-1) Yr.

Mr. Plunkett

**258A-258B. Seminar in Genetics.** (1-1) Yr.

Mr. Lewis, Mr. Phinney

Students may enter in any semester.

Special topics covering all aspects of genetics, differing each semester for  
three years.

**259A-259B. Seminar in Evolutionary Genetics.** (1-1) Yr.

Mr. Epling

**278A-278B. Research in Botany.** (2-6; 2-6) Yr.

The Staff

## Life Sciences

**1A-1B. Fundamentals of the Life Sciences.** (3-3) Yr.

Mr. Furgason, Mr. Thompson

This course satisfies the same prerequisites as Botany 1.

## RELATED COURSES IN OTHER DEPARTMENTS OR DIVISIONS

**Art 149A-B-C-D. Biological Illustration.**

**Bacteriology 1. Introductory Bacteriology and Microbiology.**

**Bacteriology 120. Bacterial Genetics.**

**Biology 12. Natural History.**

**Floriculture and Ornamental Horticulture 146A-B. Plant Breeding.**

**Floriculture and Ornamental Horticulture 148. Design and Analysis of  
Horticultural Experiments.**

**Geography 118. Plant Geography.**

\* Not to be given, 1960-1961.



Horticultural Science 111. Plant Metabolism.

Irrigation and Soil Science 110A. The Soil as a Medium of Plant Growth.

Paleontology 120. Paleobotany.

Paleontology 290. Research in Biogeography.

Zoology 119. Isotopic Tracers in Biology.

Zoology 129. Application of Optical Instruments to Biological Problems.

Zoology 139. Biological Effects of Radiation.

Zoology 140. Development of Biological Ideas.

Zoology 219. Radiation Biology.

These and other courses in the departments listed, as well as in chemistry, meteorology, oceanography, physics, and plant pathology, may be of particular interest to botany majors.

### Herbarium

The University maintains a teaching herbarium of specimens representative of the floras 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 an herbarium of subtropical ornamental plants.

### Botanical Garden, Glasshouses, and Field Areas

The Botany Building is situated in the Botanical Garden, permitting ready access to the garden for all classes. 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.

## BUSINESS ADMINISTRATION

(Department Office, 250A Business Administration-Economics Building)

Ralph M. Barnes, Ph.D., *Professor of Production Management and Professor of Engineering.*

George W. Brown, Ph.D., *Professor of Business Administration, Professor of Engineering, and Director, Western Data Processing Center.*

William F. Brown, Ph.D., *Professor of Marketing.*

Albert B. Carson, Ph.D., C.P.A., *Professor of Accounting.*

Ralph Cassady, Jr., Ph.D., *Professor of Marketing.*

John C. Clendenin, Ph.D., *Professor of Finance.*

Leo Grebler, Ph.D., *Professor of Real Estate and Urban Land Economics.*

<sup>1</sup>Neil H. Jacoby, Ph.D., LL.D., *Professor of Business Economics and Policy.*

Edward G. Koch, Ph.D., *Visiting Professor of Business Administration.*

<sup>2</sup>Harold Koontz, Ph.D., *Professor of Business Policy and Transportation.*

Jacob Marschak, Ph.D., *Professor of Business Administration.*

<sup>1</sup>Wayne L. McNaughton, Ph.D., *Professor of Business Administration.*

Frederic Meyers, Ph.D., *Professor of Personnel Management and Industrial Relations.*

Cyril J. O'Donnell, Ph.D., *Professor of Business Organization and Policy.*

<sup>1</sup> In residence fall semester only. 1960-1961.

<sup>2</sup> In residence spring semester only. 1960-1961.

- George W. Robbins, M.B.A., *Professor of Marketing (Chairman of the Department)*.
- George A. Steiner, Ph.D., *Professor of Management Theory and Director, Division of Research*.
- Robert Tannenbaum, Ph.D., *Professor of Personnel Management and Industrial Relations*.
- J. Frederick Weston, Ph.D., *Professor of Business Economics and Finance*.
- Ira N. Frisbee, M.B.A., C.P.A., *Professor of Accounting, Emeritus*.
- Howard S. Noble, M.B.A., C.P.A., LL.D., *Professor of Accounting, Emeritus*.
- Theodore A. Andersen, Ph.D., *Associate Professor of Business Economics and Finance*.
- Elwood S. Buffa, Ph.D., *Associate Professor of Production Management*.
- Joseph D. Carrabino, Ph.D., *Associate Professor of Production Management*.
- Fred E. Case, D.C.S., *Associate Professor of Real Estate and Urban Land Economics*.
- James M. Gillies, Ph.D., *Associate Professor of Real Estate and Urban Land Economics*.
- Ralph C. Hoerber, J.D., Ph.D., *Associate Professor of Business Law*.
- James R. Jackson, Ph.D., *Associate Professor of Business Administration*.
- †Wilbert E. Karrenbroek, Ph.D., *Associate Professor of Accounting*.
- Paul Kircher, Ph.D., C.P.A., *Associate Professor of Accounting*.
- Mitchell O. Locks, Ph.D., *Visiting Associate Professor of Business Administration*.
- Phillip Neff, Ph.D., *Associate Professor of Business Economics*.
- Alfred Nicols, Ph.D., *Associate Professor of Business Economics*.
- Frank E. Norton, Ph.D., *Associate Professor of Business Economics*.
- †Irving Pfeffer, Ph.D., *Associate Professor of Insurance*.
- Reed M. Powell, Ph.D., *Visiting Associate Professor of Management*.
- Harry Simons, M.A., C.P.A., *Associate Professor of Accounting*.
- B. Clay Sprowls, Ph.D., *Associate Professor of Business Statistics*.
- Jacob Stockfisch, Ph.D., *Associate Professor of Business Administration*.
- John R. Van de Water, J.D., *Associate Professor of Industrial Relations and Business Law*.
- Irving R. Weschler, Ph.D., *Associate Professor of Personnel Management and Industrial Relations*.
- Robert M. Williams, Ph.D., *Associate Professor of Business Economics and Statistics*.
- James B. Boulden, D.B.A., *Assistant Professor of Business Administration*.
- David K. Eiteman, Ph.D., *Assistant Professor of Finance*.
- David B. Houston, Ph.D., *Assistant Professor of Insurance*.
- Thomas A. Petit, Ph.D., *Assistant Professor of Marketing*.
- David A. Snell, Ph.D., *Assistant Professor of Finance*.
- Robert Wolfson, Ph.D., *Assistant Professor of Business Administration*.
- Raoul Freeman, Ph.D., *Acting Assistant Professor of Business Administration*.
- Robert Frye, M.B.A., *Acting Assistant Professor of Marketing*.
- Robert E. Hanson, B.S., *Acting Assistant Professor of Accounting*.
- Leland L. Howell, A.B., *Acting Assistant Professor of Business Administration*.
- David Huff, M.B.A., *Acting Assistant Professor of Business Administration*.
- John M. Lishan, Ph.D., *Acting Assistant Professor of Business Economics*.
- Charles G. Louie, M.B.A., *Acting Assistant Professor of Accounting*.
- Fred Massarik, Ph.D., *Acting Assistant Professor of Personnel Management*.
- Mildred Massey, Ph.D., *Acting Assistant Professor of Business Administration*.
- Harold C. Petrowitz, LL.M., *Acting Assistant Professor of Business Law*.

† Absent on leave, 1960-1961.

Jerome Reisel, M.A., *Acting Assistant Professor of Business Administration.*  
 Roger B. Ulvestad, M.B.A., *Acting Assistant Professor of Business Administration.*

Eugene Voorhees, LL.B., *Acting Assistant Professor of Business Law.*

Robert W. Buttrey, LL.B., C.P.A., *Lecturer in Accounting.*

Francis M. Fillerup, M.B.A., *Lecturer in Business Administration.*

Malcolm F. Healip, Ph.D., *Lecturer in Business Administration.*

Raymond J. Jessen, Ph.D., *Lecturer in Business Administration.*

Paul Prasow, Ph.D., *Lecturer in Personnel Management.*

Warren H. Schmidt, Ph.D., *Lecturer in Personnel Management.*

Robert B. Andrews, M.B.A., *Associate in Business Administration.*

John J. Barry, B.S., *Associate in Production Management.*

Earl S. Beecher, M.B.A., *Associate in Business Administration.*

Erwin C. Druce, M.B.A., *Associate in Business Administration.*

William P. Gellermann, M.B.A., *Associate in Business Administration.*

William W. Harned, M.B.A., *Associate in Business Administration.*

Chester F. Healy, M.B.A., *Associate in Business Administration.*

Richard H. Hill, M.B.A., *Associate in Business Administration.*

James I. Hubler, M.B.A., *Associate in Business Administration.*

Robert P. Hungate, A.B., *Associate in Business Administration.*

S. Michal Ingraham, M.B.A., *Associate in Business Administration.*

Geraldine P. Knight, M.B.A., *Associate in Business Administration.*

Charles R. Miller, M.B.A., *Associate in Business Administration.*

Anelise N. Mosich, M.B.A., *Associate in Business Administration.*

Jack L. Rettig, M.A., *Associate in Business Administration.*

Harold P. Scheinkopf, B.A., *Associate in Business Administration.*

Richard A. Siegel, M.B.A., *Associate in Business Administration.*

Donald R. Shaul, M.B.A., *Associate in Business Administration.*

Harold K. Strom, M.B.A., *Associate in Business Administration.*

Patrick M. Williams, M.B.A., *Associate in Business Administration.*

### School of Business Administration

Curricula requirements for Bachelor of Science degree, Master of Business Administration degree, and Doctor of Philosophy degree are described on pages 46-48.

### College of Letters and Science

*Letters and Science List.*—Courses 100, 118, 133, 135, 140, 142, 160, 170, 180, 190. For regulations governing this list, see page 2.

#### LOWER DIVISION COURSES

**1A-1B. Elementary Accounting.** (3-3) Beginning either semester.

Mr. Louie in charge

Lecture, two hours; laboratory, two hours. Prerequisite: sophomore standing. 1A is prerequisite to 1B.

An introduction to accounting theory and practice. The first semester presents the recording, analyzing and summarizing procedures used in preparing balance sheets and income statements. The second semester includes payroll and tax accounting, partnership and corporation accounts, manufacturing and cost accounting and supplementary statements.

## UPPER DIVISION COURSES

Unless otherwise indicated in the course description, an upper division Business Administration course is open only to students registered in the School of Business Administration or the Graduate School of Business Administration, to students in other colleges or schools the curricula of which officially prescribe the course, and to students who secure the written approval of the Dean of the School of Business Administration. Business Administration 1A-1B and Economics 1A-1B or their equivalent are prerequisite to all upper division courses unless specifically waived.

## I. Business Economics

## 100. Business Economics. (3) I, II.

Mr. Neff, Mr. Nicols, Mr. Norton, Mr. Stockfish, Mr. Williams

Prerequisite: course 115 (may be taken concurrently). Required of all business administration students in their first semester 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.

## 101. Business Fluctuations and Forecasting. (3) I, II.

Mr. Andersen, Mr. Neff, Mr. Nicols, Mr. Norton,  
Mr. Stockfish, Mr. Williams

Prerequisite: courses 100, 115; and Economics 135 (may be taken concurrently). Required of all business administration students in their second semester of residence immediately following course 100.

How the enterprise reacts to general economic fluctuations and how its decisions, in turn, affect them. Important forces in past fluctuations. Behavior of indices of business activity. Appraisal of forecasting techniques. Entrepreneurial and public policies to mitigate business fluctuations.

## II. Business Law

## 105B. Business Law. (3) I, II. Mr. Hoerber, Mr. Petrowitz, Mr. Voorhees

Prerequisite: course 18 (Berkeley) or equivalent. Not open to students who have credit for course 108.

Significance and growth of the law; law in its relationship to business, with special emphasis on current problems and on the law of sales, property, negotiable instruments, business organizations, and trade regulations.

## 108. Legal Analysis for Business Managers. (4) I, II.

Mr. Hoerber, Mr. Petrowitz, Mr. Voorhees

Not open to students who have credit for course 18 (Berkeley) or 105B or equivalents. Must be completed in the first or second semester 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.

## III. Business Statistics

## 115. Business Statistics. (3) I, II.

Mr. Sprowls, Mr. Williams

Lecture, three hours; laboratory, two hours. Students who have credit for Economics 140 will receive no credit for this course. Required of all business administration students in their first semester of residence.

Sources of statistical data; construction of tables, charts, and graphs; statistical distributions and their measurement; introduction to probability

theory, market analysis, consumer sampling, and quality control; index numbers; correlation; time-series analysis: trend, seasonal, business cycles; business forecasting; statistics of national income.

**116A-116B. Statistical Inference in Business.** (3-3) Yr. Mr. Sprowls

Prerequisite: course 115 or the equivalent.

An intermediate course in the principles of statistical inference, with emphasis upon applications to problems of a business and economic nature.

**117. Index Numbers and Time Series.** (3) II. Mr. Williams

Prerequisite: course 115 or the equivalent.

Analysis of the business indexes in current use. Index number construction. Methods of measuring business trends and fluctuations, with applications to business forecasting. The use of electronic computers in the analysis of business series.

**118. Introduction to Operations Analysis.** (3) I, II. Mr. Jackson

Prerequisite: course 115.

Techniques and applications of operations analysis as a management tool.

**119. Electronic Computers in Business.** (3) I, II. Mr. Hill, Mr. Sprowls

Electronic computers in business; the logic of computers; elements of programming and operation; costs; case studies and inspection of computer installations.

#### **IV. Accounting**

**120. Intermediate Accounting.** (4) I, II.

Mr. Karrenbroek, Mr. Mosich, Mr. Simons

(To be offered for the first time as a 4-unit course in the fall semester, 1960.)

Prerequisite: courses 1A-1B. Not open for credit to students who have credit for 120M. Required of all students whose field of concentration is accounting in their first semester in residence. Students with a field of concentration other than accounting must take either course 120 or 120M.

The preparation of the principal accounting statements. Recording valuation, and presentation of cash, temporary investments, receivables, inventories, investments, plant and equipment, intangibles, current obligations, long-term debt, paid-in capital, and retained earnings. Statement analysis. Statement of application of funds.

**120M. Managerial Accounting.** (3) I, II.

Mr. Gellermann, Mr. Kircher, Mr. Louie

Prerequisite: courses 1A-1B. May be elected by students in fields of concentration other than accounting to meet core course requirement in accounting. Not open to students who have credit for 120.

Basic concepts of accounting; systems and international control; uses of accounting data in decision-making; budgets; interpretation of administrative reports.

**121. Advanced Accounting.** (3) I, II.

Mr. Karrenbroek, Mr. Mosich, Mr. Simons

(To be offered for the first time in the spring semester, 1961.)

Prerequisite: course 120. Not open to students who started their upper division study after September 1, 1960.

Partnerships, joint ventures, installment sales, consignments, agencies and branches, consolidated balance sheets and income statements, statement of affairs, receiverships, realization and liquidation statements, estates and trusts, and actuarial problems.

**122. Cost Accounting. (3) I, II.**

Mr. Carson

Prerequisite: course 120.

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.

**123. Auditing. (3) I, II.**

Mr. Hanson

(To be offered for the last time in the spring semester, 1961.)

Prerequisite: course 121. Not open to students who started their upper division study after September 1, 1960.

Problems of verification, valuation, and presentation of financial information in reports covered by the opinion of an independent public accountant. Responsibilities of the public accountant and rules of professional conduct.

**124. Advanced Accounting. (5) I, II.**

Mr. Karrenbrock, Mr. Simons

(To be offered for the first time in the fall semester, 1961.)

Prerequisite: courses 120, 122.

Partnerships and joint ventures; installment sales and consignment sales; home office and branch relationships; corporate combinations; the preparation of consolidated statements; foreign branches and subsidiaries; receiverships, estates and trusts; governmental units; actuarial science.

**125. Fund Accounting and Accounting Systems. (3) I, II.**

Mr. Kircher

(To be offered for the last time in the spring semester, 1961.)

Prerequisite: course 120. Not open to students who started their upper division study after September 1, 1960.

Fund accounting; fund theory; governmental and other institutional operations; budgets and records for the general fund and special funds. An introduction to accounting systems and methods of data processing, including use of electronic equipment.

**127. Federal Tax Accounting. (3) I, II.**

Mr. Buttrey

Prerequisite: course 121, 124, or consent of the instructor.

A study of the fundamentals of federal income taxation, with emphasis on the taxation of individuals.

**128. Advanced Accounting Problems. (5) I, II.**

Mr. Simons

(To be offered for the last time in the fall semester, 1961.)

Three hours lecture and two practice sessions of two hours each weekly. Prerequisite: courses 121, 122, 123, 127; 125 (may be taken concurrently). Not open to students who started their upper division study after September 1, 1960.

Review of contemporary accounting theory, with emphasis upon pronouncements of the American Institute of Certified Public Accountants, American Accounting Association, and Securities and Exchange Commission. Applications of such theory to advanced problems of the kind contained in examinations for C.P.A. certification.

**V. Finance**

Economics 135 is required of all students in the School of Business Administration.

**131. Business Finance. (3) I, II.**

Mr. Andersen, Mr. Snell, Mr. Weston

A study of the forms and sources of financing business firms large and small, corporate and non-corporate. The emphasis is on financial planning and developing judgment in formulating decisions on financial problems. Financial policies are also considered in their social, legal, and economic effects.

**132. Credit Management. (3) I, II.**

Mr. Snell, Mr. Weston

Prerequisite: course 131.

Development of credit policies in relation to enterprise policy. The place of credit management within the organization. Consideration of factors influencing internal financial management and the formulation of credit extension policy.

**133. Investment Principles and Policies. (3) I, II.**

Mr. Clendenin, Mr. Eiteman

Problems 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.

**134. Investment Analysis. (3) I, II.**

Mr. Clendenin, Mr. Eiteman

Prerequisite: courses 120 or 120M or 120G, and 133.

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.

**VI. Risk-Bearing and Insurance****135. Principles of Insurance. (3) I, II.**

Mr. Houston, Mr. Pfeffer

Basic principles of risk and insurance and their applications to business management and personal affairs. Analyses of concepts and methods of handling risks; insurance carriers, contracts, and underwriting; loss prevention and settlement; government insurance programs; economic functions of insurance.

**136. Life Insurance. (3) I, II.**

Mr. Pfeffer

Prerequisite: course 135.

Studies of the nature, and of the business and personal uses of life insurance and annuities; contracts; policy conditions; selection of risks; types of carriers; mathematical bases; group, wholesale, and industrial insurance; organization, management, regulation, taxation, and investment policy of legal reserve companies.

**137. Multiple Lines Insurance. (3) I, II.**

Mr. Houston, Mr. Pfeffer

Prerequisite: course 135.

Studies of the principles and practices of property and casualty insurance. Analysis of insurance functions, including marketing, rate-making, underwriting, claims, and loss prevention. Fire and allied lines, workmen's compensation, liability, automobile, fidelity, and surety bonding are explored.

**VII. Production Management****140. Elements of Production Management. (3) I, II.**

Mr. Andrews, Mr. Buffa, Mr. Carlson, Mr. Carrabino, Mr. Drucke

Lecture, two hours; laboratory, two hours.

Principles and decision analyses related to the 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.

**141. Plant Layout and Materials Handling. (3) I, II.**

Mr. Barnes, Mr. Buffa

Lecture, two hours; laboratory, three hours. Prerequisite: course 140 or consent of the instructor.

Analytical methods effective in the design of plant layout and materials handling systems; process analysis, operation sequence analysis, economic analysis; location and layout of production departments, maintenance facilities, employee service facilities, offices. Laboratory work involves the design of a complete production system.

**142. Production Planning and Control. (3) II.** Mr. Carlson

Prerequisite: course 140 or consent of the instructor.

A study of inventory theories, production models and programming; scheduling and allocation of the factors of production; quality and cost control; and the design of production information and control systems.

**143. Motion and Time Study. (4) I, II.** Mr. Barnes, Mr. Barry

Lecture, two hours; laboratory, four hours. Prerequisite: course 140 or consent of the instructor.

Motion and time study as a management tool. Job simplification and motion economy; motion picture film analysis; analyzing operations; time standards and their determination; performance rating and allowances; measuring work by statistical methods; labor cost control.

**144. Line-Production Methods. (3) II.** Mr. Andrews, Mr. Buffa

Prerequisite: course 141 and consent of the instructor.

A study of continuous production systems. The design and operation of manual, mechanized, and automatic production lines; material movement, balancing operations, in-process storage, physiological and psychological factors in task design, support activities, and line flexibility.

**\*145. Industrial Purchasing. (3) II.**

Prerequisite: course 140 or consent of the instructor.

A study of purchasing and procurement in industry and government. Purchasing policies and organization; coordination with production schedules and materials planning; optimum quantity and price; vendor relations; follow-up and expediting; receiving and inspection; purchasing research.

**147. Job Evaluation and Wage Incentives. (3) I, II.** Mr. Buffa

Lecture, two hours; laboratory, two hours. Prerequisite: course 140 or consent of the instructor.

Theory, design, evaluation, and administration of wage incentive plans and their interrelationships with job evaluation, methods standardization, and work measurement programs; study of the specialization, enlargement, and optimum design of jobs.

### VIII. Personnel Management and Industrial Relations

**150. Elements of Personnel Management. (3) I, II.**

Mr. Massarik, Mr. Meyers, Mr. Prasow, Mr. Tannenbaum,  
Mr. Van de Water, Mr. Weschler

Required of all business administration students.

Principles and methods of utilizing human resources in organizations.

**152. Leadership Principles and Practice. (3) I, II.**

Prerequisite: senior standing. Mr. Massarik, Mr. Reisel, Mr. Schmidt,  
Mr. Tannenbaum, Mr. Weschler

Knowledge and skills leading to effectiveness in interpersonal relations. Understanding one's self 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.

\* Not to be given, 1960-1961.



**\*153. Managerial Adjustments to Labor Law.** (3) I, II. Mr. Van de Water  
Prerequisite: course 150.

History and consequences for business policy of (a) law governing collective relationships between employers, employees, and their representatives and (b) law concerned with employee welfare, including wages, hours, working conditions, and industrial accident compensation. Criteria for evaluating labor law, with special attention to the role of management in the improvement of legislation.

**154. Labor Markets and Wage Structure.** (3) I, II. Mr. Meyers  
Prerequisite: courses 100 and 150.

The theory characteristics of labor markets and wage structures considered as a basis for managerial policies and procedures in wage and salary administration.

### IX. Marketing

**160. Elements of Marketing.** (3) I, II.

Mr. W. Brown, Mr. Heslip, Mr. Howell, Mr. Ulvestad

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.

**162. Retail Store Management.** (3) I, II.

Prerequisite: course 160.

Mr. W. Brown, Mr. Cassady, Mr. Howell

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.

**163. Advertising Principles.** (3) I, II.

Mr. W. Brown, Mr. Petit

Lecture, two 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.

**165. Sales Management.** (3) I, II.

Mr. O'Donnell, Mr. Robbins

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.

**\*168. Advertising Policy.** (3) II.

Mr. W. Brown

Lecture, two hours; laboratory, two hours. Prerequisite: course 163 and consent of the instructor, to be granted on the basis of the applicant's training or experience in such fields as art, composition, psychology, and political science.

Intended for students planning a career in advertising, this course emphasizes such management problems as the definition of advertising objectives, selection of campaign themes, determination of the budget, and use of research in planning the program and measuring its effectiveness.

**169. Marketing Policies.** (4) I, II.

Mr. W. Brown, Mr. Cassady

Lecture, two hours; laboratory, two hours. Prerequisite: course 160 and senior standing.

\* Not to be given, 1960-1961.

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.

### **X. Transportation and Traffic Management**

**170. Transportation and Traffic Management. (3) I, II.** Mr. Ulvestad

Prerequisite: Economics 173 or consent of the instructor.

Emphasizes principles governing the use by business managers of the services of air, surface (rail, truck, bus, pipeline), and water transportation. Treats problems of selection of transportation alternatives, traffic organization and management, and features of transportation services affecting business policies.

**171. Motor Carrier Management. (3) II.** Mr. Ulvestad

Prerequisite: Economics 173 or consent of the instructor.

The specific operational environment of motor transportation and the principles and problems involved in the management of firms in this industry; includes impact of public highway policy, facilities, industry structure, costs, operations, rates, regulatory problems, and intercompany relationships.

**172. Rail Transport Management. (3) I, II.** Mr. Koontz

Prerequisite: Economics 173 or consent of the instructor.

Application of management principles and techniques to such problems faced by railroad managements as traffic analysis, organization, service, operations, costs, rates, labor, financing, and intercarrier relationships.

**173. Air Transport Management. (3) II.** Mr. Koontz

Prerequisite: Economics 173 or consent of the instructor.

Application of management principles and techniques to such problems faced by air-line managements as traffic analysis, organization, facilities, acquisition, scheduling, operations, costs, rates, labor, financing, intercarrier relationships, and airport terminal management.

**174. Water Transport Management. (3) I.** Mr. Ulvestad

Prerequisite: course 173 or consent of the instructor.

Analysis of management principles and problems involved in ocean, inter-coastal, coastwise, and inland waterways ship operation including, among other topics, equipment acquisitions, documentation, regulation, competition, rate policy, and organization.

### **XI. Real Estate and Urban Land Economics**

**180. Elements of Real Estate and Urban Land Economics. (3) I, II.**

Mr. Case, Mr. Gillies

Basic elements which influence managerial policy in the urban real estate field; an analysis of major influences affecting city location and growth; major elements of policy in appraising, managing, financing, marketing, developing, and subdividing urban property; the role of private and governmental institutions in influencing the use of urban land.

**181. Valuation of Real Property. (3) I.** Mr. Case

Prerequisite: course 180 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.

**182. Urban Economics and Business Policy. (3) I, II.**

Mr. Case, Mr. Gillies, Mr. Grebler

Prerequisite: course 180 or consent of the instructor.

Business policies involved in converting raw land to urban uses. 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.

**XII. Management Theory and Policy****190. Organization and Management Theory. (3) I, II.**Mr. Boulden, Mr. Healip, Mr. Koontz,  
Mr. O'Donnell, Mr. Steiner, Mr. Van de Water

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.

**XIII. Advanced Study in Business Administration****199. Special Studies in Business Administration. (1-4) I, II.** The Staff

Prerequisite: senior standing and consent of the instructor and the Dean by special petition available in the Office of the Dean.

**GRADUATE CORE COURSES†****102G. Business Economics. (3) I, II.**

Mr. Neff, Mr. Nicols, Mr. Norton, Mr. Stockfish, Mr. Williams

Open only to graduate students. May be substituted for Economics 1A-1B and courses 100 and 101. Not open to students who have credit for courses 100 or 101.

Analysis of decision-making in the firm, competitive policies and market structure, revenue and cost behavior, and expansion through investment. Sales, cost, and profit forecasting. General business forecasting and cyclical mechanisms. The role of policies enterprise under political democracy and public policy.

**108G. Law for Business Managers. (3) I, II.** Mr. Hoerber, Mr. Petrowitz

Open only to graduate students who do not have credit for course 18 (Berkeley), 105B or 108, or the equivalent.

Significance and growth of the law; modern trends in settling business controversies; summary of law of contracts, property, negotiable instruments, agency, partnerships, corporations; regulation of business by the administrative process, with special reference to trade practices and labor relations.

**115G. Business Statistics. (3) I, II.**

Open only to graduate students.

An introduction to statistics for graduate students who have had no previous course in which the emphasis is upon applications to business problems.

**120G. Survey of Accounting Principles. (3) I, II.**

Mr. Louie

Open only to graduate students. May be substituted for courses 1A-1B and 120M. May be elected by students in fields of concentration other than accounting to meet core course requirement in accounting. Not open to students who have credit for courses 1B or 120 or 120M.

† 102G and 120G are prerequisite to all other core courses. Courses 108G, 115G, 135G, 140G, 150G, and 160G may be taken concurrently.

The nature, fundamental mechanisms, and central problems of business accounting, with particular emphasis on the problems of periodic income measurement. Basic principles of cost and profit-volume analysis. Preparation and interpretation of the major accounting reports.

**131G. Fundamentals of Finance. (3) I, II.**

Open only to graduate students who do not have credit for 131 and 133.

Content includes business, financial planning, financial management, securities, and other financial instruments, securities markets, and securities valuation.

**135G. Principles of Insurance. (3) I, II.**

Mr. Pfeffer

Open only to graduate students who do not have credit for a basic course in 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 issue programs; economic functions of insurance.

**140G. Elements of Production Management. (3) I, II.**

Mr. Andrews, Mr. Carrabino

Open only to graduate students who do not have credit for a basic course in production management.

Principles and decision analysis 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.

**150G. Elements of Personnel Management. (3) I, II.**

Mr. McNaughton

Open only to graduate students who do not have credit for a basic course in personnel management.

Principles and methods of utilizing human resources in organizations.

**160G. Marketing. (3) I, II.**

Mr. Robbins

Open only to graduate students who do not have credit for a basic course in marketing.

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 cost, impact, and results.

**190G. Basic Management Theory and Policy. (3) I, II.**

Mr. Heslip, Mr. Koontz

Prerequisite: course 120, 120M, or 120G. Open only to graduate students who do not have credit for an advanced course in management theory and policy at the undergraduate level.

An analysis of the functions of managers, emphasizing underlying principles applicable to general, rather than functional, management.

**GRADUATE COURSES†****200. Managerial Economics. (3) I, II.**

Mr. Norton

Prerequisites: courses 100, 101, or 102G and 115.

Analysis of decision-making in the enterprise. 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.

† Graduate students who have had little or no previous preparation in business administration should consult the Graduate School of Business Administration for a condensed program of prerequisite courses restricted to graduate students.

- 201. Business Forecasting.** (3) I, II. Mr. Andersen  
 Prerequisite: courses 100, 101, and 115.  
 The role of business forecasting in managerial planning. Principles and methods of forecasting. Evaluation of the reliability of existing forecasting techniques. Covers both short-term and long-term forecasting of industry, regional and national business trends.
- 202. Stabilization Policy and Business Planning.** (3) I, II. Mr. Jacoby  
 Prerequisite: consent of the instructor.  
 Intensive study of the administration of the Employment Act and its practical implications for business management. Analysis of U.S. economic goals. Effects on business plans and decisions of governmental monetary, fiscal, and other actions. Stabilizing business policies.
- 203A. Theory of Decision.** (3) I. Mr. Marschak  
 Prerequisite: rudiments of economic theory, calculus, and probabilities or statistics.  
 Norms and facts of decision-making in household, business, government. Consistent behavior in terms of personal utilities and probabilities. Departures from consistency: stochastic theories of behavior and resulting econometric models.
- 203B. Theory of Information and Organization.** (3) II. Mr. Marschak  
 Prerequisites: rudiments of economic theory of the firm, and of calculus and probabilities or statistics; 203A or consent of the instructor.  
 Optimal decision and information rules. Amount, cost, and value of information. Rational models of teams. Relation to the theory of games.
- 205. Behavioral Science Applied to Management.** (3) I, II. Mr. Massarik, Mr. Tannenbaum, Mr. Weschler  
 Management as view from the standpoint of behavioral science. An examination of the forces shaping individual, group, organizational, subcultural, and cultural dynamics, as they affect the management of the business enterprise.
- 210. Seminar in Operations Analysis.** (3) I, II. Mr. Jackson  
 Prerequisite: course 118 and consent of instructor.  
 Selected advanced topics, with emphasis on the theory and practice of specialized techniques, and on the philosophy of quantitative approaches to management decision-making.
- 213. Problems in Integrated Business Systems.** (3) I, II. Mr. Kircher  
 Prerequisite: course 118 or consent of the instructor.  
 Need for integrated systems for the collection, transmission, processing, and recording of information; development of models for integrated systems; evaluation of procedures; general purpose and special purpose equipment; case studies of operating systems.
- 214. Seminar in Data Processing.** (3) II. Mr. G. Brown, Mr. Sprowls  
 Prerequisite: consent of the instructors and regular graduate status.  
 Theory of simulated models of business firms; the use of electronic data processing machines for simulation processes; the use of simulated data for teaching and research.
- 216. Sampling Survey Methods in Business.** (3) I. Mr. Sprowls  
 The planning of sampling surveys. Estimation of population characteristics and their precision in simple random samples, stratified samples, systematic samples, and multi-stage samples.

- 217. Quantitative Methods of Business Forecasting. (3) II.** Mr. Williams  
Prerequisite: course 117 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; applications to business forecasting.
- 218. Selected Topics in Business Statistics. (3) II.** Mr. Sprowls  
Special topics in statistical methods. Current developments in statistical theory and practice. Analysis of recent literature.
- 221A. Seminar in Accounting Problems I. (3) I.** Mr. Simons  
Prerequisite: course 123.  
Consideration of basic problems in presenting balance sheets and income and surplus statements, particularly from the standpoint of the public accountant; studies in the accounting methods and problems of specific industries.
- 221B. Seminar in Accounting Problems II. (3) II.** Mr. Buttrey  
Prerequisite: course 127.  
Advanced study of problems in federal and state income, franchise, gift, and estate taxes; aims to convey an understanding of source materials and research methods for ascertaining current rulings and trends in laws and regulations.
- 222. Seminar in Industrial Accounting. (3) II.** Mr. Carson  
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.
- 224. Accounting Data for Management Purposes. (3) I.** Mr. Kircher  
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.
- 229. Seminar in Accounting Theory. (3) I, II.** Mr. Carson  
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.
- 230. Seminar in Money Rates and Money Markets. (3) I.** Mr. Clendenin  
Prerequisite: Economics 135 and course 133 or 131 or 131G, or consent of the instructor.  
A study of American money markets. Source of funds for bond investment, mortgage loans, stock financing, and small business financing; the demand for such funds; the interest rates and yields from investments which result from supply-demand relationships.
- 231. Business Financial Policy. (3) I.** Mr. Weston  
Prerequisite: course 120 or 120M or 120G or 131 or 131G and 133, or consent of the instructor.  
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.

**232. Problems of Business Finance. (3) II.** Mr. Andersen, Mr. Weston

Prerequisite: course 131 or 131G or 133, or consent of the instructor.

Application of principles of finance to the financial management of business enterprises. The program includes reading assignments on principles and methods of finance, and individual student reports of financial problems of particular importance.

**233. Seminar in Investments. (3) II.** Mr. Clendenin, Mr. Graham

Prerequisite: course 120 or 120M or 120G, and 133 or 131G, or consent of the instructor.

Discussion of current problems faced by individual and institutional investors; critical review of special studies made by members of the class on topics relating to investment.

**235. Problems in Insurance Management. (3) II.** Mr. Pfeffer

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.

**236. Life Insurance in Business and Estate Management. (3) II.**

Prerequisite: courses 135, 137; or consent of the instructor. Mr. Pfeffer

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.

**239. Risk and Risk Bearing. (3) I.** Mr. Pfeffer

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.

**240A-240B. Seminar in Industrial Plant Management. (3-3) Yr.** Mr. Buffa

Course 240B may be taken before course 240A.

Policy decisions encountered at the coordinative, or plant management level. Production policies and organization; determination of production methods; coordinating production activities; industrial risk and forecasting; social aspects of production; case studies.

**241A-241B. Seminar in the Dynamics of Industrial Technology. (3-3) Yr.**

Course 241B may be taken before course 241A.

Managerial problems and policy decisions concerning technological research; budgeting for research; contributions of engineering and market research; management of research and development; research and industrial progress; social aspects of technological change; product diversification and standardization; case studies.

**242. Advanced Methods in Production Control. (3) II.**

Prerequisite: course 142.

The application of techniques to production planning and scheduling; probability models in inventory control; linear programming in planning and scheduling; priority function scheduling; the use of high-speed computers in production management; design and simulation of production models; case studies.

**249A-249B. Seminar in the Scientific Approach to Management. (3-3) Yr.**

Mr. Barnes

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.

**250. Seminar in Personnel Administration (Individual Emphasis). (3) I, II.**  
(Formerly numbered 251A.) Mr. McNaughton, Mr. Weschler

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 investigation and presentations by students.

**251. Seminar in Personnel Administration (Group Emphasis). (3) I, II.**  
(Formerly numbered 251B.) Mr. McNaughton, Mr. Weschler

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.

**252. Seminar in the Management of Industrial Relations. (3) I.**

Mr. McNaughton, Mr. Prasow, Mr. Van de Water

Consideration, at an advanced level, of the collective bargaining process, the labor-management agreement, the administration of the contract, and the impact of public policy on the management of industrial relations. Case studies, field trips, and visiting lecturers will be part of the seminar curriculum.

**253. Settlement of Industrial Disputes. (3) I, II.**

Mr. Brissenden, Mr. McNaughton, Mr. Prasow

Prerequisite: course 150 or Economics 158.

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.

**254. Analysis of Labor Markets. (3) I, II.**

Mr. Meyers

Prerequisite: consent of the instructor.

Problems of verifying hypothesis concerning labor market behavior and the application of data to managerial problems. Problems operationally defining labor market concepts. Critical evaluation of available labor market data. Case studies applying these data to managerial problems.

**260. Seminar in Product Planning and Distribution Channeling. (3) I, II.**

Mr. W. Brown

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.

**261. Seminar in Marketing Institutions. (3) I.** Mr. Cassady, Mr. De Loach

Investigative procedures in solving marketing problems. Legal environment in which marketing institutions operate. Types of competitive factors (dealer relations, self-service operations, store location, etc.) in relation to rivalry.

**262. Seminar in Price Policies. (3) II.**

Mr. Cassady

Consideration of such concepts as demand, theory of competition, market classification, price leadership, geographical pricing schemes, and price discrimination; analysis of the price policies of individual firms in which these concepts are utilized.

**263. Theory and Management of Market Stimulation. (3) I, II.** Mr. Petit

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.



**270. Transportation Management. (3) II.** Mr. Ulvestad

Prerequisite: Economics 173 or consent of the instructor.

Exploration, through individual research and analysis and group discussion, of the basic managerial problems and policies of transport firms. External relationships which strongly condition internal policy are considered. A functional approach to transportation, dealing with all agencies.

**280. Management of Real Estate Enterprises. (3) I.**

Mr. Case, Mr. Gillies, Mr. Grebler

Prerequisite: course 180, 181 and 182; or consent of the instructor.

A case-study approach to the use of urban land by business enterprises, including the theory, principles, and policies necessary for locations and site selection, property improvement, marketing and financing urban space. Particular attention is given to federal housing programs and agencies.

**282. Seminar in Urban Land Utilization. (3) II.**

Mr. Case, Mr. Gillies, Mr. Grebler

Prerequisite: course 180, 181, and 182; or consent of the instructor.

Study of forces affecting land uses, with emphasis on city growth and structure, locational theory, and the conversion of urban facilities to economic uses. Field research in urban development and redevelopment, central business districts, housing problems, and specialized real estate business activities. Extensive reading in current literature.

**290. Seminar in Organization Theory. (3) I.**

Mr. Boulden, Mr. Koontz, Mr. O'Donnell, Mr. Powell

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.

**291. Seminar in Planning and Control. (3) I, II.**

Mr. Boulden, Mr. Koch, Mr. Koontz, Mr. Steiner

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.

**292. Seminar in Direction and Leadership. (3) II.**

Mr. Massarik, Mr. Tannenbaum

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.

**293. Seminar in the Philosophy of Enterprise Control. (3) I.**

Mr. O'Donnell

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.

**294. Seminar in Business Policies. (3) I, II.**

Mr. O'Donnell

Analysis 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.

**299. Research in Business Administration. (1 to 4) I, II.**

The Staff

Prerequisite: consent of the instructor and the Dean by special petition available in the office of the Assistant Dean of Student Affairs.

**299R. Research Methods in Business Administration. (3) I, II.** The Staff

The scientific method in management research, variations in research methodology and design, methods of data collection and analysis, the application of research findings. Individual and/or group projects will be required.

## BUSINESS EDUCATION

(Department Office, 321 Business Administration-Economics Building)

Samuel J. Wanous, Ph.D., *Professor of Office Management and Business Education.*

Lawrence W. Erickson, Ed.D., *Associate Professor of Office Management and Business Education.*

Erwin M. Keithley, Ed.D., *Associate Professor of Office Management and Business Education.*

Richard S. Perry, Ed.D., *Assistant Professor of Office Management and Business Education.*

George Watto, M.A., *Visiting Assistant Professor of Office Management and Business Education.*

Evelyn Chin, M.E., *Assistant in Office Management and Business Education.*

The bachelor's degree with a major in business education is being discontinued, and will not be awarded after September, 1962. All lower division courses in business education will be discontinued after the academic year 1960-1961, when a limited offering will be given. New and reëntering students with a major in the field will be admitted in the fall semester, 1960, only in upper division standing.

**NOTE:** Students majoring in business education may not elect business administration as a minor.

*Preparation for the Major.*—Courses 3A-3B, 5, Business Administration 1A-1B, Economics 1A-1B, Psychology 1A, 1B or 33, English 1A, Speech 1, Geography 1, 2. In addition, students not completing Psychology 1B must take 3 units of science.

Business Education 4A-4B, or equivalent, is required for the teaching specialization in office administration.

*The Major.*—The major comprises 36 upper division units, distributed as follows:

**I. General requirements:** Business Education 110, 112, 113, 114, 115; Business Administration 108, 160.

**II. Specialization requirements:**

**1. Office Administration.**

Business Education 111, 116, 370A; and electives chosen from the following list to bring the total to 36 units: Business Education 370B, 370C, Business Administration 115, 120, 121, 127, 135, 152, 180, Economics 140, Education 100A, 100B, 110A, 137.

**2. Accounting.**

Business Education 370B and two units chosen from 370A, 370C; Business Administration 120 and one additional upper division accounting course; one course chosen from Business Administration 135, 152, 180, Business Education 111, 116; Education 137; and, if necessary, electives chosen from the optional courses listed in this specialization to bring the total units to at least 36.

**3. General Business.**

Business Education 111 and 116 (or Business Administration 120 and one additional upper division accounting course); 370C and two units chosen from 370A, 370B; one course chosen from Business Administration 135, 152, 180, Economics 150, 195; Education 137; and, if necessary, electives chosen from the optional courses listed in this specialization to bring the total units to at least 36.

**4. Merchandising.**

Business Education 111 and one course chosen from Business Education 116, Business Administration 135, 152, 180 (or Business Administration 120 and one additional upper division accounting course); 370C and two units chosen from 370A, 370B; Business Administration 162, 163, 165; Education 137; and, if necessary, electives chosen from the optional courses listed in this specialization to bring the total units to at least 36.

**Graduate Division.**—Students in business education may earn the following graduate degrees: Master of Business Administration in the School of Business Administration; Master of Education, Master of Arts, or Doctor of Education in the School of Education. For further information see the ANNOUNCEMENTS OF THE SCHOOL OF BUSINESS ADMINISTRATION, THE SCHOOL OF EDUCATION, AND THE GRADUATE DIVISION, SOUTHERN SECTION.

**Requirements for Teaching Credentials.**—Candidates for the \*special secondary credential in business education or for the general secondary credential with a major or minor in business education should consult the ANNOUNCEMENT OF THE SCHOOL OF EDUCATION, LOS ANGELES.

**LOWER DIVISION COURSES**

**3A-3B. Secretarial Training. (2-2) Beginning either semester.**

Mr. Erickson, Miss Chin

(Course 3A to be discontinued after fall semester, 1960; course 3B, after spring semester, 1961.)

Designed especially for and limited to students preparing for the teaching credential in business education.

A study of typewriting in which the groundwork is laid for a thorough understanding of office management and business teaching problems. Principles of operating various kinds of typewriters, special adaptations of each, and bases of speed and accuracy development are included.

**4A-4B. Secretarial Training. (3-3) Beginning either semester.**

Mr. Erickson, Miss Chin

(Course 4A to be discontinued after fall semester, 1960; course 4B, after spring semester, 1961.)

Designed especially for and limited to students preparing for the teaching credential in business education.

A study of shorthand in which the groundwork is laid for a thorough understanding of office management and business teaching problems. An analysis of various techniques used in mastery of technical vocabularies and speed in writing and reading shorthand from dictation is included.

**5. Introduction to Business Education. (3) I, II.**

Mr. Perry

(To be discontinued after the fall semester, 1960.)

Open only to lower division students.

Orients students to the field of business and business education. Covers, in survey form, functions, characteristics, organization, and problems of business. Serves as a foundation for later specialized study, and directs the thinking of students to possible careers.

**UPPER DIVISION COURSES**

**110. Business Communications. (3) I, II.**

Mr. Keithley, Mr. Perry

Prerequisite: course 3A or its equivalent.

Designed to give students an understanding of the services of written com-

\* Recommended programs on the Los Angeles campus leading to special secondary credentials are being discontinued. Certificates of completion for these credentials will not be awarded after September 15, 1961.

munications to business, training in the writing of communication forms in typical business situations, and a review of correct English usage in business writing.

**111. Applied Secretarial Practice. (3) I, II. Mr. Erickson, Miss Chin**

Prerequisite: courses 3A-3B, 4A-4B.

Study of stenographic office problems, including the development of expert skill and ability in transcription. A consideration of the principles underlying the editing of dictated letters and reports and of the requirements and standards of stenographic positions in civil service as well as in various types of private offices.

**112. Management of Office Services. (3) I, II. Mr. Watto**

Prerequisite: course 3A or its equivalent.

A study of procedures, standards, and methods of measurement related to office services. An introductory consideration of human relations problems in the office, and their solutions. The development of an understanding of the uses of various types of office machines.

**113. Office Organization and Management. (3) I, II.**

Mr. Erickson, Mr. Keithley, Mr. Watto

Analysis of functions of various office departments, their organization and management. Methods used in selecting and training office personnel; office planning and layout; selection and care of office supplies and equipment; methods and devices used to improve operating efficiency; types and uses of office appliances; techniques for performing office duties.

**114. Business Report Writing. (2) I, II. Mr. Perry, Mr. Keithley, Mr. Watto**

Prerequisite: course 3A, or equivalent, and course 110.

A study of the processes of investigation and presentation of business problems and their solutions. Training in methods of collecting, organizing, and interpreting data, with emphasis upon writing the elements of a final report.

**115. Management of Office Personnel. (3) I, II. Mr. Erickson, Mr. Watto**

Prerequisite: course 113.

An analysis of the principles, methods, and procedures of effective utilization of office personnel. Recruiting, selecting, inducting, training, compensating, promoting, and managing employee relations. A study of standardization of procedures, job analyses and job descriptions, production standards, and control methods.

**116. Office Systems and Procedures. (3) I, II. Mr. Keithley**

Prerequisite: course 113.

Study of principles of good office systems, techniques used in making systems and machine-utilization surveys, motion economy applied to office jobs, and tools used by methods analysts.

**199. Special Studies. (1-4) I, II. The Staff**

Prerequisite: senior standing and consent of the instructor.

**GRADUATE COURSES**

**210. Case Studies in Office Management. (2) II. Mr. Keithley**

**299. Independent Study in Business Education. (2-4) I, II. The Staff**

## PROFESSIONAL COURSES IN METHOD

**370A. Methods of Teaching Secretarial Subjects. (2) I.** Mr. Erickson

A survey and evaluation of the methods and materials used in teaching typewriting, shorthand, transcription, and office training to secondary school pupils. Also considered are achievement standards, grading plans, measurement devices, and procedures for adapting instruction to various levels of pupil ability.

**370B. Methods of Teaching Bookkeeping and Accounting. (2) II.**

Mr. Erickson, Mr. Watto

A study of the devices, methods, and materials used in teaching bookkeeping, business arithmetic, and related business subjects. A consideration of course objectives, curricular placement, units of instruction, and testing and teaching methods.

**370C. Methods of Teaching General Business and Merchandising. (2) I.**

Mr. Perry

A study of the devices, methods, and materials used in teaching general business and merchandising subjects. Emphasis placed upon study of current practices, objectives, teaching aids, testing, and evaluation of instructional materials.

**CHEMISTRY**

(Department Office, 3010 Chemistry Building)

Francis E. Blacet, Ph.D., *Professor of Chemistry.*<sup>1</sup>Richard C. Cookson, Ph.D., *Visiting Professor of Chemistry.*<sup>2</sup>C. A. Bunton, Ph.D., *Visiting Professor of Chemistry.*Donald J. Cram, Ph.D., *Professor of Chemistry.*Max S. Dunn, Ph.D., *Professor of Chemistry.*Clifford S. Garner, Ph.D., *Professor of Chemistry.*Theodore A. Geissman, Ph.D., *Professor of Chemistry.*Wendell H. Griffith, Ph.D., *Professor of Chemistry, and Professor of Physiological Chemistry in the School of Medicine.*Thomas L. Jacobs, Ph.D., *Professor of Chemistry.*Willard F. Libby, Ph.D., *Professor of Chemistry.*James D. McCullough, Ph.D., *Professor of Chemistry.*William G. McMillan, Jr., Ph.D., *Professor of Chemistry (Chairman of the Department).*Robert L. Scott, Ph.D., *Professor of Chemistry.*Kenneth N. Trueblood, Ph.D., *Professor of Chemistry.*<sup>2</sup>Saul Winstein, Ph.D., *Professor of Chemistry.*G. Young, Ph.D., *Professor of Chemistry.*William R. Crowell, Ph.D., *Professor of Chemistry, Emeritus.*James B. Ramsey, Ph.D., *Professor of Chemistry, Emeritus.*G. Ross Robertson, Ph.D., *Professor of Chemistry, Emeritus.*Hosmer W. Stone, Ph.D., *Professor of Chemistry, Emeritus.*Daniel E. Atkinson, Ph.D., *Associate Professor of Chemistry.*Paul S. Farrington, Ph.D., *Associate Professor of Chemistry.*Daniel Kivelson, Ph.D., *Associate Professor of Chemistry.*Robert L. Pecosok, Ph.D., *Associate Professor of Chemistry.*Kyle D. Bays, Ph.D., *Assistant Professor of Chemistry.*Richard G. Brewer, Ph.D., *Assistant Professor of Chemistry.*Kenneth Conrow, Ph.D., *Assistant Professor of Chemistry.*<sup>1</sup> In residence fall semester only, 1960-1961.<sup>2</sup> In residence spring semester only, 1960-1961.

Eugene R. Hardwick, Ph.D., *Assistant Professor of Chemistry.*  
James B. Hendrickson, Ph.D., *Assistant Professor of Chemistry.*  
Herbert D. Kaesz, Ph.D., *Assistant Professor of Chemistry.*  
Roberts A. Smith, Ph.D., *Assistant Professor of Chemistry.*  
Charles A. West, Ph.D., *Assistant Professor of Chemistry.*

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

*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.

*Letters and Science List.*—All undergraduate courses in chemistry are included in the Letters and Science List of Courses. For regulations governing this list, see page 2.

*Preparation for the Major.*—Required: Chemistry 1A–1B, 5A (or Chemistry 3A–3B), Physics 1A, 1C, Mathematics C, 1, 3A, 3B, 4A (or the alternative sequence 5A–5B, 6A), English 1A, and a reading knowledge of German. Recommended: an additional course in chemistry.

Students should note that the lower division curriculum prescribed for the College of Chemistry at Berkeley differs from the lower division curriculum in the College of Letters and Science at Los Angeles.

*The Major.*—The minimum requirement for the major in chemistry is Chemistry 5B (3), 110A–110B (6), 112A–112B (10), 111 (4) and two additional courses in chemistry, of which one must include laboratory work, selected from the following group: 103, 107, 121, 125, 126A, 126B, 130A, 130B, 131, 132, 133, 135, 136, 137, 198. It is recommended that courses through Chemistry 110B and 112B be completed by the end of the junior year provided this can be accomplished without neglecting broader educational needs. The courses which should be considered for the senior year depend somewhat on the student's special interest. If this be physical-inorganic chemistry, courses 121, 125, 130A, 130B, 131, 132 and 133 are recommended for consideration along with certain advanced courses in physics and mathematics; if organic chemistry, courses 103, 126A and 126B; and if biochemistry, courses 107, 135, 136 and 137, along with certain courses in the life sciences.

The following courses outside of chemistry are also required and should be finished as early as possible (some may be taken in the lower division): English 106S, Mathematics 4B or 6B, Physics 1D.

Completion of the major in chemistry automatically meets the minimum requirements for eligibility to full membership in the American Chemical Society in the minimum time of two years after graduation.

Chemistry majors are urged to seek help and advice in the Chemistry Undergraduate Adviser's Office, Room 3326A, Chemistry Building.

*Transfer Students.*—A student who transfers to the University of California, Los Angeles, with a grade of B or better in both Chemistry 8 and 9 (or their equivalents) may be admitted to Chemistry 112B. It is recommended, however, that he take Chemistry 112A for which he will receive 3 units of credit instead of the usual 5 units. A transfer student who has credit for only Chemistry 8 (or its equivalent), or for Chemistry 8 and Chemistry 9 (or their equivalents) with a grade less than B in either of these courses, must take Chemistry 112A for which he will receive 3 units of credit. To receive credit toward the major for Chemistry 112A and 112B (or their equivalents), which have been taken elsewhere, the consent of the departmental adviser is required.

**Upper Division Credit.**—Chemistry majors will receive upper division credit for Chemistry 5B if taken while in upper division. Non-chemistry majors will receive upper division credit for any three of the courses 5A, 5B, 8, 9, if taken while in the upper division.

**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 biological chemistry. Prospective candidates for advanced degrees in chemistry may specialize in any of the following fields: analytical, biological, inorganic, organic, or physical chemistry.

The general University requirements for the M.S. degree are given on page 66; the Department of Chemistry makes use of Plan I, the Thesis Plan. The general University requirements for the Ph.D. degree are given on page 68. 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 found in the ANNOUNCEMENT OF THE GRADUATE DIVISION, SOUTHERN SECTION, or by writing to the Graduate Adviser, Department of Chemistry, University of California, Los Angeles 24, California.

#### LOWER DIVISION COURSES

Certain combinations of courses involve limitations of total credit, as follows: 2A and 1A, 9 units; 2 and 1A, 7 units; 8 and 112A, 6 units; 8, 9 and 112A, 9 units.

#### 1A. General Chemistry. (5) I, II.

Mr. McCullough

Lecture, three hours; laboratory and quiz, six hours. Prerequisite: high school chemistry. (Chemistry 2A will be accepted in place of high school chemistry, and for outstanding students high school physics and three years of high school mathematics is another acceptable alternative.) All students who intend to take this course must take a preliminary examination approximately ten days before instruction begins. Results of this examination will be used for advising purposes only. This course is required of majors in chemistry and in various other fields of science and/or technology.

The first half of a basic course in principles of chemistry, with special emphasis on chemical calculations.

#### 1B. General Chemistry. (5) I, II.

Mr. Blacet, Mr. Garner

Lecture, three hours; laboratory and quiz, six hours. Prerequisite: course 1A. Required in the same curricula as course 1A.

Continuation of course 1A, with special applications to the theory and technique of qualitative analysis; periodic system; structure of matter. A brief introduction to organic chemistry is included.

#### 2. Introductory Chemistry. (3) I, II.

Mr. Hardwick

Lecture, three hours. The course may be taken for credit in physical science by students following curricula not requiring laboratory work in such field of study. Not open for credit to students who have credit for course 2A.

An introductory course emphasizing the principles of chemistry and including a brief introduction to elementary organic chemistry.

#### 2A. Introductory Chemistry. (5) I, II.

Mr. Hardwick

Lecture, three hours; laboratory and quiz, four hours. This course satisfies the chemistry requirements for nurses as prescribed by the California State Board of Nursing Examiners; it is required of certain home economics majors. Not open for full credit to students who have credit for course 2.

An introductory course emphasizing the principles of chemistry and including a brief introduction to elementary organic chemistry.

**3A-3B. Introductory Chemical Principles. (5-5) Yr.**

Mr. Trueblood, Mr. Libby

Lecture, three hours; laboratory and quiz, six hours. Prerequisite: an outstanding record in high school chemistry or physics and in at least three years of high school mathematics. Admission will be on basis of special examination to be given approximately ten days before instruction begins. Enrollment to be limited. Not open to students who have credit for Chemistry 1A.

An introduction to the principles and techniques of chemistry for the unusually well-qualified student. The sequence Chemistry 3A-3B covers essentially the same material as does the sequence Chemistry 1A-1B-5A.

**5A. Quantitative Analysis. (3) I, II.**

Mr. Farrington, Mr. Pecsok

Lecture, discussion, and quiz, two hours; laboratory, six hours. Prerequisite: course 1A-1B. Required of chemistry majors, economic geologists, petroleum engineers, public health, sanitary, and municipal engineers, medical technicians, and of premedical, College of Chemistry, metallurgy, and certain agriculture students.

Principles and technique involved in fundamental gravimetric and volumetric analyses.

**5B. Quantitative Analysis. (3) I, II. Mr. Farrington, Mr. Pecsok, Mr. Scott**

Lecture, discussion, and quiz, two hours; laboratory, six hours. Prerequisite: course 5A or 3B. Required of chemistry majors, economic geologists, and College of Chemistry students.

A continuation of course 5A but with greater emphasis on theory, analytical problems in acidimetry and alkalimetry, oxidimetry, electrolytic deposition, and semiquantitative procedures.

**8. Elementary Organic Chemistry. (3) I, II.**

Mr. Conrow, Mr. Cram, Mr. Geissman, Mr. Jacobs

Prerequisite: courses 1A and 1B. Course 2A will be accepted for nonscience majors only. Concurrent enrollment in course 9 is advisable.

An introductory study of the compounds of carbon, including both aliphatic and aromatic derivatives.

**9. Methods of Organic Chemistry. (3) I, II. Mr. Conrow, Mr. Hendrickson**

Lecture and quiz on principles of laboratory manipulation, two hours; laboratory, six hours. Prerequisite or concurrent: course 8. Required of premedical and pre dental students, and majors in petroleum engineering.

Laboratory work devoted principally to synthesis, partly to analysis.

**10. Organic and Food Chemistry. (4) I.**

Mr. Conrow, Mr. Cram, Mr. Geissman, Mr. Jacobs

Lecture, three hours; laboratory, three hours. Prerequisite: courses 1A and 1B, or 2A. Arranged primarily for majors in home economics.

An introductory study of the compounds of carbon, including both aliphatic and aromatic derivatives.

**UPPER DIVISION COURSES**

Certain combinations of courses carry limitations of total credit, as follows: 108A, 108B and 135, 6 units; 109 and 110A, 5 units; 8 and 112A, 6 units; 8, 9 and 112A, 9 units.

**103. Qualitative Organic Analysis. (3) I, II.**

Mr. Hendrickson

Lecture, discussion, and quiz, two hours; laboratory, six hours. Prerequisite: courses 5A or 3B and 112B.

Identification of unknown organic compounds with emphasis on use of microtechniques; discussion of modern quantitative and instrumental methods, with special regard to the identification of natural products.



**106. Clinical Chemistry. (2) I.**

Mr. Smith, Mr. West

Lecture, discussion and quiz, one hour; laboratory, five hours. Prerequisite: Chemistry 5A or 3B and 108B. Required in the medical technology curriculum. May not be offered as part of the major in chemistry.

Qualitative and quantitative methods in clinical chemistry.

**\*107. Amino Acids and Proteins. (3) I.**

Mr. Dunn

Lecture, three hours. Prerequisite: courses 5A or 3B and 9 or 112B.

A detailed treatment of the chemistry and metabolism of amino acids, polypeptides, and proteins.

**108A-108B. General Biochemistry. (3-3) Yr.**

Mr. Atkinson, Mr. West, Mr. Smith

Lecture, three hours. Prerequisite: course 8 or 112B.

This course may not be offered as part of the major requirements in chemistry. Chemistry majors may take Chemistry 135.

Discussion of the basic principles of the biochemistry of plants, animals, and microorganism with emphasis on metabolism.

**109. General Physical Chemistry. (4) I.**

Mr. Garner, Mr. McCullough

Lecture and demonstration. Prerequisite: course 5A or 3B, Physics 2A-2B, Mathematics 1; recommended preparation, course 8, Mathematics 37. May not be offered as part of the major in chemistry.

Chemical principles of particular importance in the life sciences and geology.

**110A. Physical Chemistry. (3) I, II.**

Mr. Kivelson, Mr. Libby, Mr. McCullough, Mr. McMillan

Prerequisite: course 5A, Physics 1A, and Mathematics 4A or 6A (with a minimum grade of C in each), and course 5B (may be taken concurrently). Non-chemistry majors may be admitted without course 5A or 5B.

Certain fundamental principles relating to matter and energy, including first, second and third laws of thermodynamics with applications to thermochemistry and the mass action law of chemical equilibrium; gas laws and molecular-kinetic theory.

**110B. Physical Chemistry. (3) I, II.**

Mr. Garner, Mr. Kivelson, Mr. Libby, Mr. McMillan

Prerequisite: course 110A and Physics 1C; Mathematics 4B or 6B (may be taken concurrently).

Colligative properties of solutions of nonelectrolytes; fugacity, activity and standard states, phase equilibria, chemical kinetics; electrical properties of solutions and ionic theory; electromotive force of voltaic cells.

**110G. Physical Chemistry. (3) I, II.**

Mr. Kivelson, Mr. Libby, Mr. McCullough

Prerequisite: same as for course 110A. Open only by permission of the chairman of the department to graduate students who have not taken course 110A in this institution.

**110H. Physical Chemistry. (3) I, II.**

Mr. Garner, Mr. Kivelson, Mr. Libby, Mr. McMillan

Prerequisite: course 110A or 110G. Open only by permission of the chairman of the department to graduate students who have not taken course 110B in this institution.

**111. Methods of Physical Chemistry. (4) I, II.**

Mr. Brewer, Mr. Scott

Lecture, two hours; laboratory, six hours. Prerequisite: courses 110A,

\* Not to be given, 1960-1961.

110B (may be taken concurrently), and Physics 1D (may be taken concurrently).

Physicochemical measurements and laboratory experiments illustrating some of the important principles of physical chemistry.

**112A-112B. Organic Chemistry, (5-5) Yr. beginning either semester.**

Mr. Cram, Mr. Geissman, Mr. Jacobs

Lecture, three hours; laboratory and quiz, six hours. Prerequisite: courses 1B and 5A, or 3B. A student who has received a grade of B or better in both courses 8 and 9 may be admitted to course 112B without having had course 112A. It is recommended, however, that he take course 112A, for which he will receive 3 units of credit instead of the usual 5 units.

A beginning course designed primarily for chemistry majors, but open to other students who desire a more comprehensive course than Chemistry 8 and 9. Organic chemistry is presented with emphasis upon the application of modern principles to structure, reactivity, methods of synthesis, and physical properties of organic compounds.

**\*121. Methods of Inorganic Chemistry. (3) I.**

Lecture, discussion, and quiz, two hours; laboratory, six hours. Prerequisite: course 5B.

Equilibrium and reaction rate; periodic classification. Laboratory work principally synthetic and analytic, involving special techniques.

**125. Instrumental Methods. (3) II.**

Mr. Pecsok

Lecture, discussion, and quiz, two hours; laboratory, six hours. Prerequisite: courses 5B, 110B, 111, and Physics 1D. In the event that it is necessary to limit enrollment, admission will be based upon performance in the prerequisite courses, particularly 5B and 111.

Theory and application of instrumental methods in chemical problems. The laboratory work will include experiments in spectrophotometry, chemical microscopy, polarography, radioactivity, and various other modern techniques.

**126A-126B. Advanced Organic Chemistry. (3-3) Yr.**

Lecture, three hours. Mr. Cram, Mr. Geissman, Mr. Jacobs, Mr. Winstein  
Prerequisite: Chemistry 112A-112B or its equivalent. Primarily for seniors and first-year graduate students. With the consent of the instructor, course 126B may be taken without 126A by capable students who have done well in the prerequisite course, but this is not encouraged.

A comprehensive course based upon modern concepts. Substitution, elimination, and addition reactions, condensations, rearrangements, stereochemistry and free-radical chemistry.

**130A. Advanced Physical Chemistry. (3) I.**

Mr. Garner, Mr. Kivelson, Mr. McMillan

Lecture, three hours. Prerequisite: Chemistry 110B; Mathematics 4B or 6B; Physics 1C, 1D. Primarily for seniors and first-year graduate students.

Selected topics in modern physical chemistry, including quantum effects, nucleonics, interaction of matter with fields, intermolecular forces, chemical bond, molecular structure and the solid state.

**130B. Advanced Physical Chemistry. (3) II.**

Mr. McMillan, Mr. Scott

Lecture, three hours. Prerequisite: Chemistry 110B; Mathematics 4B; Physics 1C, 1D. Chemistry 130A is prerequisite except with the permission of the instructor.

A continuation of Chemistry 130A. Selected topics in modern physical

\* Not to be given, 1960-1961.

chemistry, including probability and statistical methods, reaction kinetics, the imperfect gas and condensation, liquids and solutions, phase transitions, surface phenomena and high polymers.

\*131. Absorption Spectra and Photochemical Reactions. (2) II. Mr. Blacet  
Prerequisite or concurrent: course 110A. Normally offered only in alternate years.

The chemical interpretation of spectra and the study of chemical processes which are initiated by the absorption of visible and ultraviolet radiation.

132. X Rays and Crystal Structure. (2) II. Mr. McCullough, Mr. Trueblood  
Prerequisite: course 110A. Normally offered only in alternate years.

Symmetry of crystals; use of X rays in the investigation of crystal structure.

133. Inorganic Chemistry. (3) II. Mr. Kaesz  
Lecture, three hours. Prerequisite: courses 110B and the equivalent of 112A.

Theory of bonding in inorganic chemistry; stereochemistry; uncommon oxidation states; the periodic generalization with emphasis on relationship to electronic structure; acid-base theory and related topics.

135. Biochemistry. (3) I. Mr. Atkinson, Mr. West  
Lecture, three hours. Prerequisite: courses 112B and either 109 or 110A (110A may be taken concurrently).

A course in the principles of biochemistry designed for chemistry majors and others with equivalent preparation. Students lacking such preparation may take courses 108A and 108B which are not counted toward the fulfillment of the chemistry major requirements.

136. Methods of Biochemistry. (3) II. Mr. Atkinson, Mr. West, Mr. Smith

Lecture, discussion, and quiz, two hours; laboratory, six hours. Prerequisite: courses 5A or 3B and 108B or 135 (108B may be taken concurrently).

The preparation, analysis, and reactions of metabolites in animals, plants, and microorganisms.

\*137. Chemistry of Bacterial Nutrition. (2) II. Mr. Dunn  
Lecture, two hours. Prerequisite: approved courses in bacteriology and biochemistry.

Detailed studies of bacterial nutrition and metabolic products. Microbiological assays of vitamins and amino acids.

198. Special Courses in Chemistry. (2-3) I, II. The Staff

199. Special Studies in Chemistry. (3) I, II. The Staff

Prerequisite: senior standing and consent of the Chemistry Undergraduate Adviser.

#### GRADUATE COURSES

\*202. Chemical Kinetics. (3) II.

Normally offered only in alternate years.

A critical consideration of all important classes of chemical reactions in gaseous and condensed phases and at interfaces between phases. Experimental methods, and application of theory. Recent advances in the theory of reaction rates.

\* Not to be given, 1960-1961.

**\*203. Chemical Thermodynamics. (3) I.** Mr. McMillan, Mr. Scott  
Normally offered only in alternate years.

Derivation and application of thermodynamic relations of particular importance in chemistry; partial molar quantities and thermodynamic properties of solutions; the concepts of standard states, fugacity, activity, and activity coefficient and their uses; phase equilibria; electrochemical changes; special topics in thermodynamics.

**221. Physical Organic Chemistry. (3) II.** Mr. Winstein

A course stressing the quantitative approach to kinetics and mechanism of organic reactions. Criteria of mechanism. Correlations of reactivity and equilibrium.

**222A-B-C-D-E-F. Advanced Topics in Organic Chemistry. (2) I, II.**  
A Staff Member in Organic Chemistry

The subject matter of this course will be in a recognized field of organic chemistry in which the staff member giving the course has developed special proficiency due to his research interests.

**231. Nuclear Chemistry. (3) I.** Mr. Garner, Mr. Libby

Normally offered only in alternate years.

Radioactivity; nuclear reactions; interaction of nuclear radiations with matter; detection and measurement of nuclear radiations; methods of preparation, isolation and identification of radionuclides; chemical effects of nuclear transformations; isotope effects; applications of stable and radioactive tracers to chemical problems.

**232A-B-C-D-E-F. Advanced Topics in Physical and Inorganic Chemistry. (2) I, II.**  
A Staff Member in Physical or Inorganic Chemistry

The subject matter of this course will be in a recognized field of physical or inorganic chemistry in which the staff member giving the course has developed special proficiency due to his research interests.

**233. Statistical Mechanics. (3) I.** Mr. McMillan

Prerequisite: course 130B; Mathematics 4B. Recommended: course 203; Physics 105; Mathematics 119A, 122A-122B. Normally offered only in alternate years.

Derivation of the laws of molecular assemblies from the properties of the individual molecules, including: elementary kinetic theory of gases; thermodynamic functions for monatomic, diatomic, and polyatomic gases; chemical equilibrium; the crystalline state; theory of the general imperfect gas; condensation; and related topics.

**\*234. Quantum Chemistry. (3) II.** Mr. Kivelson, Mr. McMillan

Prerequisite: course 130A; Physics 121; Mathematics 119B or 110B; or consent of the instructor. Recommended: course 131, Physics 105. Normally offered only in alternate years.

Elementary quantum mechanics, with particular emphasis on chemical applications. Includes: classical mechanics; early quantum theory; wave-particle dualism; statistical interpretation; Schrödinger formulation; particle in a potential well, harmonic oscillator, and rigid rotator; hydrogen atom; periodic system; approximation methods, molecules; chemical bond types; and more advanced topics as time permits.

**238. Chemistry of Intermediary Metabolism. (3) II.** Mr. West

Prerequisite: course 108A-108B or 135. Normally offered only in alternate years.

Detailed consideration of metabolic transformations and the experimental methods employed in this field.

\* Not to be given, 1960-1961.

- \*240. **Chemistry of Enzyme Action.** (3) II. Mr. Atkinson  
Prerequisite: courses 108A-108B or 135 and 109 or 110A, or consent of the instructor. Normally offered only in alternate years.  
Physical and chemical characteristics of enzymes; kinetics and mechanisms of enzyme-catalyzed reactions.
260. **Seminar in Chemistry.** (1) I, II. Mr. Farrington, Mr. Hendrickson  
Oral reports by graduate students on important topics from the current literature in their field of chemistry. Each student taking this course must consult the instructor in charge before enrolling, and is expected to present a report.
261. **Seminar in Biochemistry.** (1) I, II. Mr. Dunn
299. **Research in Chemistry.** (3 to 6), I, II. The Staff  
Research in analytical chemistry, biological chemistry, inorganic chemistry, organic chemistry, and physical chemistry.

### La Jolla Campus†

- Joseph E. Mayer, Ph.D., *Professor of Chemistry.*  
Hans E. Suess, Ph.D., *Professor of Chemistry.*  
Harold C. Urey, Ph.D., *Professor at Large, of Chemistry.*  
Bruno Zimm, Ph.D., *Professor of Chemistry.*  
James R. Arnold, Ph.D., *Associate Professor of Chemistry.*  
Stanley Miller, Ph.D., *Assistant Professor of Chemistry.*

### GRADUATE COURSES

233. **Statistical Mechanics in Chemical Systems.** (3) I. Mr. Mayer  
Prerequisite: consent of the instructor.  
Fundamentals of statistical mechanics and applications to chemical systems; chemical equilibrium, phase transitions; the solid and liquid states.
234. **Quantum Chemistry.** (3) II. Mr. Arnold  
Prerequisite: consent of the instructor.  
Elementary quantum mechanics, with emphasis on chemical applications: the hydrogen atom, atomic and molecular structure, approximation methods.

## CHINESE

For courses in Chinese, see under Department of Oriental Languages.

## CLASSICS

(Department Office, 340 Royce Hall)

- \*Paul Augustus Clement, Ph.D., *Professor of Classics and Classical Archaeology.*  
Albert Hartman Travis, Ph.D., *Professor of Classics (Chairman of the Department).*  
Frederick Mason Carey, Ph.D., *Professor of Classics, Emeritus.*  
Paul Friedlander, Ph.D., *Professor of Latin and Greek, Emeritus.*  
Herbert Benno Hoffleit, Ph.D., *Associate Professor of Classics.*  
William Philip Chapman, M.A., *Acting Assistant Professor of Classics.*  
Jaan Puhvel, Ph.D., *Assistant Professor of Classics and Indo-European Linguistics.*  
Helen Florence Caldwell, M.A., *Lecturer in Classics.*  
Evelyn Venable Mohr, M.A., *Associate in Classics.*

\* Not to be given, 1960-1961.

† For information about the School of Science and Engineering on the La Jolla campus, see page 71.

‡ In residence spring semester only, 1960-1961.

*Letters and Science List.*—All undergraduate courses in the department except Latin 370 are included in the Letters and Science List of Courses. For regulations governing this list, see page 2.

### *Major Fields*

The student may take the major in Latin, in Greek, or in Latin and Greek (i.e., in the Classics). 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*

**A. Latin.** Required: courses 1, 2, 3, 4, or four years of high school Latin and course 4, or three years of high school Latin and courses 3 and 4, or two years of high school Latin and courses 2, 3, and 4; course 9A-9B (which may be taken concurrently with upper division courses). Recommended: English, French, German, Greek, Italian, Spanish.

**B. Greek.** Required: courses 1 and 2, or two years of high school Greek; and any two units of courses 100A-100B, 100C-100D (which may be taken concurrently with upper division courses). Recommended: English, French, German, Italian, Latin, Spanish.

**C. Latin and Greek (the Classics).** Required: the courses listed above as required in preparation for the major in Latin (A.) and for the major in Greek (B.). Recommended: English, French, and German.

### *The Major*

**A. Latin.** (1) courses 101, 102, 103, 104, 105, 106, 180; (2) at least four units of upper division courses in Classics, English, French, German, Greek, Italian, Latin, Linguistics, Sanskrit, Spanish, ancient or medieval history or philosophy, to be chosen with the approval of the department (especially recommended are Classics 102A-B-C-D; Greek 100 through 106, and 180A-180B; History 111A-111B and 113A-113B; Linguistics 180).

**B. Greek.** (1) courses 100A-100B, 100C-100D, 101, 102, 103, 104, 105, 106, 180A-180B; (2) at least four units of upper division courses in Classics, English, French, German, Greek, Italian, Latin, Sanskrit, Spanish, ancient or medieval history or philosophy, to be chosen with the approval of the department (especially recommended are Classics 102A-B-C-D, Latin 101 through 180, History 111A-111B and 112A-112B, Linguistics 180).

**C. Latin and Greek (the Classics).** Required: (1) Latin 101, 102, 103 or 105, 104 or 106, and 180; (2) and Greek 101, 102, 103 or 105, 104 or 106, and 180A-180B. Recommended: Classics 102A-B-C-D, History 111A-111B, 112A-112B, 113A-113B; English, French, German, Sanskrit, Linguistics 180.

### *Requirements for Admission to Regular Graduate Status*

A candidate for admission to regular graduate status in the department must meet, in addition to general university requirements, the minimum requirements for an undergraduate major in Latin, in Greek, or in Latin and Greek (the Classics). If the student is deficient in this prerequisite, he must fulfill it by undergraduate work which is not counted toward his regular graduate residence.

Undergraduate students contemplating graduate work should consult the adviser early in their upper division residence. Students who are admitted to the department with regular graduate status directly from another school must discuss their projected work with the adviser before their program for the first semester of study will be approved by the department.

### *Special Requirement for the Teaching Credential in Latin*

Latin 165A-165B and 165C-165D are required for students preparing for this credential.

*The Master's Degree*

The degree is offered in Latin, in Greek, and in Latin and Greek (the Classics). In order to qualify, the candidate must satisfy (1) the general university requirements, (2) the general departmental requirements, and (3) the special departmental requirements for the degree in one of the three fields. Only those who do so *with distinction* will be recommended to other universities for work toward the Ph.D.

*General University Requirements for the Master's Degree*

See page 66. The Department follows the comprehensive examination plan. For inclusion in electives outside the twelve units "in strictly graduate courses in the major subject," the department especially recommends Classics 102A-B-C-D, 251A-B-C-D; History 111A-111B, 112A-112B, 113A-113B, 251A-251B; Sanskrit 190, 191; Linguistics 180, 210.

*General and Special Departmental Requirements for the Master's Degree*

In addition to fulfilling the general university requirements, the candidate must meet (1) general departmental requirements for the master's degree, and (2) special departmental requirements for the master's degree in Latin, Greek, or Latin and Greek (the Classics). For these departmental requirements, students should consult the ANNOUNCEMENT OF THE GRADUATE DIVISION, SOUTHERN SECTION.

## COURSES WHICH DO NOT REQUIRE A KNOWLEDGE OF GREEK OR LATIN

Classics 113, 102A-B-C-D, 178, 251A-B-C-D, 260.

Latin 40, 180.

Greek 40, 180A-180B.

## CLASSICS

## UPPER DIVISION COURSES

## 102A, B, C, D. Classical Art.

Mr. Clement

Any phase of this course (A, B, C, or D) may be taken independently for credit. A knowledge of Latin and Greek is not required.

\*A. The Art of the Aegean Bronze Age. (2) I.

B. Greek and Roman Architecture. (2) II.

\*C. Greek and Roman Sculpture. (2) I.

\*D. Greek and Roman Painting. (2) II.

## 113. Ancient Drama. (2) I.

Mr. Travis

A knowledge of Latin and Greek is not required.

The major Greek and Latin dramas in translation, with a history of the theater and dramatic productions.

## 178. Greek and Roman Mythology. (3) I.

Mr. Puhvel

A knowledge of Greek and Latin is not required.

Origin and development of the myths and legends; their place in the religion, literature and art of Greece and Rome; modern approaches to the understanding of mythology.

## GRADUATE COURSES

## 200. History of Classical Scholarship, Bibliography, and Methodology.

(3) I.

Mr. Hoffelt

Required of all candidates for the master's degree.

## 251A, B, C, D. Seminar in Classical Art.

Mr. Clement

Prerequisite: Classics 102, or consent of the instructor. A knowledge of Latin and Greek is not required.

Each year, the seminar is concerned with specific problems in one of the following fields:

\* Not to be given, 1960-1961.

- \*251A. The Aegean Bronze Age. (2) II.  
 \*251B. Greek and Roman Architecture. (2) II.  
 \*251C. Greek and Roman Sculpture. (2) II.  
 \*251D. Greek and Roman Painting. (2) II.

\*260. Seminar in Indo-European Mythology. (3) II. Mr. Puhvel  
 Prerequisite: Classics 178 or consent of the instructor. A knowledge of Latin and Greek is not required. A reading knowledge of French or German is desirable.

Studies in ancient Indo-European mythological and religious traditions and their relationship to the myths of the Eastern Mediterranean, the Near East, and the Finno-Ugrian area.

## LATIN

## LOWER DIVISION COURSES

1. Beginning Latin. (4) I, II.

Sections meet five hours weekly.

1G. Elementary Latin for Graduate Students. (No credit) I. Miss Caldwell  
 Four hours a week.

2. Readings in Latin Prose. (4) I, II.

Sections meet five hours weekly.

Mrs. Mohr

Prerequisite: course 1, or two years of high school Latin. Students who have not had Latin for a year or more should review elementary grammar before attempting this course.

3. Readings in Latin Poetry: Ovid and Vergil's *Aeneid*. (4) I, II.

Prerequisite: course 2, or three years of high school Latin.  
 Mrs. Mohr, Miss Caldwell

4. Catullus: Selections; Horace: Odes and Epodes. (4) I, II. Mr. Chapman  
 Prerequisite: course 3, or four years of high school Latin.

9A-9B. Latin Prose Composition. (2-2) Yr.

Prerequisite: course 2, or three years of high school Latin; 9A is prerequisite to 9B.

A systematic survey of Latin syntax and idiom through translation of English into Latin.

40. The Latin Element in English. (2) II.

A knowledge of Latin is not required.

Mrs. Mohr

A course in vocabulary building based on a study of the many groups of English words which are derived from the Latin.

## UPPER DIVISION COURSES

Important: certain upper division courses are given every other year only, for example, 103, 104, 105, 106, and 180 (see below). All courses required for the major may readily be taken within the usual four years of undergraduate study, but adequate planning is essential.

101. Plautus and Terence. (3) I.

(Former number, 102.)

Prerequisite: course 4.

Miss Caldwell

102. Lucretius; Vergil: Eclogues and Georgics. (3) II.

(Former number, 146.)

Prerequisite: course 4.

Miss Caldwell

\* Not to be given, 1960-1961.



**\*103. Satire: Horace, Juvenal, and Martial. (3) I.**

(Former number, 157.)

Prerequisite: course 101 or 102 (in special cases, course 103 may be taken concurrently with 101). This course is normally given every other year in alternation with course 105.

**\*104. Cicero and Seneca: The Philosophical Works. (3) II. Mr. Hoffleit**

(Former number, 191.)

Prerequisite: course 101 or 102 (in special cases, course 104 may be taken concurrently with 102). This course is normally given every other year in alternation with course 106.

**105. Roman Elegy. (3) I.**

(Former number, 115.)

Mr. Chapman

Prerequisite: course 101 or 102 (in special cases, course 105 may be taken concurrently with 101). This course is normally given every other year in alternation with course 103.

**106. Livy; Tacitus: Annals. (3) II.**

(Former number, 154.)

Mr. Hoffleit

Prerequisite: course 101 or 102 (in special cases, course 106 may be taken concurrently with 102). This course is normally given every other year in alternation with course 104.

**\*120. Introduction to Medieval Latin. (2) II.**

Prerequisite: one year of college Latin or the equivalent.

A study of the forms, syntax, and vocabulary of medieval Latin and the reading of illustrative texts.

**\*165A-165B. Latin Composition. (1-1) Yr.**

Mr. Hoffleit, ———

Prerequisite: course 9A-9B. 165A is not prerequisite to 165B. This course is normally given every other year in alternation with course 165C-165D. Ciceronian prose.

**165C-165D. Latin Composition. (1-1) Yr.**

Mr. Hoffleit

Prerequisite: course 9A-9B. 165C is not prerequisite to 165D. This course is normally given every other year in alternation with course 165A-165B. Ciceronian prose.

**180. A Survey of Latin Literature in English. (3) II.**

Mr. Travis

A knowledge of Latin is not required. This course is normally given every other year in alternation with Greek 180A-180B.

**199. Special Studies in Latin. (1-5) I, II.**

The Staff

Prerequisite: senior standing and consent of the instructor.

## GRADUATE COURSES

**\*202. Cicero's Philosophical Works. (3) I.**

Mr. Hoffleit

**203. Roman Historians. (3) II.**

Mr. Hoffleit

**\*204. Roman Prose Writers. (3) II.**

Cicero's letters.

Mr. Hoffleit

**\*206. The Roman Epic. (3) II.**

The Roman epic from Ennius to Silius Italicus.

Mr. Hoffleit

**\*210. Vergil's Aeneid. (3) I.**

Mr. Clement

\* Not to be given, 1960-1961.

**Classics**

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211. Cicero's Rhetorical Works. (3) I. Mr. Travis
220. Vulgar Latin. (3) I. Mr. Puhvel
254. Seminar in Latin Studies. (3) II. \_\_\_\_\_  
Latin Comedy.
- \*256. Seminar: Ovid. (3) II. \_\_\_\_\_
290. Research in Latin. (1-4) I, II. The Staff

**PROFESSIONAL COURSE IN METHOD**

- \*370. The Teaching of Latin. (3) II. \_\_\_\_\_  
Prerequisite: a foreign language minor.

**GREEK****LOWER DIVISION COURSES**

- 1-2. Greek for Beginners. (4-4) Yr. Miss Caldwell  
Sections meet five hours weekly. Upon completing Greek 2, students may enroll directly in course 101.  
The elements of Greek grammar and readings from Attic prose.
40. The Greek Element in English. (2) I. Mrs. Mohr  
A knowledge of Greek is not required.  
A course in vocabulary building based on a study of the many groups of English words which are derived from the Greek.

**UPPER DIVISION COURSES**

Important: certain upper division courses are given every other year only, for example, 103, 104, 105, 106, and 180A-180B (see below). All courses required for the major may readily be taken within the usual four years of undergraduate study, but adequate planning is essential.

- \*100A-100B. Prose Composition. (1-1) Yr. Mr. Travis  
Prerequisite: course 1-2; 100A is not prerequisite to 100B. This course is normally given every other year in alternation with course 100C-100D.
- 100C-100D. Prose Composition. (1-1) Yr. Mrs. Mohr, Mr. Chapman  
Prerequisite: course 1-2; 100C is not prerequisite to 100D. This course is normally given every other year in alternation with course 100A-100B.
101. Plato: Apology and Crito; Herodotus: Selections. (3) I. Mr. Chapman  
(Former number, 102.)  
Prerequisite: course 1-2.
102. Lyric Poets; Homer: Odyssey. (3) II. Mr. Puhvel  
(Former number, 101.)  
Prerequisite: course 101.
- \*103. Plato: Republic. (3) I. Mr. Hoffleit  
(Former number, 114.)  
Prerequisite: courses 101, 102. This course is normally given every other year in alternation with course 105.
- \*104. Euripides and Aristophanes. (3) II. Mr. Travis  
(Former number, 103.)  
Prerequisite: courses 101, 102. This course is normally given every other year in alternation with course 106.

\* Not to be given, 1960-1961.

105. **Thucydides and Demosthenes.** (3) I. Mr. Hoffleit  
(Former number, 104.)

Prerequisite: courses 101, 102. This course is normally given every other year in alternation with course 103.

106. **Aeschylus and Sophocles.** (3) II. Mr. Chapman  
(Former number, 105.)

Prerequisite: courses 101, 102. This course is normally given every other year in alternation with course 104.

117. **Greek New Testament.** (3) II. Mr. Clement

Prerequisite: course 101. This course does not count toward the major in Greek.

\*180A-180B. **A Survey of Greek Literature in English.** (2-2) Yr. ———

This course is normally given every other year in alternation with Latin 180. A knowledge of Greek is not required. 180A and 180B may be taken independently for credit.

A study of the literature of Greece from Homer to Lucian with reading in English.

199. **Special Studies in Greek.** (1-5) I, II. The Staff

Prerequisite: senior standing and consent of the instructor.

#### GRADUATE COURSES

\*201A. **Homer: The Iliad.** (3) I. Mr. Clement

\*201B. **Homer: The Odyssey.** (3) II. Mr. Clement

202. **Sophocles.** (3) I. ———

\*203. **Thucydides.** (3) II. Mr. Hoffleit

\*204. **Aristophanes.** (3) I. Mr. Travis

205. **Euripides.** (3) II. Mr. Travis

290. **Research in Greek.** (1-4) I, II. The Staff

#### SANSKRIT

##### UPPER DIVISION COURSES

190. **The Elements of Sanskrit.** (3) I. Mr. Puhvel

Prerequisite: consent of the instructor.

Introduction to script and grammar, with reading exercises and attention to the significance of Sanskrit for the understanding of other Indo-European languages.

191. **Advanced Sanskrit.** (3) II. Mr. Puhvel

Prerequisite: Sanskrit 190 or equivalent preparation.

Advanced aspects of grammar and the reading of literary texts.

199. **Special Studies in Sanskrit.** (1-5) I, II. Mr. Puhvel

Prerequisite: senior standing and consent of the instructor.

##### RELATED COURSES IN OTHER DEPARTMENTS

**History 111A-111B. History of the Ancient Mediterranean World.**  
(3-3) Yr. Mr. Brown, Mr. Chambers

**History 112A-112B. History of Ancient Greece.** (3-3) Yr. Mr. Brown

\* Not to be given, 1960-1961.

History 113A-113B. History of Rome. (3-3) Yr. Mr. Brown, Mr. Chambers

History 251A-251B. Seminar in Ancient History (3-3) Yr. Mr. Brown

\*Linguistics 180. Introduction to Indo-European Linguistics. (3) I.  
Mr. Puhvel

Linguistics 210. Comparative Grammar of the Indo-European Languages.  
(3) II. Mr. Puhvel

## EARTH SCIENCES

### La Jolla Campus†

Carl Eckart, Ph.D., *Professor of Geophysics.*

Albert E. J. Engel, *Professor of Geology.*

Walter H. Munk, *Professor of Geophysics.*

Russell W. Raitt, *Professor of Geophysics.*

Gustaf O. Arrhenius, Ph.D., *Associate Professor of Marine Geology.*

Harmon Craig, Ph.D., *Associate Professor of Geochemistry.*

Edward D. Goldberg, Ph.D., *Associate Professor of Chemistry (Chairman of the Department).*

Henry W. Menard, Ph.D., *Associate Professor of Geology.*

Milton N. Bramlette, Ph.D., *Professor of Geology.*

Fred B Phleger, Ph.D., *Professor of Geology.*

Norris W. Bakestraw, Ph.D., *Professor of Chemistry.*

Roger Revelle, Ph.D., *Professor of Oceanography.*

Hans E. Suess, Ph.D., *Professor of Geochemistry.*

Harold C. Urey, Ph.D., *Professor of Chemistry.*

James R. Arnold, Ph.D., *Associate Professor of Chemistry.*

Fred N. Spiess, Ph.D., *Research Geophysicist and Director of the Marine Physical Laboratory.*

Victory Vacquier, M.A., *Research Geophysicist.*

The department will offer a graduate curriculum leading to the degrees of Master of Science and Doctor of Philosophy in earth sciences.

The program of study will consist of two parts:

(a) Preparation for the qualifying examination. In this examination the student will be examined in the basic fields of earth science.

(b) Advanced or specialized studies grouped under the three options of geophysics, geology, and geochemistry.

*Requirements for Admission.*—A baccalaureate major in one of the physical or earth sciences, or mathematics, or engineering. The student's preparation should include:

(a) General physics, equivalent to Physics 1A, 1B, 1C, 1D at the Los Angeles campus. Physics courses designed specifically for medical, biological, or agricultural students will normally not be acceptable for this requirement.

(b) Two years of chemistry, including physical chemistry (advanced physics may be substituted for one year of chemistry).

(c) Mathematics through differential and integral calculus. (Students intending to specialize in geophysics should also have additional mathematical preparation.)

*The Master's Degree.*—The Master of Science will be offered under Plan II (Comprehensive Examination Plan). All programs must include an approved list of basic courses. A reading knowledge of German, French, or Russian is required.

\* Not to be given, 1960-1961.

† For general information about the School of Science and Engineering on the La Jolla campus, see page 71.

**The Qualifying Examination.**—The qualifying examinations for the Doctor of Philosophy degree in earth sciences will include (1) a written comprehensive examination covering the basic curriculum and emphasizing the student's ability to integrate this material with his knowledge of the physical sciences for the analysis of general problems in the earth sciences, (2) a preliminary departmental oral examination, and (3) a special examination in the student's general area of specialization.

**Languages.**—Examinations in two languages (German, French, or Russian) must be passed before the qualifying examination.

**Advanced Work for the Doctoral Degree.**—Advanced study and research for the doctoral thesis may be done in theoretical or experimental geophysics and geochemistry, marine and terrestrial geology, or other specialized areas of the earth sciences. Students specializing in geochemistry or geophysics will normally take some advanced courses in physics and chemistry as well as some of the departmental option courses. Other courses available are listed in the Oceanography curriculum.

#### UPPER DIVISION COURSES

- 120. Mineralogy. (3) I.** Mr. Arrhenius  
Prerequisite: consent of the instructor.  
Lectures and laboratory work in crystallography, x-ray and optical mineralogy.
- 121. Petrology. (3) II.** Mr. Engel  
Prerequisite: courses 120, 125, 215.  
Petrology of igneous, metamorphic, and sedimentary rocks.
- 125. Mathematical Techniques. (3) I.** The Staff  
Prerequisite: consent of the instructor.  
Ordinary and partial differential equations, complex variables, vectors and tensors, Fourier and infinite series, etc., with applications to the earth sciences.
- 130A-130B. Topics in Geology. (2-2) I, II.** Mr. Engel, Mr. Arrhenius  
Reading course, with preparation of written reports, dealing with basic subjects and problems in the earth sciences
- 132. Introduction to Geochemistry. (2) I.** The Staff  
(Formerly numbered Oceanography 123.)  
Prerequisite: Oceanography 113.  
Survey of general topics in geochemistry, with special emphasis on marine chemical problems. This course, offered from time to time, is designed for oceanographers, geologists, and biologists; this is not a prerequisite for those specializing in geochemistry.
- 133. Instrumental Geochemistry. (3) I.** Mr. Goldberg and The Staff  
Prerequisite: physical chemistry and consent of the instructor.  
Lectures and laboratory work on instrumental methods.
- 199. Special Studies. (1-4) I, II.** The Staff  
Prerequisite: consent of the instructor.

#### GRADUATE COURSES

- 215. Tectonics. (3) I.** Mr. Menard  
Prerequisite: consent of the instructor.  
Large-scale structural and morphological features of the earth, crustal deformation, mountain building, permanency of continents, etc.

**217. Hydrodynamics. (3) I.** Mr. Eckart

Prerequisite: consent of the instructor.

A systematic exposition of the principles governing the flow of liquids. The various mathematical forms of the conservation principles (matter, momentum, energy), and of the second law of thermodynamics, are derived and illustrated by examples and problems.

**230A. Geochemistry. (3) I.** Mr. Goldberg

Prerequisite: physical chemistry; courses 120, 125; Oceanography 110; course 237 or taken concurrently.

Chemistry of the lithosphere, atmosphere, and oceans; the geochemical cycles of the major and minor elements; geochronology.

**230B. Geochemistry. (3) I.** Mr. Craig

Chemical and phase equilibria of geological importance; applications of thermodynamics to problems in the earth sciences; geochemistry of stable and radioactive isotopes.

**231. Nuclear Geochemistry. (3) II.** Mr. Suess

Prerequisite: physical chemistry and atomic physics.

Radioactive and stable isotopes; stability of nuclei; radioactive decay schemes; natural radioactivities and geological applications; origin and relative abundances of the elements; fission elements and extinct natural radioactivities.

**237. Chemical Thermodynamics. (3) II.** Mr. Craig

Prerequisite: physical chemistry and integral calculus.

Extension of the thermodynamics of Gibbs, following the formulation of DeDonder, Prigogine, and Defay. Fundamental theorems; homogeneous and heterogeneous systems; thermodynamic stability and theorems of moderation; equilibrium displacements and transformation; relaxation phenomena; solutions; indifferent states.

**240A-240B. Geophysics. (4-4) I, II.**

Mr. Raitt, Mr. Munk, Mr. Vacquier, Mr. Spiess

Prerequisite: general physics; course 125; Oceanography 110.

A two-semester course covering elastic wave propagation in the atmosphere, the ocean, and the solid earth; earth magnetism; gravity; tides, and other topics in geophysics. Sequence begins spring semester.

**246. Field Work at Sea. (4)** Mr. Menard and The Staff

Prerequisite: consent of the instructor.

About three weeks at sea, in summer session. Field work in marine geology and geophysics, and physical and chemical oceanography. Reports and interpretations of data will be prepared after return.

**253. Seminar in Geochemistry. (2) II.** Mr. Arrhenius and The Staff

Prerequisite: consent of the instructor.

Oral and written reports on important topics in geochemistry. Subjects include: mineral chemistry; geochemistry of specific elements; chemical and phase equilibria; geochronology; geochemical cycles; nuclear geochemistry.

**299. Research (1-6) I, II.**

The Staff

**ECONOMICS**

(Department Office, 270 Business Administration-Economics Building)

†Armen A. Alchian, Ph.D., *Professor of Economics.*Paul A. Dodd, Ph.D., LL.D., *Professor of Economics.*Wytze Gorter, Ph.D., *Professor of Economics (Chairman of the Department).*

† Absent on leave, 1960-1961.

Dudley F. Pegrum, Ph.D., *Professor of Economics.*  
 Warren C. Seoville, Ph.D., *Professor of Economics.*  
 Earl J. Miller, Ph.D., LL.D., *Professor of Economics, Emeritus.*  
 Paul T. Homan, Ph.D., *Professor of Economics, Emeritus.*  
 William R. Allen, Ph.D., *Associate Professor of Economics.*  
 Robert E. Baldwin, Ph.D., *Associate Professor of Economics.*  
 Karl Brunner, Dr. Rer. Pol., *Associate Professor of Economics.*  
 Jack Hirschleifer, Ph.D., *Associate Professor of Economics.*  
 Charles M. Tiebout, Ph.D., *Associate Professor of Economics.*  
 John F. Barron, Ph.D., *Assistant Professor of Economics.*  
 Norman V. Breckner, Ph.D., *Assistant Professor of Economics.*  
 Harold Demsetz, Ph.D., *Assistant Professor of Economics.*  
 W. Lee Hansen, Ph.D., *Assistant Professor of Economics.*  
 †H. Laurence Miller, Jr., Ph.D., *Assistant Professor of Economics.*  
 E. Thayne Robson, M.S., *Acting Assistant Professor of Economics.*  
 Melvin Rothbaum, Ph.D., *Assistant Professor of Economics.*  
 Donald E. Stout, Ph.D., *Assistant Professor of Economics.*

*Letters and Science List.*—All undergraduate courses in economics are included in the Letters and Science List of Courses. For regulations governing this list, see page 2.

*Objective of the Major in Economics.*—The program for the student majoring in the field of economics is designed to provide a well-balanced and carefully integrated curriculum in liberal arts leading to the A.B. degree. The requirements for and offerings in the major are intended not only to provide a well-rounded education based on a broad foundation of economics and related subjects, but also to supply basic training for students who plan to enter the professional fields of high school and junior college teaching in the social sciences or business education, law, social work, or government service. Majors who envisage a business career can arrange a plan of study which provides the basic training for such a career and the foundation for graduate work in schools of business administration. The major also provides the basic training for professional graduate studies in economics.

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

*Preparation for the Major.*—Required: Economics 1A-1B. Under special circumstances and by petition, a student may be permitted to substitute Economics 101 for Economics 1A-1B. This may be done only when the student is in upper division standing.

*Requirements for the Major.*

- 1) Economics 100A and 3 units selected from 100B, 103, or 140;
- 2) One course in each of three fields in economics listed below other than the field of economic theory or Economics 140;
- 3) Twenty-four upper division units in courses offered by the Department of Economics, including (1) and (2). Upon petition to the department, not more than 6 units of those upper division courses in business administration that appear on the Letters and Science course list may be accepted toward the satisfaction of this requirement.

*Recommended Courses.*—Lower division students preparing for the major in economics are strongly recommended to include in their programs Economics 13 and Business Administration 1A. Majors in economics should endeavor to include courses selected from the following departments in complet-

† Sabbatical leave in residence, fall semester, 1960-1961.

‡ Not more than 42 units of upper division courses in economics and business administration may be counted toward the bachelor's degree.

<sup>2</sup> In residence spring semester only, 1960-1961.

ing their upper division programs: Anthropology and Sociology, Business Administration, Geography, History, Philosophy, Political Science, Psychology. The selection should be made on the basis of the student's proposed career and on the recommendation of his major adviser. Students who intend to pursue economics to the graduate level are encouraged to take work in mathematics at least through the first course in calculus. This applies especially to those who are interested in economic theory and statistics.

**Fields:**

- Economic Theory (courses 100A, 100B, 103, 105, 143).
- Economics Institutions (courses 106, 107, 108).
- Economic Development (courses 109, 110, 111).
- Regional Economics (courses 120, 121).
- Public Finance (courses 131, 132, 133).
- Money and Banking (courses 135, 136).
- Econometrics (courses 140, 142, 143).
- Labor Economics (courses 150, 152, 155, 156, 158).
- Government and Industry (courses 170, 171, 173, 174).
- International Economics (courses 195, 196, 197).

**1A-1B. Principles of Economics.** (3-3) Yr. Beginning either semester.

Mr. Allen, Mr. Breckner, Mr. Hansen, Mr. H. L. Miller,  
Mr. Scoville, Mr. Tiebout

Lecture, two hours; discussion, one hour

An introduction to principles of economic analysis, economic institutions, and issues of economic policy. The first semester emphasizes allocation of resources and distribution of income through the price system. The second semester concentrates on aggregative economics, including money and banking, national income, and international trade.

**13. Evolution of Economic Institutions in America.** (3) I, II. Mr. Stout

Rise of large-scale capitalistic methods of production, influence of technology, prices, politics, ideologies, and wars.

**UPPER DIVISION COURSES**

Courses 1A-1B or 101 are prerequisite to all upper division courses in economics.

**100A. General Economic Theory.** (3) I, II.

Mr. Allen, Mr. Hansen, Mr. Hirshleifer, Mr. H. L. Miller

The laws of demand, supply, returns, and costs; price and output determination in different market situations. The implications of the pricing process for the optimum allocation of resources.

**100B. General Economic Theory.** (3) I, II. Mr. Hansen, Mr. H. L. Miller

Theory of employment and income; theory of factor pricing and income distribution; present state and prospects of capitalism in relation to welfare and economic progress.

**101. Economic Principles and Problems.** (3) I, II.

Mr. Alchian, Mr. Barron, Mr. Demsetz, Mr. H. L. Miller,  
Mr. Robson, Mr. Rothbaum, Mr. Tiebout

Designed for non-economics majors. A one-semester course presenting the principles of economics with applications to current economic problems. Satisfies the prerequisite to all upper division courses in economics. Not open to students with credit for 1A-1B.

**103. History of Economic Theory.** (3) II.

Mr. Allen

An historical survey of the major systems of economic thought.



**105. Economic Fluctuations. (3) I.**

Mr. Hansen

Prerequisite: course 135.

Identification, measurement, and analysis of economic fluctuations; methods of forecasting. Appraisal of alternative countercyclical policies, public and private, and their use in recent cyclical experience.

**\*106. Individualism and Collectivism. (3) II.**

An examination of the economic assumptions and implications of the literature of liberalism, socialism, communism, and anarchism, from classical antiquity to the present, with special attention to conceptions of economic reform and organization, and to the place of the state in the economic scheme.

**107. Comparative Economic Systems. (3) I, II.** Mr. Scoville, Mr. Stout

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 their economic goals, theories of economic organization, institutions, and developmental processes. Problems of economic planning are emphasized.

**108. Development of Economic Institutions. (3) I.**

Mr. Scoville

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.

**109. Economic Development. (3) I.**

Mr. Baldwin

A brief survey of development theories from Adam Smith to the post-Keynesians is followed by an examination of the problems both of accelerated development in poor countries and of maintaining development in rich countries.

**110. Problems of Underdeveloped Areas. (3) II.**

Mr. Baldwin

Prerequisite: course 109

An analysis of the obstacles to economic development confronting poor countries and of the policies designed to overcome these barriers to growth. Special problems of different areas as well as development plans of selected countries are examined.

**111. Population Analysis. (3) II.**

Mr. Hansen

An analysis of the dynamics of population change and trends in population growth, its composition and distribution. Interaction of population change with levels of business activity and rates of economic development.

**112. Economic Problems of the U.S.S.R. (3) I.**

Prerequisite: course 1A-1B or 101.

An introduction to the organization and policies of the economy of the U.S.S.R.

**120. Regional Economic Analysis. (3) I.**

Mr. Tiebout

The analysis of intranational regions including discussion of: income determination, regional growth, and interregional flows. Special attention to the problems of the Los Angeles region.

**121. The Economics of Location. (3) II.**

Mr. Tiebout

The principles of location of firms in terms of general and partial equilibrium analysis. Includes empirical evidence on actual location practices.

**131. Public Finance. (3) I.**

Mr. Breckner

A survey of the development and economic effects of public expenditures, revenues, and indebtedness, with reference to selected tax and budgetary problems.

\* Not to be given, 1960-1961.

- 132. State and Local Finance. (3) II.** Mr. Tiebout  
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.
- 133. Federal Finance. (3) II.** Mr. Breckner  
Prerequisite: course 135.  
An analysis of the federal tax structure, federal expenditures, and the federal debt structure, and their relationship to the level of employment and income, resource allocation, and the distribution of income.
- 135. Money and Banking. (3) I, II.**  
Mr. Barron, Mr. Brunner, Mr. Breckner, Mr. H. L. Miller, Mr. Tiebout  
The principles and history of money and banking, with principal reference to the experience and problems of the United States.
- 136. Techniques of Monetary Control. (3) II.** Mr. Brunner  
Prerequisite: course 135.  
The nature of monetary controls; monetary developments as related to prices, production, and national income; monetary policies in the interwar and postwar periods; monetary policy and domestic economic stabilization.
- 140. Introduction to Statistical Methods. (3) I, II.**  
Mr. Alchian, Mr. Hirschleifer, Mr. H. J. Miller  
Principles and methods of utilizing statistical data; presentation and statistics of a given set of data; probability; methods of statistical inference with economic applications; bivariate correlation, time series, and index numbers. Not open for credit to students who have completed Business Administration 115.
- 142. Quantitative Economic Analysis. (3) II.** Mr. Hansen, Mr. Hirschleifer  
Prerequisite: course 140 or the equivalent.  
Quantitative aspects of the main economic magnitudes and their relationships. Implications of extent of quantitative knowledge on validity of economic theory.
- 143. Introduction to Mathematical Economics. (3) I.** Mr. Brunner  
Basic concepts and operations of mathematical logic and their application to economic analysis. Differentiation of functions, maximum and minimum problems in economics. Linear systems in economics, matrices, vectors and determinants and their elementary properties.
- 150. Labor Economics. (3) I, II.** Mr. Robson, Mr. Rothbaum  
Economic analysis of trade union philosophies and practices; theoretical exploration of basic influences affecting real wages and employment, with examination of the relevant statistical record; internal wage policies of the firm; union-management relations and the public economy.
- 152. Social Insurance. (3) II.** Mr. Robson  
Basis of the social security program; unemployment insurance, workmen's compensation, old age pensions, insurance against sickness.
- 155. History and Problems of the Labor Movement. (3) II.** Mr. Rothbaum  
The origin and development of trade-unionism in the United States; theory of collective bargaining, methods and practices of contemporary unionism; the legal status of unionism.
- 156. Labor Law and Legislation. (3) I.** Mr. Robson  
Prerequisite: course 150.  
The social and economic basis of the law regulating employer-employee

relationships. Analysis of the implications of federal and state legislation for collective bargaining; economic effects of laws regulating wages, hours of work, and other labor standards.

**158. Collective Bargaining.** (3) I, II. Mr. Robson, Mr. Rothbaum  
Prerequisite: course 150.

Theory and practice of collective bargaining; mediation and arbitration of industrial disputes; grievance procedures and administration of labor-management agreements; government intervention in collective bargaining.

**170. Economics of Industrial Control.** (3) I, II. Mr. Barron, Mr. Demsetz, Mr. Pegrum

The institutional patterns of regulation; the economics of industrial production and pricing; the control of competitive enterprise, combinations and monopolies and their control; governmental regulation and economic planning.

**171. Public Utilities.** (3) I. Mr. Barron

The economics of public service corporations; the economic problems of regulation; state and national problems arising from the development of public utilities; public ownership.

**173. Economics of Transportation.** (3) I, II. Mr. Pegrum

The economic characteristics of transport; the functions of the different transportation agencies; rate structures; problems of state and federal regulation; coordination of facilities. The current transportation problem.

**174. National Transport Policy.** (3) II. Mr. Pegrum  
Prerequisite: Economics 173.

Major economic problems of national transport policy; interagency pricing; interagency integration; investment allocation within and among agencies; traffic allocation among agencies; economic analysis of public aid and regulation; terminal and metropolitan transport problems; coordination of regulatory agencies.

**176. Economics of Natural Resources.** (3) II. Mr. Barron

Pricing system and efficiency in the use and conservation of natural resources; private and social cost, and the concept of waste; cost allocation among users. Analysis of policies for petroleum, coal, timber, fisheries, and minerals.

**\*177. Water and Land Economics.** (3) II.

Economic principles in utilization of water and resources. Legal and institutional factors governing use. Problems in development, reclamation, conservation, and allocation. Project and area studies. One field trip required. Not open for credit to students who have taken Agricultural Economics 177.

**195. Principles of International Trade.** (3) I, II. Mr. Allen, Mr. Baldwin, Mr. Gorter

An introduction to the principles and mechanisms of international trade; foreign exchange, the balance of payments, comparative costs, the exchange of goods and services and the gain from trade. Effects of trade restrictions. Analysis of selected current international economic problems and policies in the light of the principles presented.

**196. International Trade Policies.** (3) II. Mr. Gorter  
Prerequisite: course 195 or consent of the instructor.

Governmental regulations of international transactions. Bilateral and multilateral trade agreements. Import quotas. Dumping and international cartels.

\* Not to be given, 1960-1961.

International commodity agreements. The international trade of planned economies. The development of United States foreign trade policy and its impact upon the world economy. The General Agreement on Tariffs and Trade.

**197. International Finance. (3) I.**

Mr. Allen

Prerequisite: course 135 or 195

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 organizations.

**199. Special Studies in Economics. (1-3) I, II.**

The Staff

Prerequisite: senior standing and consent of the instructor.

GRADUATE COURSES

**201A-201B. Price and Distribution Theory. (3-3) Yr.**

Mr. Alchian,

(Formerly 251A-251B.) Mr. Baldwin, Mr. Brunner, Mr. Hirshleifer

**202. Macroeconomics: Theory of Employment, Income and Money. (3)**

(Formerly 255.)

Mr. Brunner

**203. Analytical Methods and Concepts. Seminar. (3)**

(Formerly 257.)

Mr. Brunner

**242A-242B. Econometrics. (3-3) Yr.**

Mr. Brunner

**250. History of Economic Thought. Seminar. (3) II.**

Mr. Allen

Prerequisite: Economics 103 or consent of the instructor.

**\*252. Recent Trends in Economic Thought. Seminar. (3) I.**

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**253. Applications of Economic Theory. Seminar. (3) II.**

Mr. Alchian

**254. Economic Fluctuations and Growth. Seminar. (3)**

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**\*256. Statistical Economics. Seminar. (3)**

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**\*258. Monetary Policy. Seminar. (3)**

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**260A-260B. Industrial Organization, Price Policies and Regulation.**

Seminar. (3-3)

Mr. Pegrum

Economics 260A is not a prerequisite for 260B.

**261. Public Finance. Seminar. (3) I, II.**

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**262. Evolution of Economic Institutions in the United States. Seminar. (3)**

Mr. Scoville, Mr. Stout

**263. Evolution of Economic Institutions in Western Europe. Seminar. (3)**

Mr. Scoville

**265. National Transport Policy. (3) I.**

Mr. Pegrum

**266A-266B. International Economics. Seminar. (3-3) Yr.**

Mr. Allen, Mr. Gorter

**268A-268B. Economic Growth of Underdeveloped Areas. Seminar.**

(3-3) Yr.

Mr. Stout, Mr. Baldwin

**270. History and Problems of the Labor Movement. (3) II.**

Mr. Rothbaum

**271A-271B. Labor Economics. Seminar. (3-3) Yr.**

Mr. Rothbaum

**272. Industrial Relations Seminar. (3)**

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**290. Special Problems. (1-6 units each semester) I, II.**

The Staff

\* Not to be given, 1960-1961.

## EDUCATION

(Department Office, 325 Moore Hall)

- Howard E. Wilson, Ed.D., *Professor of Education and Dean of the School of Education (Chairman of the Department)*.
- Jesse A. Bond, Ed.D., *Professor of Education and Director of Training*.
- William S. Briscoe, Ed.D., *Professor of Education*.
- John I. Goodlad, Ph.D., *Professor of Education and Director of the University Elementary School*.
- B. Lamar Johnson, Ph.D., *Professor of Education and Assistant Director of Training*.
- George F. Kneller, M.A. (London), Ph.D., *Professor of Education*.
- Erick L. Lindman, Ph.D., *Professor of Education*.
- Arthur A. Lumsdaine, Ph.D., *Professor of Education*.
- Malcolm S. MacLean, Ph.D., *Professor of Education*.
- Lloyd N. Morrisett, Ph.D., *Professor of Education*.
- May V. Seago, Ph.D., *Professor of Education and Assistant Dean of the School of Education*.
- Paul H. Sheats, Ph.D., *Professor of Education*.
- Lawrence E. Vredevoe, Ph.D., *Professor of Education*.
- Samuel J. Wanous, Ph.D., *Professor of Education and Assistant Dean of the School of Education*.
- John A. Hockett, Ph.D., *Professor of Education, Emeritus*.
- David F. Jackey, Ph.D., *Professor of Education, Emeritus*.
- Edwin A. Lee, Ph.D., *Professor of Education, Emeritus*.
- F. Dean McClusky, Ph.D., *Professor of Education, Emeritus*.
- Junius L. Meriam, Ph.D., *Professor of Education, Emeritus*.
- Corinne A. Seeds, M.A., *Professor of Education, Emeritus*.
- Charles Wilkin Waddell, Ph.D., *Professor of Education, Emeritus*.
- Fredric P. Woellner, Ph.D., LL.D., *Professor of Education, Emeritus*.
- Melvin L. Barlow, Ed.D., *Associate Professor of Education and Director of the Division of Vocational Education*.
- Watson Dickerman, Ph.D., *Associate Professor of Education*.
- Wilbur H. Dutton, Ed.D., *Associate Professor of Education and Associate Director of Training*.
- Lawrence W. Erickson, Ed.D., *Associate Professor of Education*.
- Claude W. Fawcett, Ph.D., *Associate Professor of Education and Director of Field Services*.
- Clarence Fielstra, Ph.D., *Associate Professor of Education*.
- C. Wayne Gordon, Ph.D., *Associate Professor of Education and Sociology*.
- Evan R. Keislar, Ph.D., *Associate Professor of Education*.
- William H. Lucio, Ph.D., *Associate Professor of Education*.
- Lorraine M. Sherer, Ed.D., *Associate Professor of Education*.
- A. Garth Sorenson, Ph.D., *Associate Professor of Education*.
- Harvey L. Eby, Ph.D., *Associate Professor of Education, Emeritus*.
- Ethel I. Salisbury, M.A., *Associate Professor of Education, Emeritus*.
- , *Associate Professor of Education*.
- Theodore R. Husek, Ph.D., *Assistant Professor of Education*.
- Wendell P. Jones, Ph.D., *Assistant Professor of Education*.
- Donald A. Leton, Ph.D., *Assistant Professor of Education*.
- John D. McNeil, Ed.D., *Assistant Professor of Education and Associate Director of Training*.
- Richard S. Perry, Ed.D., *Assistant Professor of Education*.
- Louise L. Tyler, Ph.D., *Assistant Professor of Education*.
- , *Assistant Professor of Education*.
- Jack H. Cooper, Ph.D., *Instructor in Education*.

- Aubrey L. Berry, Ed.D., *Lecturer in Education.*  
 Howard A. Champion, Ed.D., *Lecturer in Education.*  
 Gladys A. Graham, Ed.D., *Lecturer in Education, and Education Librarian.*  
 Lyle Herbst, M.A., *Lecturer in Education, Life Sciences.*  
 Faith Smitter, Ed.D., *Lecturer in Education.*  
 Ernest R. Toon, M.Ed., *Lecturer in Education, Physical Sciences.*

### Supervisors of Training

- Vivienne M. Brady, A.B., *Elementary.*  
 Mary P. Broderick, A.B., *Elementary.*  
 Evelyn W. Lindstrom, A.B., *Elementary.*  
 Elizabeth M. Schneider, A.B., *Elementary.*  
 Genie M. Swinney, M.A., *Elementary.*



- Freeman Ambrose, M.A., *Secondary, English.*  
 Nora B. Cole, A.B., *Secondary, Physical Education for Women.*  
 Kenneth Kilday, M.A., *Secondary, Physical Education for Men.*  
 Gladys W. Harris, M.A., *Secondary, Art.*  
 Allen A. Hogle, M.Ed., *Secondary, Social Studies.*  
 Oscar M. Jiminez, A.B., *Secondary, Foreign Languages.*  
 Edward B. Johns, Ed.D., *Secondary, Health Education.*  
 Alice H. Lynton, A.B., *Secondary, Communication Skills.*  
 Mary C. M. McDonald, M.A., *Secondary, Mathematics and Science.*  
 Thelma D. Nicklin, M.Ed., *Secondary, Business Education.*  
 Sophia R. Pezel, Ph.D., *Secondary, Social Studies.*  
 Virginia Whitfield, M.Mus., *Secondary, Music.*  
 ———, *Secondary, Home Economics.*

### UNIVERSITY ELEMENTARY SCHOOL

- Margaret D. Mathews, B.Ed., *Acting Principal.*  
 Kathryn Argabrite, M.A., *Supervisor, Health Instruction.*  
 Mary Maxine Bentzen, A.B., *Supervisor, Nursery Group.*  
 Lola C. Binney, B.S., *Supervisor, Third Grade.*  
 Cynthia Brown, M.A., *Supervisor, First Grade.*  
 Elenore Cornberg, M.A., *Supervisor, Kindergarten.*  
 Richard J. L. Covington, M.Ed., *Supervisor, Sixth Grade.*  
 John D. Cunningham, M.A., *Supervisor, Science and Outdoor Education.*  
 Janet E. Ecki, A.B., *Supervisor, Second Grade.*  
 Emma S. Griffith, M.A., *Supervisor, Fourth Grade.*  
 Ann Gutierrez, A.B., *Supervisor, Third Grade.*  
 Patricia Haglund, A.B., *Supervisor, Music.*  
 Jean S. Kershner, *Supervisor, Nursery School.*  
 Mee Lee Ling, A.B., *Supervisor, Fifth Grade.*  
 Donnarae McCann, *Librarian.*  
 Penrod Moss, A.B., *Supervisor, Sixth Grade.*  
 June Patterson, M.S., *Supervisor, Kindergarten.*  
 Olga Richard, M.A., *Supervisor, Art.*  
 Mary Rogers, M.S., *Supervisor, Nursery Group.*  
 Sterling S. Stott, M.A., *Counselor.*  
 Dorothy Tait, A.B., *Supervisor, Fourth Grade.*  
 Margaret F. Toungaw, B.Ed., *Supervisor, Fourth Grade.*  
 ———, *Supervisor, Nursery Group.*  
 ———, *Supervisor, Second Grade.*  
 ———, *Supervisor, Fourth Grade.*  
 ———, *Assistant, Rhythms.*  
 ———, *Supervisor, Physical Education.*

## City Training Schools

### ELEMENTARY SCHOOLS

George F. Grimes, M.S., *Principal, Nora Sterry Elementary School.*  
 Behy C. Kermoyan, M.S., *Principal, Westwood Elementary, School.*  
 Floyd D. McCorkle, M.A., *Principal, Brockton Avenue Elementary School.*  
 Esther McGinnis, B.Ed., *Principal, Clover Avenue Elementary School.*  
 Genevieve L. McMahan, A.B., *Principal, Fairburn Avenue Elementary School.*  
 Gertrude G. Woodmansee, M.A., *Principal, Warner Avenue Elementary School.*

Training teachers and demonstration teachers in these and other schools are carefully chosen for their ability as teachers and as supervisors by the University supervisory staff and approved by the public school authorities. The personnel varies from year to year.

### JUNIOR AND SENIOR HIGH SCHOOLS

Eugene Olson, Ed.D., *Principal, University High School.*  
 Donald R. Pelton, M.S., *Vice-Principal, University High School.*  
 Sheila W. M. Bauer, M.A., *Vice-Principal, University High School.*  
 Alice K. Brees, A.B., *Counselor, University High School.*  
 Thomas A. Campbell, M.A., *Principal, Emerson Junior High School.*  
 David H. Carter, M.S., *Vice-Principal, Emerson Junior High School.*  
 Mabel-Ella Campbell, M.A., *Vice-Principal, Emerson Junior High School.*  
 Margaret A. Ruenitz, M.A., *Counselor, Emerson Junior High School.*  
 John C. Holt, M.Ed., *Principal, Los Angeles High School.*  
 Allen A. Sebastian, M.S., *Principal, Webster Junior High School.*  
 William J. Ferguson, M.A., *Principal, Paul Revere Junior High School.*

The secondary training staff consists of about two hundred public school teachers chosen for their ability as teachers and as supervisors by the University supervisory staff and approved for such service by the public school authorities. Each ordinarily assumes responsibility for the training of not more than three student teachers at any one time.

*Letters and Science List.*—Courses 100A–100B, 108, and 110A–110B are included in the Letters and Science List of Courses. For regulations governing this list, see page 2.

*The Major.*—An undergraduate major is not offered in the Department of Education at Los Angeles. Students desiring to qualify for certificates of completion leading to teaching and administration credentials should consult the ANNOUNCEMENT OF THE SCHOOL OF EDUCATION, LOS ANGELES.

### UPPER DIVISION COURSES

Junior standing is prerequisite to all courses in education except course 100A, which is open to high sophomores. Additional prerequisites for enrollment in 100 and 300 series courses will be found on page 53 of this bulletin.

#### Area 1. Theoretical and Social Foundations

100A–100B. Fundamentals of Education. (2–2) I, II. Mr. Kneller and Staff (100A–100B replaces the former 106, 130, and 160. It also replaces 170 in the required credential sequence.)

An analytical and critical study of American educational thought and practice, with special emphasis on the ability of the teacher to deal with educational ideas as they relate to philosophic, social, political, and economic factors.

**108. Sociology of Education.** (3) I, II. Mr. Gordon  
(Former number, 180. Same as Sociology 180.)

Prerequisite: Sociology 1 or 101.

Studies 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; formal and informal groups; school culture; roles of teachers, students, and administrators.

**Area 2. Educational Psychology and Counseling**

Psychology 1A and either 1B or 33 are prerequisites to all courses in educational psychology.

**110A-110B. Psychological Foundations of Education.** (3-2) I, II.  
(Replace courses formerly numbered 110, 111, 112, and 117A.)

**Course 110A.** Mr. Keislar, Mr. Leton, Mr. Whittrock  
Prerequisite: Psychology 1A and either 1B or 33.

The learning process in school situations and the evaluation of learning; physical, mental, and social development of children in relation to the school.

**Course 110B.** Mr. Sorenson, Mr. Leton  
Prerequisite: course 110A.

Personality formation and assessment among pupils; principles of guidance as applied to problems of pupil personnel and counseling in schools.

**114. Educational Statistics.** (2) I, II. Mr. Husek  
Prerequisite: Psychology 1A and either 1B or 33.

Lecture and laboratory.

Elementary descriptive statistical procedures and sampling error theory through simple analysis of variance and Chi square as applied to educational problems.

**116. The Education of Exceptional Children.** (3) I. Mrs. Seagoe  
Prerequisite: course 110A-110B.

The characteristics of and educational provisions for exceptional children, including the mentally and physically handicapped, the gifted, and the delinquent.

**118. Counseling and Guidance for the Handicapped.** (2) II.  
Prerequisite: course 116. Mr. Leton, ———

Principles and practices employed in guidance and counseling services for persons who are handicapped, mentally, physically, or socially. Emphasis given to occupational opportunities for the handicapped and to the role of appraisal of individual differences in planning for social, emotional, and vocational adjustments.

**119. Educational Measurement.** (3) I, II. Mr. Husek, Mr. Leton  
Lecture and laboratory. Prerequisite: course 114.

Introduction to achievement test construction, elementary theory of measurement, survey of measurement techniques, critical study of typical tests and inventories used for estimating aptitude, achievement, attitudes, temperaments, and interests.

**Area 3. Curriculum and Instruction**

**122A. Early Childhood Education.** (4) I, II. Mrs. Sherer  
(Former number, 128A.)

Prerequisite: courses 100A-100B, 110A.

Theory and practice in nursery schools, kindergartens, and primary grades, with particular emphasis on social studies, science, and mathematics for younger children.



- 122B. Early Childhood Education. (4) I, II.** Mrs. Sherer  
(Former number, 128B.)  
Prerequisite: course 122A, English 118.  
Language development of children from nursery school age through the primary grades; includes oral and written language, prereading, reading, and literature.
- 122C. The Arts in Early Childhood Education. (3) II.** Mrs. Sherer  
(Former number, 124.)  
Prerequisite: course 110A-110B.  
The role of the arts (music, art, rhythm, dramatic play and creative language) in the school and out of school experiences of younger children.
- \*123. Social Backgrounds in the Development of Younger Children. (3) II.** Mrs. Sherer  
Prerequisite: course 110A-110B.  
Environmental factors in the family, neighborhood, and community as influences on the mental, emotional, and social development of children from infancy through early childhood. Includes family-school relationships from both parental and school viewpoints.
- 124A. The Elementary School Curriculum. (4) I, II.** \_\_\_\_\_  
(Former number, 139B.)  
Prerequisite: courses 100A, 110A-110B. Aside from regular class hours, students must reserve three hours each week for participation in assigned schools.  
Current conceptions of the elementary school curriculum, with emphasis on the role of social studies and science, and on effective teaching techniques.
- 124B. The Elementary School Curriculum. (4) I, II.** Mr. Dutton  
(Former number, 139A.)  
Prerequisite: courses 100A, 110A-110B. Aside from regular class hours, students must reserve three hours each week for participation in assigned schools.  
Current conceptions of the elementary school curriculum, with emphasis on the place of the basic skills in the school program.
- 128. Curriculum for Mentally Retarded Children. (3) II.** Mr. Leton  
(Former number, 135.)  
Prerequisite: courses 116, 110A-110B.  
Organization, curricula, and procedures in classes for the mentally retarded.
- 129. Secondary Education. (3) I, II.** Mr. Vredevoe  
(Former number, 170.)  
Prerequisite: Psychology 1A and either 1B or 33.  
A study of secondary education in the United States, with reference to the needs and problems of secondary school teachers.
- 130. Curriculum and Instruction in Secondary Schools. (3) Yr.** Mr. Bond  
(Former number, 370.)  
Prerequisite: course 100A for secondary candidates; course 209A or 234 for junior college candidates. This course is prerequisite to all supervised teaching for the general secondary or junior college credentials.  
Current conceptions of the secondary school curriculum, including instructional techniques.

\* Not to be given, 1960-1961.

**137. Business Education. (3) I, II.**

Mr. Wanous

(Former number, 165.)

The organization, administration, and teaching of business education in secondary schools.

**139. Audio-Visual Media of Instruction. (2) I, II.**

(Former numbers, 147 and 147EC.)

Mr. Lumsdaine and the Staff

Prerequisite: must be taken concurrently with 122A, 124B, or 130.

Theory and practice in the use of audio-visual instruction media, with special reference to particular educational levels. Activities include utilization of field trips, environmental materials, films, still pictures, television, and other audio-visual media for instruction.

**149. Field Work. (2-4) I, II.**

Mr. Dickerman

Section 1. Adult Education.

(Former number, 149, Section 3.)

Supervised field work in adult education.

Section 2. General Pupil Personnel Services.

Mr. Leton, Mr. Sorenson

Prerequisite: courses 215 and 217 or 213A-213B; approval by the Teacher Selection and Counseling Service. Limited to candidates for appropriate credentials in General Pupil Personnel Services.

Supervised field work in public schools and other community agencies.

**199. Special Studies. (1-5) I, II.**

The Staff

Prerequisite: senior standing and consent of the instructor.

**GRADUATE COURSES†**

**200A-200B. Fundamentals of Educational Research. (2-2) Yr.** Mr. Keislar  
Lecture and laboratory. Prerequisite: course 114. Education 200A is prerequisite for Education 200B.

Considers research reporting, including bibliographical techniques, presentation of data, the application of the scientific method to educational research, theory of research, experimental design, techniques for gathering data, and interpretation of results.

**201A-201B. History of Education. (2-2) Yr.**

(Former numbers, 201 and 202.)

Development of educational thought and practice in Western civilization. Emphasis in 201A upon the Greek and Roman cultures, the Middle Ages, the Renaissance, the Reformation, and National Systems of Europe. Emphasis in 201B upon Colonial America and significant educational movements in the United States.

**204A-204B. Comparative Education. (2-2) Yr.**

Mr. Wilson, Mr. Jones

(Former number 197A-197B.)

Prerequisite: course 100A-100B.

An analytical and critical study of educational thought and practice in major countries and regions of the world. Particular attention is given to political, economic, social, religious, and other factors which influence education and public enlightenment.

**206A-206B. Philosophy of Education. (2-2) Yr.**

Mr. Kneller

Prerequisite: course 206A is prerequisite to course 206B.

A critical analysis of the philosophic and related forces determining American educational policy and practice.

† Open only to students in graduate status. Consent of the instructor is required for all graduate courses.

**208A-208B. Advanced Sociology of Education.** (2) I, II. Yr. Mr. Gordon  
Prerequisite: course 108; Sociology 180; or consent of the instructor.

The application of the concepts of social and cultural systems to the analysis of educational systems and the derivation of general principles of group behavior therefrom; interpretation of organizational behavior according to current principles as observed in various educational groups.

**209A. The Junior College.** (2) I, II. Mr. Johnson, Mr. Cooper

A study of the history and role of the junior college, and of problems and issues confronting the two-year college.

**209B. Higher Education in the United States.** (2) I. Mr. MacLean  
(Former number, 279A.)

Study of functions, trends, practices, and issues in higher education, with emphasis on the role, government, and curriculum of different types and levels of institutions, public and private.

**210. Learning and Education.** (2) I. Mr. Keislar  
(Former number, 210C.)

Prerequisite: course 110A-110B.

A critical review of the theoretical and experimental literature dealing with learning in school.

**211. Developmental Processes in Education.** (2) I. Mr. Keislar

Prerequisite: course 110A-110B.

A study of growth and function in physical, mental, social, and emotional development from infancy through adolescence.

**212. Individual Differences and Education.** (2) II. Mr. Keislar  
(Former number, 210D.)

Prerequisite: course 110A-110B.

Individual and group differences among students, including a study of the interrelationships of special significance for the school.

**213A-213B. Personality Theory in Student Personnel Work.** (2-2) Yr.  
(Former number, 217A-217B.) Mr. Sorenson

Prerequisite: courses 110A-110B, 114, 119.

213A. Introduction to selected theories of personality, and consideration of their implications for teachers and counselors.

213B. A review of psychological well-being and mental hygiene, and their implications for teachers and counselors.

**214A-214B. Measurement in Education. Advanced.** (2-2) Yr.  
(Former number, 254C-254D.) Mr. Keislar, Mr. Husek

Prerequisite: courses 110A-110B, 114, 119.

Theory of educational measurement; the construction and evaluation of aptitude and achievement tests, questionnaires, and rating devices for prediction and assessment in education.

**215A-215B. Fundamentals of Student Personnel Work.** (2-2) Yr.  
(Former numbers, 194, 148C.) Mr. Sorenson, Mr. Berry

Prerequisite: courses 110A-110B, 114, 119.

For student personnel workers at all levels.

215A. Considers the functions of the personnel worker and relations to student, teacher, other school officials, parents, and community agencies.

215B. Considers the ethical principles and legal provisions that apply to specific problems.

- 216A-216B. The Measurement and Guidance of Exceptional Children.**  
(2-2) Yr. Mr. Leton  
Prerequisite: courses 110A-110B, 116, 218A.  
Deals with the techniques for measuring educational characteristics of exceptional children, and the application of data in the educational guidance of exceptional children.
- 217. Principles of Career Planning. (2) I.** Mr. Barlow  
(Former number, 117B.)  
Prerequisite: courses 110A-110B, 114, 119, 215A.  
The use of psychological tests and occupational information in helping students in educational and vocational planning.
- 218A-218B. Appraisal of the Individual Student. (2-2) Yr.** Mr. Sorenson, Mr. Leton  
Prerequisite: courses 110A-110B, 114, 119, 215A.  
218A. Introduction to individual testing; includes supervised practice.  
218B. Other appraisal techniques, such as systematic observations, the interview, and case studies; and cumulative records and their use in the school.
- 219A-219B. Experimental Study of Audio-Visual Communication Media.**  
(2-2) Yr. Mr. Lumsdaine  
Prerequisite: courses 114 and 139 or the equivalent required; 119 and 200A-200B recommended.  
For advanced students with an active interest in research. Analysis of methods used and results obtained in experiments on the development of knowledge, skills, and attitudes through audio-visual communication media.
- 220. Principles of Curriculum and Instruction. (2) I, II.** Mrs. Tyler  
(Former number, 276A.)  
For graduate students who wish to develop the ability to examine critically the basic concepts underlying the determination of objectives, the selection and organization of learning experience, and the evaluation process.
- 221. Evaluation of Curriculum and Instruction. (2) I.**  
(Former number, 236A-236B.) Mr. Goodlad, Mrs. Tyler  
Prerequisite: course 220.  
Ways of evaluating the effectiveness of curriculum and instruction, including assessment and improvement of teacher behavior and accomplishment.
- 222A-222B. Early Childhood Education. Advanced. (2-2) Yr.** Mrs. Sherer  
(Former number, 228A-228B.)  
Prerequisite: course 122A-122B.  
Critical survey of current literature and research in early childhood education.
- 224A-224B. Curriculum Construction in Elementary Education. (2-2) Yr.**  
(Former number, 238A-238B.) Mr. Lucio  
Intensive study of research relating to design, evaluative criteria, and staff organization in curriculum improvement.
- 225A-225B. The Social Studies in Elementary Education. (2-2) Yr.** ———  
(Former number, 230A-230B.)  
Advanced study and research in social studies teaching and learning, with implications for curriculum development.

- 226A-226B. Mathematics and Science in Elementary Education. (2-2) Yr.**  
 (Former number, 233A-233B.) Mr. Dutton  
 Critical analysis of significant research in elementary mathematics and science teaching and learning. Application of findings to improvement of school programs. Evaluative techniques and individual student research.
- 227A-227B. Reading and Language in Elementary Education. (2-2) Yr.**  
 (Former number, 234A-234B.) Mrs. Sherer  
 Advanced study and research in reading, spelling, and oral and written language. Application of findings to improvement of school curricula.
- 230A-230B. The Secondary School Curriculum. (2) Yr.** Mr. McNeil  
 (Former number, 275A.)  
 Prerequisite: course 220.  
 For teachers, administrators, guidance personnel, and workers in foundations of education who wish to analyze current curriculum offerings in the light of purposes of secondary education. Consideration will be given to philosophical, psychological, and sociological bases for selection of learning experiences.
- 234. The Junior College Curriculum. (2) II.**  
 (Former number, 209B.) Mr. Cooper, Mr. Dunlap, Mr. Johnson  
 Prerequisite: course 209A.  
 A study of trends, practices, and issues in the junior college curriculum, viewed in the light of the philosophy and purposes of the two-year college.
- 236A-236B. Adult Education. (2-2) Yr.** Mr. Dickerman  
 (Former number, 207A-207B.)  
 For school administrators and teachers, extension and group workers, librarians, and others who are responsible for developing programs of adult education.  
 A survey of the field of adult education: functions, development, clientele, institutions, and practices.
- 237A-237B. Business Education in Secondary and Higher Education. Advanced. (2-2) I, II.** Mr. Erickson  
 Prerequisite: course 137 and teaching experience.  
 Advanced study in business education teaching and learning, with a critical analysis and evaluation of significant research applicable to curriculum and teaching practices.
- 237C. The Organization, Administration, and Supervision of Business Education. (2) I.** Mr. Wanous  
 (Former number, 226A.)  
 Prerequisite: teaching experience or consent of the instructor.  
 A study of principles, practices, and problems related to the organization, administration, and supervision of business education at secondary and higher education levels.
- 238A-238B. Vocational Education. Advanced. (2-2) Yr.** Mr. Barlow  
 (Former number, 224A-224B.)  
 Prerequisite: course 100A-100B.  
 An advanced course in the principles of vocational education, designed especially for supervisory and administrative personnel and candidates for the doctorate in education.
- 239A-239B. Audio-visual Education. Advanced. (2-2) Yr.**  
 (Former number, 247A-247B.) Mr. Lumsdaine, Mr. Vetter  
 For supervisors and administrators dealing with problems involved in developing programs of visual education on the various levels in public education.

**240A-240B-240C-240D. Backgrounds for Education Administration.**

**240A. Introduction to Education Administration.** (2) I, II. Mr. Fawcett  
(Former number, 140.)

Presents principles and theories relating to administration and supervision.

**240B. Organization of Education in the United States.** (2) I, II.  
(Former number, 142.)

Mr. Lindman  
Considers the respective roles of the federal, state, county, and local governments, and voluntary agencies in American education. Reviews legal bases and administrative relationships.

**240C. School Law.** (2) I, II.  
(Former number, 148.)

Mr. Briscoe

For students preparing for administrative positions in education. Considers laws, court decisions, and legal procedures relating to management of schools.

**240D. Laws Relating to Minors.** (2) I, II.  
(Former number, 148C.)

Mr. Berry

Prerequisite: consent of the instructor.

Considers federal and state statutes, local regulations and ordinances, attorney general and county counsel interpretations, court decisions, and ethical practices applicable to minors.

**241A-241B-241C-241D. Supervision of Instruction.**

**241A. Supervision of Instruction.** (2) I, II.  
(Former number, 251A.)

Mr. Fielstra

Prerequisite: teaching experience and consent of the instructor.

Considers basic principles and procedures applicable to supervision of instruction and in-service education of teachers.

**241B. Supervision of Instruction in Elementary Schools.** (2) I.  
(Former number, 251B.)

Mr. Fielstra

Prerequisite: course 241A.

Relates principles and procedures of supervision specifically to the elementary school.

**241C. Supervision of Instruction in Secondary Schools.** (2) II.  
(Former number, 251B.)

Mr. Fielstra

Prerequisite: course 241A.

Relates principles and procedures of supervision specifically to the secondary school.

**241D. Evaluation and Field Research in Supervision of Instruction.**  
(2) I, II.

Mr. Fielstra

(Former number 149, Section 1.)

Prerequisite: courses 241A and 241B or 241C.

Emphasizes the field study and evaluation of major problems in supervision.

**242A. Principles of Educational Finance.** (2) I, II.  
(Former number, 145.)

Mr. Lindman

Reviews historical and theoretical background; considers principles relating to federal and state participation in educational finance; analyzes present expenditures and future requirements.

**242B. School Business Administration.** (2) I, II. Mr. Briscoe  
(Former number, 145.)

For students preparing to be school superintendents or business managers. Principles of financial planning and operational procedures relating to school budgeting, accounting, purchasing, and plant operation.

**242C. School Business Administration. Problems.** (2) I, II.  
Prerequisite: consent of the instructor. Mr. Briscoe, Mr. Lindman

For students preparing for school business management positions. Intensive study of selected problems in school business administration.

**244A. Personnel Administration in Education.** (2) I. Mr. Fawcett  
(Former number, 245.)

Theories and principles of school personnel administration; personnel policies and procedures; selection, appointment, and orientation; salary policies, professional welfare; and in-service growth.

**244B. Communication in Education Administration.** (2) II. Mr. Fawcett  
(Former number, 242.)

Considers communication theory and its application to administrative problems; includes internal communication among board members, superintendent and staff, and external communication with the community.

**245A. Research in Education Administration.** (2) I, II. Mr. Lindman

Research methodology intrinsic to school administration; includes projection of school population, study of cost-quality relationships, and analysis of services performed by educational research agencies.

**245B. School Surveys.** (2) I, II. Mr. Morrisett  
(Former number, 241A-241B.)

Principles and techniques for appraisal of schools and colleges, with emphasis upon school and college surveys.

**246A-246B. Administration of Elementary Education.** (2-2) Yr. Mr. Lucio  
(Former numbers, 236A and 246.)

Prerequisite: teaching experience and consent of the instructor.  
Emphasizes study of major problems and research findings in elementary administration.

**246C. Evaluation and Field Research in Elementary School Administration.**  
(2) I, II. Mr. Lucio

(Former numbers, 236B and 149, Section 1.)  
For students who have completed basic requirements for the elementary administration and supervision credential. Emphasizes the field study and evaluation of major problems in administration.

**247A-247B. Administration of Secondary Education.** (2-2) Yr.  
(Former number, 243A-243B.) Mr. Vredevoe

For students preparing for administration and supervision of secondary schools. Principles and practices in organization and administration of secondary schools.

**247C. Evaluation and Field Research in Secondary School Administration.**  
(2) I. Mr. Vredevoe

(Former numbers, 270B and 147.)  
An examination and evaluation of secondary schools, including an intensive study and development of evaluative instruments and criteria.

- 248A. Organization and Administration of City School Systems. (2) I.** Mr. Morrisett  
(Former numbers, 141 and 240A.)  
Principles of efficient school administration as exemplified in the practices of city school systems; compares organization and management procedures used in public administration, business administration, and school administration.
- 248B. City School Administration. Problems. (2) II.** Mr. Morrisett  
(Former number, 240B.)  
Provides for intensive study of selected problems in city school administration.
- 249. Administration of Junior Colleges. (2) I, II.** Mr. Campion  
For students preparing for or now in administrative positions in junior colleges. Reviews administrative problems peculiar to junior colleges.
- 250A-250B. History of Education. Seminar. (2-2) Yr.** \_\_\_\_\_  
Prerequisite: course 201A-201B. Limited to candidates for advanced degrees.  
Specialized studies in the history of education.
- 251A-251B. Philosophy of Education. Seminar. (2-2) Yr.** Mr. Kneller  
(Former number, 256A-256B.)  
Prerequisite: courses 110A-110B, 206A-206B.  
Limited to candidates for advanced degrees whose major interest is philosophy of education.
- 252A-252B. Sociology of Education. Seminar. (2-2) Yr.** Beginning either semester. Mr. Gordon  
Prerequisite: Education 108; Sociology 180; Education 208A-208B or graduate status in the departments of Sociology or Anthropology.  
Admission on consultation with the instructor. Limited to graduate students of advanced standing in the departments of Education, Sociology, and Anthropology.
- 253A-253B. Comparative Education. Seminar. (2-2) Yr.** Mr. Wilson, Mr. Jones  
Prerequisite: course 204A-204B  
Comparative analysis of educational policies and practices in selected cultural regions with special attention to social, political, and economic factors influencing educational development.
- 254. Higher Education. Seminar. (2) II.** Mr. MacLean  
An intensive study of selected problems in higher education, including administration; student personnel.
- 255A-255B. Educational Psychology. Seminar. (2-2) Yr.** Mrs. Seago, Mr. Keislar  
(Former number, 260A-260B.)  
Prerequisite: courses 210, 211, 212. Limited to candidates for the master's or doctor's degree whose major interest is educational psychology and to students desiring to carry research in this area.
- 256A-256B. Measurement in Education. Seminar. (2-2) Yr.** Mr. Husek  
(Former number, 254A-254B.)  
Prerequisite: course 214A-214B.  
Special problems in construction and use of achievement examinations, aptitude tests, and other methods of assessment.



- 257A-257B. The Development of Newer Educational Media. Seminar.**  
(2-2) Yr. Mr. Lumsdaine  
Prerequisite: courses 110A and 139 required; 119 and 210C recommended.  
Limited to candidates for advanced degrees.  
Experimentation with educational applications of teaching films, television courses, and self-instructional media, including implications of theories of learning and communication for the design and use of these media.
- 258A-258B. Counseling Theory and Practice. Seminar.** (2-2) Yr.  
(Former number, 277A-277B.) Mr. MacLean  
Prerequisite: courses 213A-213B, 215A. Limited to candidates for advanced degrees whose major interest is counseling, and to selected high school and college counselors.
- 259. Problems in Educational Psychology. Seminar.** (2) II. Mrs. Seago  
(Former number, 267.)  
Prerequisite: courses 210, 211, and 212. Limited to graduate students whose major interest is in educational research.  
Studies the procedures employed in collegiate bureaus of educational research, problems investigated, and methodologies employed in public school research.
- 260. Curriculum and Instruction. Seminar.** (2) I, II. Mrs. Tyler  
(Former number, 276B.)  
Prerequisite: course 220.  
For graduate students who wish to pursue research in the curriculum.
- \*261A-261B. Early Childhood Education. Seminar.** (2-2) Yr. Mrs. Sherer  
(Former number, 253A-253B.)  
For graduate students whose major interest is in the nursery school, kindergarten, or primary education.
- 262A-262B. The Elementary School Curriculum. Seminar.** (2-2) Yr.  
Prerequisite: course 124B. Mr. Lucio  
For teachers, curriculum workers, administrators, and graduate students interested in the intensive study of curriculum problems in the elementary school.
- 263. Secondary School Curriculum. Seminar.** (2) I, II. Mr. McNeil  
(Former number, 275B.)  
Prerequisite: courses 220, 221.  
Primarily for doctoral students in supervision and curriculum. Intensive study and research on selected problems.
- 264A-264B. The Junior College. Seminar.** (2-2) Yr.  
(Former number, 279A-279B.) Mr. Johnson, Mr. MacLean  
Prerequisite: course 209A.  
For graduate students whose major interest is higher education. Attention is given to college and university problems; the technical institute; and closely related areas of study.
- 264C-264D. Technical Education in the Junior College. Seminar.** (2) I, II.  
(Former number, 278A-278B.) Mr. Barlow  
A study of the content, methods, and organization of technical education programs of a vocational-technical nature, with particular reference to junior college problems of teaching and administration.

\* Not to be given, 1960-1961.

- 266A-266B. Adult Education. Seminar. (2-2) Yr.**  
 (Former number, 281A-281B.)  
 Prerequisite: course 236A-236B.  
 For professional adult educators. Trends, problems, and recent research.
- 267A-267B. Research in Business Education. Seminar. (2-2) I, II.**  
 (Former number, 226B.) Mr. Wancous  
 Covers the bibliography of and research methods found useful in a study of problems in business education. Analyses, studies, and implications of their findings for the improvement of business education. Design of individual research projects.
- 268A-268B. Vocational Education and Guidance. Seminar. (2-2) Yr.**  
 (Former number, 266A-266B.) Mr. Campion  
 For graduate students whose major interest is in vocational education, vocational guidance, or closely related problems.
- \*269A-269B. Audio-visual Education. Seminar. (2-2) Yr.** Mr. Lumsdaine  
 (Former number, 257A-257B.)  
 Prerequisite: course 139. Limited to candidates for advanced degrees whose major interest is audio-visual education and to students desiring to carry on research in this area.
- 270. Education Administration. Seminar. (2) I, II.** Mr. Morrisett  
 (Former number, 255A-255B.)  
 For advanced students in educational administration and supervision. Considers major issues and current problems relating to administration of schools and colleges.
- 271. Advanced Education Administration. Seminar. (2 or 4) I, II.**  
 (Former number, 292A-292B.) Mr. Morrisett, Mr. Lindman  
 Directed research for advanced students in education administration.
- 273. Supervision of Instruction. Seminar. (2) I, II.** Mr. Fielstra  
 Prerequisite: courses 241A and 241B or 241C.  
 Provides opportunity for advanced students in supervision to design and to conduct directed research which normally will be related to the preparation of a master's thesis or doctoral dissertation.
- 280A-280B. Secondary Education. Seminar. (2-2) Yr.** Mr. Vredevoe  
 (Former number, 221A-221B.)  
 280A. Critical study of basic issues and problems related to secondary education.  
 280B. Emphasizes purposes, methods, instruments, and types of evaluative programs for secondary schools.
- 297. Individual Studies for Graduate Students. (1-6) I, II.** The Staff  
 Prerequisite: graduate status and consent of the instructor. May be repeated only once for credit.
- 299A-299B. Research on Dissertation for Doctoral Candidates. (2-6) Yr.**  
 The Staff  
 Limited to candidates for the Doctor of Education degree who have been advanced to candidacy.

## PROFESSIONAL COURSES

- 322A-322B-322C. Supervised Teaching: Early Childhood Education.**  
 (4-4-4) I, II. Mr. Bond and the Staff  
 (Former numbers, EC335A-EC335B, and EC336.)  
 Required of all candidates for the kindergarten-primary credential. One of the teaching assignments must be in the kindergarten and the other in grades 1, 2, or 3.

\* Not to be given, 1960-1961.

**323. Supervised Teaching in the Nursery School. (2-4) I, II.**

(Former number, N334.)

Mr. Bond and the Staff

Open to candidates seeking a permit to teach in child-care centers, nursery schools, parent-child observation classes, and parent cooperatives. Does not meet the requirement in supervised teaching for kindergarten-primary or general elementary credentials.

**324A-324B-324C. Supervised Teaching: General Elementary (4-4-4) I, II.**

(Former numbers, E335A-E335B and E336.)

Mr. Bond and the Staff

Prerequisite: for courses A and B: senior standing, Education 124A-124B, Art 330, Music 330, and Physical Education 330. Required of all candidates for the general elementary credential. One of the assignments will be in the upper elementary grades and the other in a lower elementary grade. For course C: supplementary teaching which may be elected by the student, or, in certain cases, required by the department.

**328MB and 328SC. Supervised Teaching: Mentally Retarded; Speech Correction and Lip Reading. (4-4) I, II.**

(Former numbers, MR376 and SC376.)

Mr. Bond and the Staff

328MB. Prerequisite: Education 128 and at least 8 units of supervised teaching for the general elementary credential or 6 units for the general secondary credential. 328MB does not displace any portion of the required 8 units of student teaching for the general elementary credential or 6 units for the general secondary credential.

328SC. Prerequisite: Speech 142A-142B and at least 8 units of supervised teaching for the general elementary credential or 6 units for the general secondary credential. 328SC does not displace any portion of the required 8 units of student teaching for the general elementary credential or 6 units for the general secondary credential.

**329. Supervised Teaching: General Junior High School. (2-6) I, II.**

(Former number, J374.)

Mr. Bond and the Staff

Prerequisite: Education 324A-324B or a minimum of 6 units of teaching in a special field.

**330A-330B-330C-330D-330E. Supervised Teaching: General Secondary.**

(3 units each) I, II.

Mr. Bond and the Staff

(Former numbers, G377, G378, 384A-384B, 383.)

General prerequisites for A, B, C, D: graduate status; Education 100A-100B, 130. Special methods courses in majors and in minors as follows: Art: 370A, 370B; Business Education: 2 units from Business Education 370A-370B-370C-370D; English and Speech: English 370; French: 370; German: 370; Health Education: 145B; Home Economics: 370; Mathematics: 370; Music: 370; Physical Education (Men): 370, 145B; Physical Education (Women): 326, 327; Spanish: 370 (or may be taken concurrently); Speech and Speech-English: Speech 370. Approval of the department of the undergraduate major subject, and consent of the director of training.

Prerequisites for E: previous student teaching or regular public school teaching experience, Education 100A-100B, and consent of the director of training.

**334. Supervised Teaching: Junior College. (4) I, II. Mr. Bond and the Staff**

(Former number G379.)

Prerequisite: graduate status; Education 209A; Education 234 or 130; approval of the department of the teaching major and the consent of the director of training. Restricted to candidates for the junior college credential.

## †\*A375 and A376. Supervised Teaching in Art. (3-3) I, II.

Mr. Bond and the Staff

Prerequisite: senior standing, Education 100A-100B, approval of the Department of Art and the director of training. Art 375 is prerequisite to A376 only.

## \*B375 and B376. Supervised Teaching in Business Education. (3-3)

Mr. Bond and the Staff

Prerequisite: senior standing, Education 100A-100B; 4 units from Business Education 370A, 370B, 370C, 370D, 2 of which may be taken concurrently with Education B375; approval of the Department of Business Education, and the director of training.

## †\*H375 and H376. Supervised Teaching in Home Economics. (3-3) I, II.

Mr. Bond and the Staff

Prerequisite: senior standing, Education 170, Home Economics 370, approval of the Department of Home Economics and the director of training.

## †\*M375 and M376. Supervised Teaching in Music. (3-3) I, II.

Mr. Bond and the Staff

Prerequisite: high junior standing, Music 369, approval of the Department of Music, and the director of training. Music 370 and M375 are also prerequisite to M376 only.

## †\*P375 and P376. Supervised Teaching in Physical Education. (3-3) I, II.

Mr. Bond and the Staff

Prerequisite: senior standing, Education 100A-100B, Physical Education for Men 370 or Physical Education for Women 326A-326B and 327A-327B, approval of the Department of Physical Education, and the director of training.

## ENGINEERING

(Department Office, 7408 Engineering Building)

Morris Asimow, Ph.D., *Professor of Engineering.*Roy Bainer, M.S., *Professor of Engineering and Professor of Agricultural Engineering, Resident at Davis.*John Landes Barnes, Ph.D., *Professor of Engineering.*Ralph M. Barnes, Ph.D., *Professor of Engineering and Professor of Production Management.*Joseph S. Beggs, M.Sc., *Professor of Engineering.*Charles T. Boehlein, Ph.D., *Professor of Engineering.*Alexander E. Boldyreff, Ph.D., *Professor of Engineering.*L. M. K. Boelter, M.S., *Professor of Engineering (Chairman of the Department).*George W. Brown, Ph.D., *Professor of Engineering and Professor of Business Administration.*Albert F. Bush, M.S., *Professor of Engineering.*Harry W. Case, Ph.D., *Professor of Engineering and Professor of Psychology.*Reno Cole, M.S., *Professor of Engineering.*Edward P. Coleman, Ph.D., *Professor of Engineering.*C. Martin Duke, M.S., *Professor of Engineering (Vice-Chairman in Charge of Academic Activities).*

\* All candidates must (1) secure the approval of the Selection and Counseling Service at least one semester prior to assignment, including formal recommendation of the University Physician and evidence of suitable grade-point averages; and (2) apply to the director of training by the middle of the semester preceding the assignment.

† For students taking the special secondary credential a year sequence of 8 units per semester (total of 6 units) is required, as indicated.

- Robert S. Elliott, Ph.D., *Professor of Engineering.*  
 John M. English, Ph.D., *Professor of Engineering (Vice-Chairman in Charge of the Institute of Industrial Cooperation).*  
 Gerald Estrin, Ph.D., *Professor of Engineering.*  
 Alan E. Flanigan, Ph.D., *Professor of Engineering.*  
 H. Kurt Forster, Ph.D., *Professor of Engineering.*  
 Joseph T. Gier, M.S., *Professor of Engineering.*  
 Louis L. Grandi, M.S., *Professor of Engineering.*  
 W. D. Hershberger, Ph.D., *Professor of Engineering.*  
 Martin R. Huberty, Engr., *Professor of Engineering and Professor of Irrigation.*  
 Walter C. Hurty, M.S., *Professor of Engineering.*  
 W. Julian King, M.E., *Professor of Engineering.*  
 William J. Knapp, D.Sc., *Professor of Engineering.*  
 Tung Hua Lin, D.Sc., *Professor of Engineering.*  
 Wendell E. Mason, M.S., M.E., *Professor of Engineering (Vice-Chairman in Charge of Laboratory Facilities).*  
 John H. Mathewson, M.S., *Professor of Engineering.*  
 John W. Miles, 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.*  
 Russell L. Perry, M.E., *Professor of Engineering and Professor of Agricultural Engineering.*  
 Arthur F. Pillsbury, Engr., *Professor of Engineering and Professor of Irrigation.*  
 †Louis A. Pipes, Ph.D., *Professor of Engineering.*  
 John B. Powers, Ph.D., *Professor of Engineering.*  
 Thomas A. Rogers, Ph.D., *Professor of Engineering.*  
 Daniel Rosenthal, Ph.D., *Professor of Engineering.*  
 Nicholas Rott, Ph.D., *Professor of Engineering.*  
 William F. Seyer, Ph.D., *Professor of Engineering.*  
 Francis R. Shanley, B.S., *Professor of Engineering.*  
 Edward H. Taylor, M.S., *Professor of Engineering.*  
 William T. Thomson, Ph.D., *Professor of Engineering.*  
 Myron Tribus, Ph.D., *Professor of Engineering.*  
 Harry Buchberg, M.S., *Associate Professor of Engineering.*  
 Bonham Campbell, A.B., E.E., *Associate Professor of Engineering and Assistant Director, Relations with Schools.*  
 Andrew Charwat, Ph.D., *Associate Professor of Engineering.*  
 Jacob Frankel, Ph.D., *Associate Professor of Engineering.*  
 Daniel Gerlough, Ph.D., *Associate Professor of Engineering.*  
 Warren A. Hall, Ph.D., *Associate Professor of Engineering.*  
 John C. Harper, D.Sc., *Associate Professor of Engineering and Associate Professor of Agricultural Engineering, Resident at Davis.*  
 Thomas E. Hicks, Ph.D., *Associate Professor of Engineering.*  
 Walter J. Karplus, Ph.D., *Associate Professor of Engineering.*  
 Ellis F. King, M.S., E.E., *Associate Professor of Engineering.*  
 Eldon L. Knuth, Ph.D., *Associate Professor of Engineering.*  
 Cornelius T. Leondes, Ph.D., *Associate Professor of Engineering.*  
 John Lyman, Ph.D., *Associate Professor of Engineering and Associate Professor of Psychology.*  
 †Joseph W. McCutchan, M.S., *Associate Professor of Engineering.*  
 †Bruce R. Mead, Ph.D., *Associate Professor of Engineering.*

† Absent on leave, 1960-1961.

\* In residence spring semester only, 1960-1961.

- Antony J. A. Morgan, Ph.D., *Associate Professor of Engineering.*  
 George E. Mount, Ph.D., *Associate Professor of Engineering and Associate Professor of Psychology.*  
 Phillip F. O'Brien, M.S., *Associate Professor of Engineering.*  
 Richard L. Perrine, Ph.D., *Associate Professor of Engineering.*  
 Alan Powell, D.L.C., Ph.D., *Associate Professor of Engineering.*  
 Allen B. Rosenstein, Ph.D., *Associate Professor of Engineering.*  
 Frederick W. Schott, Ph.D., *Associate Professor of Engineering.*  
 George Sines, Ph.D., *Associate Professor of Engineering.*  
 William D. Van Vorst, Ph.D., *Associate Professor of Engineering.*  
 George A. Zizicas, Ph.D., *Associate Professor of Engineering.*  
 Harold W. Mansfield, *Associate Professor of Engineering, Emeritus.*  
 James R. Allder, Ph.D., *Assistant Professor of Engineering.*  
 Harold Davis, Ph.D., *Assistant Professor of Engineering.*  
 Donald K. Edwards, Ph.D., *Assistant Professor of Engineering.*  
 John Isherwood, Ph.D., *Assistant Professor of Engineering.*  
 Richard C. Mackey, M.S., *Assistant Professor of Engineering.*  
 Ken Nobe, Ph.D., *Assistant Professor of Engineering.*  
 John Arthur Aseltine, Ph.D., *Lecturer in Engineering.*  
 Fred H. Blanchard, *Lecturer in Engineering.*  
 John C. Dillon, B.S., *Lecturer in Engineering.*  
 Henry C. Froula, M.A., M.S., *Lecturer in Engineering.*  
 Gerald L. Hassler, Ph.D., *Lecturer in Engineering.*  
 Sam Houston, Ph.D., *Lecturer in Engineering.*  
 Adin E. Mathews, M.S., *Lecturer in Engineering.*  
 John Rex, A.B., *Lecturer in Engineering.*  
 Johanna E. Tallman, A.B., Cert. in Lib., *Lecturer in Engineering Bibliography (Librarian, Engineering Library).*  
 George J. Tauxe, M.S., *Lecturer in Engineering.*  
 Willis H. Ware, Ph.D., *Lecturer in Engineering.*  
 Abe M. Zarem, Ph.D., *Lecturer in Engineering.*  
 Robert Brenner, M.S., *Associate in Engineering.*  
 Richard H. Haase, B.S., M.B.A., *Associate in Engineering.*  
 Jamal Habib, M.S., *Associate in Engineering.*  
 Albert F. Klinge, M.S., *Associate in Engineering.*  
 Levi J. Knight, M.S., *Associate in Engineering.*  
 Leonard Meirovitch, M.S., *Associate in Engineering.*  
 Harry C. Showman, B.S., *Associate in Engineering.*  
 Edward W. Wedbush, M.E., M.B.A., *Associate in Engineering.*

*Letters and Science List.*—Courses 2, 111A, 115A, 117A, 120A, 122A, 130A, 145, 150B, 151A, 160A, 163A, 181A, 182D, 182E, 183A, 185B, 186A, 187A.

Enrollment in engineering courses is permitted to students from other colleges who are undertaking curricula in which engineering courses are prescribed. A non-engineering student may be admitted to engineering courses by petition approved by the Dean of his College and by the Dean of the College of Engineering. Except for service courses, enrollment in Engineering courses normally is open only to students in the College of Engineering.

#### SERVICE COURSES

Enrollment in the following courses is open to any University student who is qualified. Service courses may not be accepted toward a degree in Engineering.

#### 1A. Surveying. (3) II.

Mr. Dillon

Lecture, two hours; field work, three hours. Prerequisite: trigonometry.

† Absent on leave, 1960-1961.

Principles and practices in measurement of distances, directions, and elevations. Construction and use of common surveying instruments, such as tape, compass, level, transit, and plane table. Problems in elementary surveying.

**2. Engineering Graphics. (3) II.**

Mr. McCutchan in charge  
Lecture, one hour; laboratory, five hours. Prerequisite: one year of high school drafting, plane geometry, trigonometry.

The principles of descriptive geometry and graphics and their application to the solution of problems in engineering and science.

**18. Materials of Production and Construction. (3) I.** Mr. Sines in charge  
Prerequisite: Chemistry 1A or 2.

A study of the properties of materials and the mass production methods of processing them.

**146B. Properties of Art Ceramic Materials. (3) I.**

Mr. Knapp

(Numbered 108D prior to 1959-1960.)

Prerequisite: Art 190. Occasional field trips will be scheduled. For students in Applied Arts.

Composition of ceramic materials and products. Properties of ceramic bodies and glazes, and calculation methods for compounding.

**LOWER DIVISION COURSES**

**\*1B. Surveying (3) II.**

Mr. Dillon

Lecture, two hours; field work, three hours; Saturdays. Prerequisite: courses 1A, or 4A, 4B.

Plane and geodetic surveys, triangulation; precise leveling; engineering astronomy; hydrographic surveys; topographic surveys, including application of photogrammetry.

**4A. Introduction to Engineering Systems. (3) I, II.** Mr. Grandi in charge

Demonstration and lecture, two hours; laboratory, four hours. Prerequisite: regular lower division status in the College of Engineering. Concurrent or prerequisite (should be taken concurrently): Mathematics 5A, Chemistry 1A. Field trips may be scheduled.

Introduction to engineering systems. Measurements of geometrical and performance parameters of such systems as an energy conversion system and a transportation system including both traffic and material flow. Geometrical measurements of the output of a production plant and of land are included. Graphical presentation of results of laboratory measurements. Introduction to the statistical representation of data. Introduction to engineering analysis.

**4B. Introduction to Design. (3) I, II.**

Mr. McCutchan, Mr. Grandi

Demonstration and lecture, two hours; laboratory, four hours. Prerequisite: course 4A; concurrent or prerequisite: Mathematics 5B, Chemistry 1B, Physics 1A.

Introduction to elementary design, including experimental design, of a structure, machine, circuit, or process, for the satisfaction of a given need. Graphical computations and analyses and preparation of working drawings and specifications. Introduction to the general method of engineering design. Case studies of engineering designs, including possible field trips.

**4C. Introduction to Engineering Materials. (3) I, II.**

Mr. Asimow, Mr. Grandi

Lecture, two hours; laboratory, three hours. Prerequisites: course 4B; Chemistry 1B, Physics 1A, Mathematics 5B. Not open for full credit to students who have had course 8.

\* Given alternate years; not to be given, 1960-1961.

Importance of materials in engineering. Internal structures and general properties of solids, metals, nonmetals (ceramics), natural and synthetic organic materials, fluids. Experimental demonstration of important properties and illustration of their application in engineering, including field trips.

#### 4D. Introduction to Engineering Processes. (3) I, II.

Mr. Asimow, Mr. Grandi

Lecture, one hour; laboratory, seven hours. Prerequisite: course 4C. Concurrent: course 15B, Physics 1C, Mathematics 6B. Field trips may be scheduled.

Manufacturing, construction, chemical and sanitation processes which combine or separate materials, considered as engineering systems. Measurement and control of mechanical and human variables.

#### †6. Engineering Drawing. (3) I.

Mr. McCutchan in charge

Lecture, one hour; laboratory, five hours. Prerequisite: course 2 or 4B.

An advanced course, based on A.S.A. standards of drawing and drafting room practice, correlating technical sketching and drafting with engineering design and production.

#### 15A-15B. Elementary Mechanics. (3-3) Yr. Beginning either semester.

Lecture, two hours; laboratory, three hours. Mr. Taylor in charge

This is a unified course covering elementary topics of analytical mechanics and strength of materials.

15A, prerequisite: Physics 1A; prerequisite or concurrent: course 4C, Mathematics 4A or 6A.

Composition and resolution of coplanar force systems, equilibrium of coplanar force systems, simple stress calculations, frames, continuously distributed loads, moments of areas, beam stresses. Algebraic and graphic methods will be employed.

15B, prerequisite: course 15A; prerequisite or concurrent: Mathematics 4B or 6B.

Composition and resolution of noncoplanar force systems, equilibrium of noncoplanar force systems, friction, torsion, states of stress and strain, deflection of beams, statically indeterminate beams, combined axial and bending loads, eccentric loads, columns, cables.

#### 96. Engineering and Society. (2) II.

Mr. Campbell in charge

Prerequisite: enrollment in College of Engineering or consent of instructor.

Readings selected from the writings of outstanding engineers, scientists, and architects whose works illustrate the interaction between engineering and human society. Attention also given to the over-all contributions and historical significance of these men and their works.

#### 97. Elementary Analysis of Engineering Practice. (3) I, II.

Mr. Knight in charge

Prerequisite: satisfactory completion of one semester's work in residence in the College of Engineering, Los Angeles, and participation in cooperative work-study program in engineering.

Analysis of the physical operation and plant of representative industries or engineering agencies. Role of the engineer in safety, economy, and use of human and natural resources. Written and oral reports required.

#### UPPER DIVISION COURSES

Admission to junior status in the College of Engineering is determined on the basis of lower division grades and the score on the *Engineering Examina-*

† To be given when there is sufficient demand.



*tion, Upper Division.* Applicants for junior status from all sources, including applicants from the University's lower division, will be required to meet the same minimum standard. Junior status in the College of Engineering is prerequisite to all upper division courses.

Students entering junior status with a course in statics should take Engineering 108A. A course in statics is not equivalent to either course 15A or course 15B.

**100A. Circuit Analysis.** (3) I, II.

Mr. Schott in charge

Prerequisite: Mathematics 110AB or 110C (may be taken concurrently)

Elements of electrical circuit analysis, with emphasis on solutions of circuit problems; analogues and duals; applications of steady state and transient analysis to linear electrical, mechanical, and thermal systems.

**100B. Field Theory and Energy Flow.** (3) I, II.

Mr. Powers in charge

(Not the same course as the 100B given prior to February, 1958.)

Prerequisite: courses 100A; 104A (may be taken concurrently). Occasional field trips may be scheduled.

A study of electrostatic and electromagnetic fields, of the interaction of fields and matter, and of fields in areas other than electrical. Energy in fields will be studied.

**102B. Engineering Dynamics.** (3) I, II.

Mr. Thomson in charge

Prerequisite: course 15B or a course in analytical mechanics—statics (equivalent to Engineering 35, Berkeley campus), Mathematics 110AB or 110C (may be taken concurrently).

Fundamental ideas of dynamics; kinematics and kinetics of particles and rigid bodies; motion relative to moving reference frames; work-energy and impulse-momentum relationships; an introduction to oscillatory motion. Vector analysis methods are introduced in the treatment of most of these subjects

**103A. Elementary Fluid Mechanics.** (3) I, II.

Mr. Taylor in charge

Prerequisite: courses 102B, 105A. Recommended to be taken concurrently: course 105B. Occasional field trips may be scheduled.

An introductory course dealing with the application of the principles of mechanics to the flow of compressible and incompressible fluids. Includes hydraulic problems of flow in closed and open conduits.

**104A. Experimental Engineering.** (3) I, II.

Mr. E. F. King, Mr. Grandi

Laboratory, six hours per week. Additional three hours required for preparation, calculations, and reports. Prerequisite: course 100A (may be taken concurrently). Occasional field trips may be scheduled.

Introductory experiments illustrating the properties of engineering materials. Applications of circuit theory to electrical, mechanical, thermal, acoustical, and fluid systems. Measurements and instrumentation. Required and elective experiments.

**104B. Experimental Engineering.** (3) I, II.

Mr. E. F. King, Mr. Grandi

Laboratory, six hours per week. Additional three hours required for preparation, calculations, and reports. Prerequisite: courses 100A, 104A; 108B (may be taken concurrently). Concurrent: courses 100B, 103A. Occasional field trips may be scheduled.

Introductory experiments on the operation and application of machines, and on the behavior of engineering structures. Measurements and instrumentation.

**104C-104D. Experimental Engineering.** (4-4) Yr. Beginning either semester.

Mr. Gier, Mr. Grandi

Laboratory, eight hours, some of which may be devoted to lecture and/or demonstration. Additional four hours required in preparation of reports. Prerequisite: completion of all required freshman, sophomore, and junior courses. Occasional field trips may be scheduled.

A year laboratory course containing a group of integrated experiments common to all engineering fields, a group of elective experiments particularly applicable to the several fields of engineering, and a senior project.

**105A. Thermostatistics and Thermodynamics.** (3) I, II. Mr. Tribus in charge  
(Not the same as course 105A given prior to September, 1959)

Prerequisite: junior standing.

Introduction to energy, information theory, entropy, and states of matter; statistical basis for zeroeth, first, second and third laws of thermostatistics; macroscopic behavior of gases; processes of closed thermodynamic systems; equations of state.

**105B. Thermostatistics and Thermodynamics.** (3) I, II. Mr. Tribus in charge

Prerequisite: course 105A.

Properties of solids; processes occurring in flow systems; statistical and macroscopic considerations of open systems, chemical potential, chemical equilibrium, solutions and heterogeneous systems, piston-cylinder devices, electrical and other force fields; irreversible processes.

**106A. Principles of Engineering Investment and Economy.** (3) I, II.

(Numbered 120 prior to 1959-1960.)

Mr. English in charge

Prerequisite: course 100B, 103A, 105B.

Derivation of formulas used in investment theory; analysis of financial statements and cost accounting methods; analysis of original and alternative investments; equipment replacement problems; influence of personnel factors; quality control; studies in the economy of governmental projects.

**108A. Strength of Materials.** (3) I, II.

Mr. Taylor in charge

Prerequisite: course 4C; a course in analytical mechanics—statics (equivalent to Engineering 85, Berkeley campus); Mathematics 4B or 6B (may be taken concurrently). Students entering junior status with a course in statics should take Engineering 108A. A course in statics is not equivalent to either course 15A or course 15B.

Stress, strain, and elasticity; thin shells, welded and riveted joints; shafts and helical springs; beams, shear, moment, flexural stress, shearing stress, deflection, unsymmetrical loading; column-theory; combined stresses.

**108B. Strength of Materials.** (2) I, II.

Mr. Shanley in charge

Prerequisite: course 15B or 108A, or the equivalent.

Review of stress-strain relationships, including inelastic behavior, strain energy, combined stresses; stress concentration and fatigue; bending theory, including curved beams, inelastic behavior, composite beams, unsymmetrical loading; shear flow theory, including shear center, torsion of thin shells, deflections; inelastic buckling of columns, plates, and shells; energy methods of deflection analysis; introduction to analysis of statically indeterminate structures and relaxation methods.

**†109A-109B. The Engineer and His Professional Duties.** (2-2) Yr.

(Numbered 113A-113B prior to 1959-1960.)

Mr. Boelter in charge

Prerequisite: senior standing in engineering. Enrollment limited to twenty students per section.

† 109A given each semester and summer; 109B given spring semester.

Oral and written reports on various subdivisions of knowledge, with emphasis on the sociohumanistic periphery of engineering. Class meetings will be devoted to the subjects of the history of technology, business organization, personal efficiency, professional codes and ethics, industrial procedures, and engineering-report writing. The course serves as training in the professional duties of the engineer.

**110A. Intermediate Circuit Theory I. (3) I, II.** Mr. Karplus  
(Numbered 198 prior to 1959-1960.)

Prerequisite: senior standing in engineering; course 181A recommended.  
Engineering circuit theory; essentials of circuit analysis and introduction to circuit synthesis; physical applications of complex frequency plane representation.

**110B. Intermediate Circuit Theory II. (3) I.** Mr. Karplus  
(Numbered 198 prior to 1959-1960.)

Prerequisite: courses 110A and 181A, or equivalent.  
Review of driving point impedance synthesis; properties of transfer functions; synthesis of transfer functions; normalization and frequency transformation.

**111A. Basic Magnetics. (3) I, II.** Mr. Rosenstein  
(Numbered 198 prior to 1959-1960.)

Prerequisite: course 100A, or equivalent.  
Fundamentals of modern magnetic theory and materials; magnetic circuit; development of energy, force, and circuit relations; characteristics of magnetic and permanent magnet materials; analysis of static electromagnetic systems such as transformers and magnetic amplifiers, emphasizing the static magnetic amplifier.

**113A. Analog Computations. (3) I, II.** Mr. Karplus in charge  
(Numbered 181D prior to 1959-1960.)

Prerequisite: Mathematics 110C or equivalent; courses 115A, 181A recommended.

A detailed study of the theory, operation, and application of analog computing devices such as the mechanical differential analyzer, thermal analyzer, network analyzer, and electronic computers and simulators. Engineering problems will be used to illustrate the operation and limits of accuracy of each device.

**114A. Introduction to Electronic Digital Computing Systems. (3) I, II.** Mr. Estrin  
(Numbered 198 prior to 1959-1960.)

Prerequisite: senior standing in electrical engineering, or equivalent including a knowledge of differential equations and their solution by Laplace transform methods, general circuit design, electronic circuits, nonlinear and pulse electronic circuits. (Mathematics 110AB; courses 100A, 115A, 115B, 181A.)

Orientation including comparison of analog and digital systems; historical background of digital computers; special mathematical topics; introductory programming; specialized digital computing circuits; systems and logical aspects of the over-all machine and its components; emphasis on reliable and conservative design techniques.

**114B. Logical Design of Digital Computing Machinery and Systems.** Mr. Estrin  
(3) I, II.

(Numbered 198 prior to 1959-1960.)  
Prerequisite: course 114A, or approved equivalent.

Logical design of synchronous digital computers; introduction to Boolean algebra and application to the following topics, among others: decimal and binary arithmetic units; delay-time and fast-access memories; input and output systems; error-detecting and correcting circuits.

**114C. Circuit Design of Digital Computers.** (3) I, II. Mr. Estrin  
(Numbered 198 prior to 1959-1960.)

Prerequisite: course 114A or equivalent.

Properties of nonlinear elements in two-state circuits, common component characteristics: semiconductors, magnetic materials, vacuum tubes, design of gates, bi-stable units, amplifiers, design of matrix and drum memories, storage and input-output devices and circuits.

**114D. Digital Computer Systems Design.** (3) I. Mr. Estrin

Prerequisite: course 114A.

Complete design of digital systems; fundamentals common to most digital systems and consideration of major aspects of several specific systems.

**†115A. Fundamentals of Electron Devices.** (3) I, II.

(Numbered 112A prior to 1958-1959.) Mr. E. F. King in charge

Prerequisite: course 100A (may be taken concurrently). Not open for credit to students who have had course 112A.

A unified fundamental treatment of electron devices including vacuum tubes and transistors. Equivalent circuits. Introduction to small-signal operation.

**†115B. Active Electronic Circuits I.** (3) I, II. Mr. E. F. King in charge

Prerequisite: course 115A.

Amplifiers: untuned voltage, untuned power, direct-coupled, broad-band, tuned voltage and power; feedback. Oscillators; modulation, mixing, detecting; analog computing circuits. Design considerations.

**†115C. Active Electronic Circuits II.** (3) I, II. Mr. E. F. King in charge

Prerequisite: course 115B.

Large-signal and nonlinear situations. Graphical and analytical methods for analysis and design. Introduction to switching-mode operation. Design considerations.

**†115D. Pulse and Digital Methods.** (3) I, II. Mr. E. F. King in charge

Prerequisite: course 115B.

Linear and nonlinear wave shaping; linear pulse amplification; bistable, monostable and astable multivibrators, time-base generators; counting, synchronization and frequency division; digital computer circuits, gates, comparators; pulse and digital systems; design considerations.

**†115F. Junction Transistor Electronics I.** (3) I, II.

Mr. E. F. King in charge

Prerequisite: course 100A, or equivalent. Not open for credit to students who have had courses 115A, 115B.

Fundamental processes in semiconductors, the PN junction, the junction transistor; low-frequency small-signal equivalent circuits; basic amplifier configurations; introduction to bias stabilization.

† A maximum of 12 units credit is allowed in the 115 series.

‡ Not to be given after summer, 1961.

**‡115G. Junction Transistor Electronics II. (3) I, II.**

Mr. E. F. King in charge

Prerequisite: course 115F. Not open for credit to students who have had courses 115A, 115B.

Bias stabilization; audio and power amplifiers; large-signal behavior and switching times; pulse and switching circuits; d-c amplifiers; high-frequency analysis; oscillators, modulators and high-frequency circuits; other semiconductor devices and circuit applications.

**117A. Applied Electromagnetic Theory I. (3) I, II.**

Mr. Hershberger

Prerequisite: course 100B. Not open for credit to students who have had former course 112C.

Fundamentals of wave propagation, static electric and magnetic fields, Maxwell's equation in integral and differential form, plane electromagnetic waves; transmission line theory.

**117B. Applied Electromagnetic Theory II. (3) I, II.**

Mr. Schott

Prerequisite: course 117A.

Propagation and reflection of plane waves, wave guides, resonant cavities, microwave networks, Hertzian dipole.

**118A. Electrical Power Operation and Distribution. (3) I.**

Mr. Grandi

(Numbered 100C prior to 1959-1960.)

Prerequisite: courses 100B, 104B. Occasional field trips will be scheduled.

Electrical power generation and distribution systems are considered from the viewpoint of equipment, operations, transmission and distribution, and system economics.

**120A. Intermediate Fluid Mechanics. (3) I, II.**

Mr. Taylor

(Numbered 103B prior to 1959-1960.)

Prerequisite: courses 103A, 105B.

The dynamics of nonviscous and viscous fluids; potential motion, vortex motion, Navier-Stokes equation, boundary layers, turbulence, compressibility. Emphasis is placed on the applications of theory to various practical systems which involve fluid motion.

**121A. Engineering Aerodynamics. (3) I, II.**

Mr. Hurty

(Numbered 121 prior to 1959-1960.)

Prerequisite: course 103A and Mathematics 110AB or 110C.

A course in the fundamentals of aerodynamics dealing with the basic aspects of compressible and incompressible fluid dynamics; theory of potential flow, airfoils, and finite wings; lifting surfaces in supersonic flow.

**122A. Viscous Fluid Dynamics. (3) II.**

Mr. Charwat

Prerequisite: course 103A; course 120A recommended.

Fundamental equations. Flow in pipes and channels; introduction to the study of viscous flows; laminar and turbulent boundary layers; methods of solution; elements of compressible boundary layer theory and heat transfer.

**130A. Environmental Biotechnology. (3) I, II.**

Mr. Lyman in charge

Prerequisite: course 105A (may be taken concurrently), Physics 1D, Mathematics 6B.

Physical, physiological, and psychological phases of the interaction between man and thermal, atmospheric, radiant, and mechanical agents and energies in the environment. Emphasis is laid upon the biomechanical and environmental aspect of human factors in engineering.

† A maximum of 12 units credit is allowed in the 115 series.

‡ Not to be given after summer, 1961.

**130B. Machine and Systems Biotechnology.** (3) I, II. Mr. Lyman in charge  
Prerequisite: junior standing in engineering. Occasional field trips may be scheduled.

Introduction to the methods and results pertinent to engineering design which involve the man-machine relationship. Discussion of modes of analysis and representative applications to visual, auditory, and other sensory displays. Limits of human capacity for correlating and applying information as functional links in engineering systems.

**131A. Industrial Sanitary Engineering.** (3) II. Mr. Bush  
Prerequisite: senior standing in engineering.

Quantitative consideration of industrial environment. Evaluation of atmospheric contaminants, sampling methods and analysis, design of ventilation systems (hoods, local exhaust principles, exhausters and collectors), airflow measurements, industrial atmospheric pollution regulations. Consideration of fundamentals of problems of evaluation, disposal of liquid and solid waste involving the design of disposal systems.

†**132A. Air Conditioning.** (3) I. Mr. Nottage  
(Numbered 198 prior to 1959-1960.)

Prerequisite: senior or graduate standing, or equivalent.

Design and performance principles for air-conditioning equipment. Thermodynamic properties of moist air. Psychrometric chart analyses. Component equipment principles. Physiological-environmental interactions. Systems load analysis for air-conditioning buildings. Guest lecture and field trip.

**135A. Design of Optical Systems I.** (3) I, II. Mr. Beggs  
(Numbered 198 prior to 1959-1960.)

Prerequisite: senior standing in engineering.

An understanding of principles of image formation, and their application to design of lenses and optical systems in the first order with correction of aberrations. Synthesis of systems by the algebraic third order methods.

\***135B. Design of Optical Systems II.** (3) II. Mr. Beggs  
(Numbered 198 prior to 1959-1960.)

Prerequisite: course 135A.

Preliminary design of optical systems with attention to application; preliminary design of a lens; trigonometric analysis of aberrations; graphical aids; optical image evaluation; tolerances; use of high-speed automatic digital computers; design of aspheric surfaces and condensing systems.

**136A. Introduction to Control Systems Theory.** (3) I, II. Mr. Leondes  
(Numbered 181C prior to 1959-1960.)

Prerequisite: course 181A.

Study of basis for control system specification; synthesis techniques; a.c. and d.c. servo components and detailed study of servomechanisms drawn from practice.

**136B. Control Systems Theory.** (3) I, II. Mr. Leondes  
(Numbered 198 prior to 1959-1960.)

Prerequisite: course 136A.

Extended synthesis techniques; multipole control systems; problems in linear systems; analysis and synthesis of nonlinear control systems.

\* Given alternate years; not to be given 1960-1961.

† Given alternate years; to be given, 1960-1961.

- 136C. Sampled Data Control Systems Theory. (3) I.** Mr. Leondes  
(Numbered 198 prior to 1959-1960.)  
Prerequisite: course 136A.  
Analysis and synthesis of control systems with sampled functions of time variables; techniques for synthesis of sampled data control systems to meet required specifications; behavior of sampled data system between sampling instances, multirate sampled data systems.
- 137A. Highway Transportation Systems. (3) I.** Mr. Mathewson  
(Numbered 174 prior to 1959-1960.)  
Prerequisite: senior standing in engineering.  
Fundamental aspects of streets and highways as transportation facilities; planning, financing, location, economics, geometric design, and physical characteristics. Traffic surveys and instrumentation; traffic control and related devices; applications of statistical techniques to traffic problems.
- 137B. Design of Streets and Highways. (2) II.** Mr. Mathewson  
Lecture, one hour; laboratory, three hours. Prerequisite: course 137A.  
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.
- 141A. Product Design. (3) II.** Mr. Mason in charge  
(Numbered 106B prior to 1959-1960.)  
Lecture, one hour; laboratory, six hours. Prerequisite: 162A or 167A.  
Engineering and economic calculations involved in the design and manufacture of industrial products; design for function, safety, and appearance; sketching and rendering.
- 142A. Elements of Construction. (3) I.** Mr. Duke  
(Numbered 148A prior to 1959-1960.)  
Lecture, two hours; laboratory and field trips, three hours. Prerequisite: senior standing in engineering.  
Anatomy of the industry, contracts, costs and economics, equipment and materials, construction methods, field engineering techniques, observation and engineering analysis of current construction projects in the vicinity, field trips.
- 143A. Engineering of Underground Reservoirs. (3) II.** Mr. Perrine  
(Numbered 143B prior to 1959-1960. Not the same as 143A offered prior to 1960-1961.)  
Prerequisite: Geology 111 or consent of instructor. Occasional field trips will be scheduled.  
Oil and gas production mechanisms, aquifer behavior; thermodynamic relations, reservoir forces, fundamental equations; secondary recovery of oil.
- 144A. Tool Engineering. (3) II.** Mr. Asimow  
(Numbered 145 prior to 1959-1960.)  
Lecture, two hours; laboratory, two hours. Prerequisite: course 162A (may be taken concurrently). Field trips will be scheduled.  
The selection of tooling for production; design of tools, jigs, fixtures, dies, and production-type gages; design of tooling for automatic machines, design of assembly tooling.

- 145. Introduction to X-Ray Diffraction.** (3) II. Mr. Rosenthal  
Lecture, two and one-half hours; demonstration, one-half hour. Prerequisite: junior standing; Physics 121 (may be taken concurrently).  
Fundamentals of crystallography; stereographic projection; X rays, diffraction of X rays by crystals; determination of a cubic lattice by powder method; determination of crystal orientation by back reflection Laue method; structural and phase changes; electron and neutron diffraction.
- 146A. Properties of Ceramic Materials.** (3) I. Mr. Knapp  
(Numbered 108C prior to 1959-1960.)  
Prerequisite: senior standing in engineering.  
Structure of some ceramic materials in the crystalline and glassy states, and relation to physical and chemical properties. Equilibria of ceramic mixtures and certain thermodynamic applications.
- 147A. Introduction to Physical Metallurgy.** (3) I, II. Mr. Flanigan  
(Numbered 108G prior to 1959-1960.)  
Lecture, two hours; laboratory, three hours.  
A fundamental study of metals and alloys, the dependency of properties on structure, and the influence of mechanical and thermal treatments on structure and properties. Metal crystals. Plastic deformation, work hardening and recrystallization. The role of alloying elements. Alloy diagrams. Precipitation hardening. Transformations in alloys of iron and carbon. Commercial treatments and processes.
- 147B. Processing of Metals.** (3) II. Mr. Asimow  
(Numbered 108H prior to 1959-1960.)  
Prerequisite: course 147A.  
Metal-shaping processes and associated problems involving plastic and fluid flow, heat transfer, metallurgical and chemical reactions, forces and energy. Design of equipment and interrelation of process and product design.
- 150A. Industrial Heat Transfer.** (3) I, II. Mr. Tribus  
(Numbered 151A prior to 1959-1960.)  
Prerequisite: course 105B.  
The study of the basic principles of heat transfer and their application to the design of industrial equipment. Steady state and transient problems of conduction by analytical and numerical methods. Free and forced convection. Transfer of radiant energy.
- 150B. Thermal and Luminous Radiation.** (3) II. Mr. O'Brien  
(Numbered 153 prior to 1959-1960.)  
Prerequisite: course 105B or the consent of the instructor.  
Introduction to the production, transmission, and reception of radiation; geometry and properties of radiant transfer systems; determination of radiant transfer matrices; integral and finite-difference representations of radiant transfer; analogue and digital computers applied to thermal radiation and lighting systems.
- \*150C. Utilization of Solar Energy.** (3) I. Mr. O'Brien  
(Numbered 198 prior to 1959-1960.)  
Prerequisite: senior standing in engineering and consent of instructor.  
Meteorological effects on availability; methods of collection and concentration; methods of conversion to mechanical, chemical and electrical energy; limitations on design; status of application to heating, cooling, high temperature research, distillation of sea water, etc.

\* Given alternate years; not to be given 1960-1961.



- 151A. Intermediate Thermodynamics. (3) II.** Mr. Tribus  
(Numbered 105C prior to 1959-1960.)  
Prerequisite: course 105B.  
General treatment of first and second laws, including systems of variable mass and availability concepts. Mathematical relationships among thermodynamic functions, with applications from the areas of chemistry, physics, and engineering. The phase rule, and chemical and physical equilibrium. The third law. Introduction to the kinetic theory of gases, statistical mechanics, and nonequilibrium thermodynamics.
- 152A. Mass Transfer. (3) I, II.** Mr. Knuth  
Prerequisite: course 105B.  
Physical and thermal properties of fluids; molecular and eddy diffusion; mass, heat, and momentum transfer; application to evaporation and psychrometric unit operation, cooling towers, etc.
- 153A. Propulsion I. (3) II.** Mr. W. J. King  
(Numbered 156 prior to 1959-1960.)  
Prerequisite: courses 103A, 105B.  
A survey of theory, practice, limitations, and trends of future developments in the field of aircraft, missiles, and space craft propulsion, including all types of primary and auxiliary power plant, but with particular emphasis upon gas turbines and jet propulsion.
- 153B. Propulsion II. (3) I.** Mr. Charwat  
(Numbered 157 prior to 1959-1960.)  
Prerequisite: courses 103A, 105B, course 153A recommended.  
Aerodynamic and mechanical design of compressors and turbines; synthesis of gas turbine engines; elements of combustion technology in air-breathing and rocket engines; propulsive characteristics of turbojets, ramjets, rockets and hybrid propulsors (ducted fans, bypass engines, air-turbo-rockets, etc.)
- 155A. Engineering Aspects of Nuclear Processes. (3) I, II.** Mr. Hicks  
Prerequisite: senior standing in engineering, physics, or chemistry.  
Introduction to the basic engineering principles involved in the design of nuclear reactors. Includes a review of basic physics required for engineering applications, diffusion of neutrons, reactor mechanics, and radiation shielding.
- 156A. Nuclear Reactor Design. (3) II.** Mr. Hicks  
(Numbered 155B prior to 1959-1960.)  
Prerequisite: course 155A.  
Studies of the major elements of reactor design and the integration of these elements, including both over-all design and component design.
- 156B. Nuclear Reactor Control. (3) I.** Mr. Hicks  
(Numbered 155C prior to 1959-1960.)  
Prerequisites: courses 155A, 136A or equivalent.  
Reactor kinetics, automatic control and control mechanisms, feedback loops, transient response, long term reactivity changes, effects of power plant control, and reactor start-up and shutdown.
- 157. Engineering Aspects of Chemical Processes. (3) II.** Mr. Nobe  
(Numbered 150 prior to 1959-1960.)  
Prerequisite: course 105A; Chemistry 110A recommended.  
A synthesis of the elements of design of chemical process systems, including the chemical reaction, reaction rates, thermochemistry, energy and mass

balances, process equipment. A review of the unit processes and unit operations comprising chemical process systems. A survey of the organic, inorganic, and biochemical processes of principal economic importance in the United States.

**158A. Principles of Separation Operations.** (3) II. Mr. Hicks  
(Numbered 152B prior to 1959-1960.)

Prerequisite: course 152A.

Requirements and limitations in the separation of a mixture into its component parts. Emphasis on repetitive counter-flow operations and on applications common to all fields. Specific examples from fields of chemistry, metallurgy, fossil fuels, atomic energy, etc.

**158B. Chemical Reactor Analysis: Combustion.** (3) I. Mr. Hicks  
(Numbered 152C prior to 1959-1960.)

Prerequisite: course 158A.

Basic principles of reaction kinetics, chemical reactor kinetics, and inter-phase transfer kinetics continuous-flow systems. Steady-state flow systems contrasted with batch systems. The effects of thermodynamic variables on kinetics.

**160A. Introduction to Mechanical Vibrations.** (3) I, II. Mr. Thomson  
(Numbered 102D prior to 1959-1960.)

Prerequisite: course 102B.

Introduction to fundamentals of mechanical vibrations, types of oscillatory motions, Fourier components. Study of free, forced, and transient vibrations, damping, vibration isolation, vibration measuring instruments. Coupled oscillations of lumped systems, use of Lagrange's equations, Rayleigh and matrix-iteration methods.

**160B. Flight Mechanics and Performance.** (3) I. Mr. Boehnlein in charge  
Prerequisite: courses 102B and 103A, or equivalent.

Study of the atmosphere, experimental aerodynamics, trajectory mechanics, basic and special performance problems of aircraft and missiles, static stability and control, and the mechanics of maneuvers.

**160C. Aircraft Stability and Control.** (3) II. Mr. Boehnlein  
Prerequisite: courses 160B, 181A.

Euler's equations of motion and their application to aircraft flight; the nature of external forces and stability of motion; aerodynamic stability derivatives and their bearing on aircraft design; aircraft response to arbitrary control input using Laplace's method.

**160D. Aeroelasticity.** (3) II. Mr. Miles  
Prerequisite: courses 160A, 160B, 181A, or consent of the instructor.

Analysis of the aeroelastic problems of divergence, control reversal, flutter, and transient response including related topics in vibrations, structures, and unsteady aerodynamics. Solutions by both assumed mode and matrix methods will be stressed.

**161A. Advanced Kinematics of Mechanisms.** (3) I, II. Mr. Beggs in charge  
(Numbered 180 prior to 1959-1960.)

Prerequisite: course 102B. A field trip will be scheduled during the spring or fall recess.

Analysis and synthesis of fundamental types of mechanisms, including electric, magnetic, pneumatic, and hydraulic links. Both graphical and analytical methods are used. Applications will be considered to such devices as instruments, servomechanisms, calculating machines, conveyors, and printing presses.

- 162A. Machine Design.** (4) I. Mr. Mason in charge  
(Numbered 106A prior to 1959-1960.)  
Lecture, two hours; laboratory, six hours. Prerequisite: course 4B, or equivalent introductory design course; 102B.  
The design of machine elements on the basis of static and dynamic working stresses; selection of materials and shop processes; economic problems in design; design and use of various machine elements; linkages, fastenings, power transmission equipment; friction and lubrication.
- 163A. Elasticity and Plasticity.** (3) I, II. Mr. Rosenthal  
(Numbered 107H prior to 1959-1960.)  
Prerequisite: course 108B; Mathematics 110AB or 110C (may be taken concurrently).  
Analytical, numerical, and experimental solutions of plane state and torsion problems (stress function, relaxation and analogous methods, photo-elasticity.) Criteria of flow and fracture. Homogeneous plastic flow, including strain hardening. Elements of heterogeneous plastic flow.
- 164A. Principles of Soil Mechanics.** (3) I, II. Mr. Tauxe  
(Numbered 108J prior to 1959-1960.)  
Prerequisite: courses 103A, 108B; Geology 2 and 2L recommended.  
Soil as a foundation for structures and as a material of construction. Soil formation, properties, classification, tests. Shear failure and earth pressures. Compaction. Consolidation. Bearing capacity. Stresses in earth masses. Field techniques for exploration and design.
- 165A. Analysis of Framed Structures.** (3) I, II. Mr. English in charge  
(Numbered 107A prior to 1959-1960.)  
Prerequisite: course 108B.  
Analysis of beams and plane and space framed structures; applications of superposition and influence lines; deflections of beams and framed structures. Introduction to analysis of indeterminate beams and framed structures.
- 165B. Advanced Analysis of Framed Structures.** (3) I, II. Mr. English in charge  
(Numbered 107B prior to 1959-1960.)  
Prerequisite: course 165A.  
Extension of principles covered in Engineering 165A to the general solution of more complicated determinate and indeterminate framed structures. Slope deflection and moment distribution methods. Principles of limit analysis of frames and trusses. Analysis of rings and arches including those with variable moment of inertia.
- 166A. Analysis of Shell Structures.** (3) I, II. Mr. Shanley  
(Numbered 107G prior to 1959-1960.)  
Prerequisite: course 108B.  
Analysis for shear, bending, and torsion; buckling of columns, plates, and shells; properties of aircraft structural materials; brief description of load factors and load distribution for aircraft structures.
- 166B. Advanced Analysis of Shell Structures.** (3) I, II. Mr. Shanley  
(Numbered 107J prior to 1959-1960.)  
Prerequisite: course 166A.  
Analysis of stiffened and unstiffened shell structures, including frames, bulkheads, cutouts, general instability, pressure loading, allowable stresses, applied buckling theory.
- 167A. Structural Components.** (3) I, II. Mr. English  
(Numbered 106C prior to 1959-1960.)  
Lecture, two hours; laboratory, three hours. Prerequisite: course 165A (may be taken concurrently).

Design and analysis of structural members and modes of connections; composite and prestressed members; fabrication and erection techniques; optimization principles.

**167B. Design of Stationary Structures.** (3) I, II. Mr. English  
Lecture, two hours; laboratory, three hours. Prerequisite: course 167A.

Design of structural systems such as bridges, buildings, waterfront installations and towers. Application of optimization principles to complete structures. An individual or group project to design a comprehensive structural system will constitute approximately one-half the course. Field trips.

**168A. Optimum Structural Design I.** (2) I. Mr. Shanley  
(Numbered 198 prior to 1959-1960.)

Prerequisite: course 108B or equivalent.

Development and application of fundamental principles of structural design for minimum weight; relationships between material properties and corresponding structural design and weight; structural configuration studies applicable to both aeronautical and civil engineering structures.

**168B. Optimum Structural Design II.** (2) II. Mr. Shanley  
(Numbered 198 prior to 1959-1960.)

Prerequisite: course 168A.

Continuation of Optimum Structural Design, Part I, to include more advanced problems, such as optimum distribution of material for minimum weight, use of optimum design principles in predicting weight of structures, effects of elevated temperatures, creep buckling, theory of fatigue.

**170. Sales Engineering.** (3) I. Mr. Case  
Lecture, three hours. Prerequisite: senior standing in engineering. Field trips may be arranged.

The principles of engineering sales will be illustrated by the case method. The selection and assembly of prefabricated components in the solution of a production and construction problem. Presentation of the service function as it is related to sales engineering.

**171. Engineering Organization and Administration.** (3) I, II. Mr. Case  
Prerequisite: senior standing in engineering.

The principles of organization and administration as applied to engineering in industry will be considered. Special problems pertaining to the use of organization charts, the assignment of administrative responsibility, the engineering use of job descriptions, job evaluation, job analysis, and efficiency surveys as well as problems pertaining to the selection, training, and supervision of technical employees will be discussed.

**172. Principles of Industrial Safety.** (3) II. Mr. Mathewson  
Prerequisite: junior standing in engineering.

Delineation of the over-all accident prevention problem, with emphasis on industrial concepts. Analysis and synthesis of all major elements, e.g., statistical methods, plant layout, machine and process control devices and safeguards, applicable laws and codes, nuclear radiation and other occupational health hazards, engineering and medical controls, explosion and fire prevention and protection, industrial traffic and safety organization.

**181A. Linear System Solutions by Transform Methods.** (3) I, II. Mr. Schott in charge

Prerequisite: courses 100A, 102B, 104A; Mathematics 110C or 110AB.

Formulation and solution of equations of behavior of linear electrical, mechanical, and thermal systems by the Laplace-transformation method. Applications of the transform method to lumped-parameter systems.

**182A. Mathematics of Engineering. (3) I, II. Mr. Pipes**

Prerequisite: course 181A; Mathematics 110AB or 110C.

Applications of mathematical methods to engineering problems are considered, involving systems whose parameters are "lumped" and whose mathematical formulation leads to the solution of ordinary differential or difference equations. Typical problems in the fields of electrical, mechanical, and civil engineering are discussed and used to introduce and illustrate the mathematical techniques involved.

**182B. Mathematics of Engineering. (3) I, II. Mr. Pipes**

Prerequisite: course 182A.

Applications of mathematical methods to engineering problems are considered, involving systems whose parameters are "distributed" and whose mathematical formulation leads to the solution of partial differential equations. The engineering problems are used to introduce and illustrate the mathematical procedures and are chosen from the fields of electrical, mechanical, and civil engineering.

**182C. Matrix Methods in Engineering. (3) I, II. Mr. Pipes**

(Numbered 198 prior to 1959-1960.)

Prerequisite: course 181A; Mathematics 110AB or 110C.

Fundamentals of matrix algebra, differential and integral calculus of matrices; solution of linear, polynomial, and systems of differential equations; applications to mechanical vibrations, electric circuit theory, heat conduction, acoustical vibrations, theory of elasticity, electrical, mechanical, and acoustical wave motion.

**182D. Variational Methods in Engineering. (3) I, II. Mr. Pipes**

(Numbered 198 prior to 1959-1960.)

Prerequisite: courses 100A, 102B, 181A; Mathematics 110AB or 110C.

Maxima and minima of integrals involving several dependent variables; isoperimetric problems and Lagrange's multipliers; Hamilton's principle and Lagrange's equations; Fermat's principle; energy method; Rayleigh's principle and Rayleigh-Ritz method; Galerkin method; variational methods; applications.

**182E. Nonlinear Differential Equations in Engineering. (3) I, II. Mr. Pipes**

(Numbered 198 prior to 1959-1960.)

Prerequisite: courses 100A, 102B, 181A.

Practical introduction to nonlinear differential equations; representative applications; presentation of various analytical methods employed in solution of technical problems taken from fields of electrical, mechanical, and civil engineering. Topological, operational, Poincare, van der Pol, and Kryloff-Bogoliuboff methods; technical problems.

**183A. Probability and Stochastic Processes for Engineers. (3) I, II.**

Mr. Coleman in charge

Prerequisite: Mathematics 6B. (Not the same as course 183A offered prior to fall semester, 1958.)

Combinatorial analysis, sample space, events, probability theory, discrete and continuous random variables, probability distributions, population parameters, stochastic independence, sums of random variables, law of large numbers. Central limit theorem and applications. Statistical inference, stochastic processes and calculus of random function.

**183B. Engineering Statistics I. (3) I, II. Mr. Coleman in charge**

(Numbered 183A prior to 1958-1959.)

Lecture, two hours; laboratory, two hours. Prerequisite: course 183A or equivalent.

Fundamental statistical concepts, population (system), sample, parameter, statistics. Significance tests and confidence limits. Efficient computational procedures. Risks of wrong decisions, power functions, operating characteristic curves. Simple and multiple regression and correlation, bivariate normal distribution. Applications in engineering and industry.

**183C. Engineering Statistics II. (3) I, II.**

Mr. Coleman

(Numbered 183B prior to 1958; not the same as course 183B offered subsequent to June, 1958.)

Prerequisite: course 183B or equivalent.

Statistical design and analysis of engineering and industrial experiments. Analysis of variance and covariance. Designs include randomized blocks, Latin and Graeco-Latin squares, factorial and fractional factorial experiments. Determination of optimum experimental conditions for maximum response. Engineering and industrial applications.

**185A. Systems Engineering. (3) I, II.**

Mr. Boldyreff

(Numbered 198 prior to 1959-1960.)

Prerequisite: Mathematics 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.

**185B. Dynamic Programming. (3) II.**

Mr. Hall

(Numbered 198 prior to 1959-1960.)

Prerequisite: Mathematics 110AB or 110C.

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.

**186A. Random Processes. (3) II.**

Mr. Davis

(Numbered 198 prior to 1959-1960.)

Prerequisite: course 183A or equivalent.

Analytic representations of random fluctuations occurring in certain engineering systems, especially communication and control systems; spectral analysis of stationary processes; Gaussian processes and their special properties, zero crossings, etc.; linear systems, Wiener filters, and analogues in optics; turbulence.

**187A. The Communication of Information. (3) I, II.**

Mr. Hershberger

(Numbered 112B prior to 1959-1960.)

Prerequisite: course 115A.

Delineation of the fundamental problem of communication between human beings, with emphasis on factors common to all systems. The course includes a study of information theory, signals and their spectra, and the factors that determine system performance as distortion, element variation, and band width; noise, and the characteristics of the human voice and sense organs. Illustrative material is drawn from telephony, radar, television, computers, and automatic control systems.

**197. Advanced Analysis of Engineering Practice. (3) I, II.**

Mr. Knight in charge

Prerequisite: junior standing and participation in the cooperative work-study program in engineering.

Analysis and synthesis of engineering systems in industry and government, including prediction of performance and costs. Role of the engineer in design, production, and management. Written and oral reports.

**198. Special Courses (1-6) I, II.** Mr. Boelter in charge

Prerequisite: senior standing in engineering; enrollment subject to approval of instructor in charge.

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.

The following study groups will be made available during the fall semester, 1960, and are indicative of the material which may be offered for the spring semester, 1961:

*Fall Semester, 1960*

- ‡Engineering Design. (3)
- ‡Properties of Materials. (3)
- Applications of Control Systems Theory. (3) (Enrollment limited)
- Engineering Acoustics. (3)
- Problems in Engineering Education. (1)
- Mechanics of Missile Guidance. (3)
- Boundary Layer Theory with Applications to Aerodynamics, Part II.
- Fundamentals of Corrosion. (3)
- Problems in Operations Research. (3)
- Radioactive Isotopes in Engineering. (3)
- Thermodynamics: Emphasis on Direct Power Conversion. (3)

**199. Special Studies. (1-5) I, II.** Mr. Boelter in charge

Prerequisite: senior standing and consent of the instructor. Application forms for requesting enrollment may be obtained from the Chairman of the Department.

Occasional field trips may be arranged.

**GRADUATE COURSES**

Courses in the 200 series are open only to graduate students and in each case the consent of the instructor must be secured. Courses will be offered only if there is sufficient demand.

**210A. Advanced Circuit Theory. (3) II.** Mr. Karplus

(Numbered 298 prior to 1959-1960.)

Prerequisite: courses 110A, 110B.

General theory of two terminal pair networks; advanced techniques of transfer function synthesis; approximation in frequency domain; potential analog techniques; Fourier series techniques; time domain approximations; introduction to active network synthesis.

**213A. Advanced Analog Computations. (3) II.** Mr. Karplus

(Numbered 298 prior to 1959-1960.)

Prerequisite: course 113A.

Selected topics in the design and application of analog computers; adjoint techniques, treatment of random variables, limitations on accuracy, applications to network synthesis, combined use of analog and digital facilities.

**213B. Analog Simulation of Field Problems. (3) I.** Mr. Karplus

(Numbered 298 prior to 1959-1960.)

Prerequisite: courses 113A, 181A.

Comprehensive study of the application of conducting sheet analogs, electrolytic tanks, and network analyzers to the solution of partial differential equations; emphasis on problems in engineering endeavors including such areas as electrostatics, heat transfer, air pollution, and oil reservoir engineering.

‡ Applicable only toward B.S. degree.

- 214A. Seminar in Digital Computer Advances.** (3) I, II. Mr. Estrin  
(Numbered 298 prior to 1959-1960.)  
Prerequisite: courses 114A, 114B; or introduction to digital computers, logical design and/or consent of instructor.  
A survey of the literature in the field of digital computers with emphasis on switching theory and application, digital computer design, and the application of digital computers.
- 215A. Solid State Electronics.** (3) I. Mr. Hershberger  
(Numbered 230B prior to 1959-1960.)  
Prerequisite: course 117A or consent of instructor.  
Energy levels in gases and solids, dielectric materials, paramagnetism and ferromagnetism, ferrites, spin resonance effects, absorption and reradiation effects, masers.
- 215B. Solid State Electronics: Semiconductors.** (3) II. Mr. Hershberger  
Prerequisite: courses 117A and 117B or consent of instructor.  
Review of quantum mechanics and statistics; band theory of metals; properties and physics of semiconductors; Hall effect, electron mobility, effective mass of electron alloy semiconductors; problems in synthesizing semiconductors with required properties.
- †**217A. Electromagnetic Theory: Radiation I.** (3) I. Mr. Elliott  
(Numbered 230A prior to 1959-1960.)  
Prerequisite: courses 117A and 117B or consent of instructor. Offered in alternate years.  
Hallen-Aharoni theory of linear antennas; Schelkunoff array theory. Dolph-Tchebyscheff aperture distribution; two-dimensional scanning arrays; effect of mutual coupling; dipole, slot and helix as single radiators and as array elements; frequency-independent antennas.
- †**217B. Electromagnetic Theory: Radiation II.** (3) I. Mr. Elliott  
(Numbered 298 prior to 1959-1960.)  
Prerequisite: course 217A. Offered in alternate years.  
Microwave optics. Stratton-Chu formulation. Horn radiators. Reflectors and lenses. Pattern synthesis. Stevenson slot theory. Fast and slow wave antennas. Taylor distribution. Waveguide-fed arrays. Babinet's principle.
- \***217C. Electromagnetic Theory: Microwave Circuits I.** (3) I. Mr. Elliott  
Prerequisite: course 117B or equivalent. Offered in alternate years.  
Impedance concept for waveguide modes; Schwinger variational technique for obstacles; irises; matching of discontinuities; principal types of junctions; ridges and corrugations; dispersive effects.
- \***217D. Electromagnetic Theory: Ion Dynamics.** (3) II. Mr. Elliott  
Prerequisite: courses 117A, 117B. Offered in alternate years.  
The fundamental force equation; simple ion trajectories; magnetic and electric focusing; conformal transformation solutions; klystron theory and magnetron theory; the electron microscope; frequency limitations; traveling wave interactions; plasma oscillations.
- 217E. Electromagnetic Theory: Wave Propagation.** (3) II. Mr. Hershberger  
(Numbered 298 prior to 1959-1960.)  
Prerequisite: course 117B.  
Ground wave radiation from dipoles above flat and spherical earths; equivalent earth radius, height gain and effect of ground; the ionospherically reflected wave, magnetic field effects, absorption and multipath fading; scatter propagation from tropospheric and ionospheric fluctuations.

\* Given alternate years; not to be given 1960-1961.

† Given alternate years; to be given in 1960-1961.



**‡220A-220B. Theoretical Hydrodynamics I and II. (3-3) Yr. Mr. Miles**

Prerequisite: course 103A or the equivalent; vector algebra; partial differential equations.

Vector calculus: equations of conservation of mass, momentum, and energy for an inviscid fluid; potential and stream functions; application of complex variable theory to two-dimensional, incompressible flow; airfoil theory; free streamline problems; vortex motion; surface waves; equations of viscous, incompressible flow; very viscous flow; boundary layer theory; gas dynamics of the convergent-divergent nozzle; hodograph method; characteristics method.

**221A. Gas Dynamics. (3) I. Mr. Miles**

Prerequisite: 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, effects of viscosity and conductivity.

**221B. Hypersonic Aerodynamics. (3) II. Mr. Miles**

(Numbered 198 prior to 1959-1960.)

Prerequisite: course 221A.

A comprehensive survey of hypersonic aerodynamics to provide an introduction to the field; application to aircraft, missiles, and space vehicles.

**222A. Real Fluids. (3) II. Mr. Charwat**

Prerequisite: course 103A, partial differential equations, vector algebra; or consent of instructor; course 122A recommended.

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.

**\*223A. Kinetic Theory and Molecular Flow. (3) I. Mr. Charwat**

(Numbered 298 prior to 1959-1960.)

Offered in alternate years.

The molecular structure of gases; kinetic foundations of thermodynamics and gas dynamics; physics of the upper atmosphere; aerodynamics in rarefied gases; gas-surface interactions; experimental techniques.

**224A. Aerodynamic Noise. (3) II. Mr. Powell**

(Numbered 298 prior to 1959-1960.)

Prerequisite: fluid mechanics, vibration theory or acoustics; or consent of instructor.

Theoretical developments are compared to experimental results to give a fundamental outlook on noise production by turbulent jets, pulse jets, boundary layers, unsteady shockwaves, and selected phenomena such as jet-and-edge-tones, "transduced" boundary layer noise, structural fatigue.

**225A. Aerothermochemistry. (3) II. Mr. Knuth**

(Numbered 298 prior to 1959-1960.)

Prerequisite: courses 103B, 105B; or consent of instructor.

Change equations for multicomponent mixtures; rate equations for momentum, mass and energy transfers, chemical reactions, phase changes; equilibrium criteria; reaction heats; characteristic times and dimensionless parameters of aerothermochemistry; examples, including burning mixed gases, cooling with mass transfer, quenching chemical reactions.

\* Given alternate years; not to be given 1960-1961.

‡ Course 220B to be given even-numbered years only.

- 230A. Advanced Biotechnology. (3) I.** Mr. Lyman  
(Numbered 298 prior to 1959-1960.)  
Prerequisite: consent of 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.
- 230B. Advanced Biotechnology. (3) II.** Mr. Lyman  
(Numbered 298 prior to 1959-1960.)  
Prerequisite: consent of 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.
- 236A. Random Processes in Automatic Control Systems. (3) I.** Mr. Leondes  
(Numbered 298 prior to 1959-1960.)  
Prerequisite: courses 136B, 183A or equivalent.  
Techniques for analysis and synthesis of linear control systems subjected to random processes as inputs, of nonlinear control systems with random processes as inputs, and of multipole control systems with random processes as inputs.
- 236B. Advanced Control Systems Theory. (3) I, II.** Mr. Leondes  
(Numbered 298 prior to 1959-1960.)  
Prerequisite: courses, 136B, 136C, 236A.  
Critical review of most recent literature on control systems techniques; topics studied will include random processes in automatic control systems, sampled data theory, nonlinear control system synthesis, multipole servo-synthesis; linear time variable, self-optimizing or adaptive, and hybrid control systems.
- 243A. Theory of Flow Through Porous Media. (3) I.** Mr. Perrine  
(Numbered 298 prior to 1959-1960.)  
Prerequisite: course 143A or consent of 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.
- 245A. Properties of Engineering Materials. (3) I.** Mr. Sines in charge  
(Numbered 210A prior to 1959-1960, and 210B prior to 1958-1959.)  
Prerequisite: graduate standing in engineering.  
Application of solid-state physics to determination of structure and properties (mechanical) of engineering materials. Elements of X-ray structure analysis. Cohesive strength of ionic crystals and simple metals. Lattice imperfections, nonelastic behavior of solids.
- 245B. Properties of Engineering Materials. (3) II.** Mr. Rosenthal  
(Numbered 210B prior to 1959-1960, and 210A prior to 1958-1959.)  
Prerequisite: graduate standing in engineering, Physics 121 (or equivalent).  
Application of solid-state physics to determination of properties (other than mechanical) of engineering materials. Introduction to modern concepts. Specific heat, conductivity (conductors and semiconductors), dielectrics, magnetic properties. Electron theory of alloys.

- 246A. Equilibria for Materials at Elevated Temperatures. (3) II.** Mr. Knapp  
(Numbered 298 prior to 1959-1960.)  
Prerequisite: course 146A.  
Thermodynamic applications for systems of inorganic materials at elevated temperatures; lattice energies of ionic crystalline compounds; thermodynamic properties of solid solutions and melts; chemical reactions involving metals and ceramics at elevated temperatures.
- \*247A. Reactions of Physical Metallurgy. (3) II.** Mr. Flanigan  
(Numbered 298 prior to 1959-1960.)  
Prerequisite: bachelor's degree in engineering, physics, or chemistry and at least one prior course in physical metallurgy, e.g., course 147A; or consent of the instructor.  
A study of the mechanisms and rate-controlling factors associated with important reactions of physical metallurgy. Diffusion, solidification, recrystallization after cold work, grain growth, precipitation from supersaturated solid solution, decomposition of austenite.
- †247B. Thermodynamics of Metals. (3) II.** Mr. Flanigan  
(Numbered 298 prior to 1959-1960.)  
Prerequisite: bachelor's degree in engineering, physics, or chemistry and at least one prior course in physical metallurgy such as 147A.  
Entropy and free energy; solid and liquid metals; binary and dilute solutions; zinc-tin, zinc-cadmium, and zinc-copper systems; heats of fusion; free energy of liquid alloys; solid solutions with atoms of equal size; imperfect crystals and liquids.
- ‡249A. Problems of Materials for Nuclear Reactors. (3) II.** Mr. Frankel  
(Numbered 198 prior to 1959-1960.)  
Prerequisite: courses 147A, 155A, or equivalent; courses 163A, 245A recommended.  
Review of reactor characteristics; general materials considerations; problems unique to nuclear reactors; neutron economy; radiation damage; internal heating; properties of special materials; special problems with power reactors; fuels for high burn-up, influence of materials considerations on economics of nuclear power.
- 250A. Heat and Mass Transfer. (3) I.** Mr. Tribus  
(Numbered 251A prior to 1959-1960.)  
Prerequisite: course 150A or 152A or consent of the instructor.  
Development of equations describing heat, mass, and momentum transfer; general principles of diffusional and mass transfer processes; analogies among transport processes; applications to systems and processes with combined heat and mass transfer such as evaporative cooling.
- 250B. Seminar in Advanced Heat Transfer. (3) II.** Mr. Tribus  
(Numbered 298 prior to 1959-1960.)  
Prerequisite: course 150A.  
A review of the current literature in the fields of convective heat transfer and boiling heat transfer with special emphasis on analytical methods. Student reports on advanced topics in heat transfer.
- 251A. Advanced Topics in Thermodynamics. (3) I.** Mr. Tribus  
(Numbered 298 prior to 1959-1960.)  
Prerequisite: course 151A and consent of instructor.

\* Given alternate years; not to be given 1960-1961.

† Given alternate years; to be given 1960-1961.

‡ Not to be given, 1960-1961.

A review of the fundamental notions of classical and irreversible thermodynamics; applications to chemical equilibria and flow processes. Student reports on current topics in thermodynamics.

**255A. Nuclear Reactor Analysis. (3) I.** Mr. Hicks

Prerequisite: course 156A, or equivalent.

Derivation of the reactor equations, age theory, reactor kinetics, temperature effects, etc., and their use with respect to both homogenous and heterogeneous reactors. Development of multigroup, multiregion neutron theory, and neutron transport theory.

**256A. Nuclear Reactor Preliminary Design. (3) II.** Mr. Hicks  
(Numbered 298 prior to 1959-1960.)

Prerequisite: course 255A. Offered in alternate years.

Criteria necessary for nuclear reactor preliminary design will be discussed. Problems considered will be heat transfer, fluid flow, properties of materials, controls, fuel cycles, chemical separations, weight, shielding, etc. Students will prepare a nuclear reactor preliminary design as a report.

**260A. Advanced Dynamics of Rigid Bodies. (3) I.** Mr. Thomson  
(Numbered 298 prior to 1959-1960.)

Prerequisite: course 102B or equivalent.

Kinematics and dynamics of space motion; ellipsoid of inertia; Poincot's geometric interpretation; precession and nutation; stability, perturbation solutions; high speed gyro; influence of gimbals, damping; constrained motion and gyrodynamic forces; gyrocompass, vehicle motion; Lagrangian formulation; impulsive excitation.

**260B. Advanced Topics in Dynamics. (3) II.** Mr. Thomson  
(Numbered 298 prior to 1959-1960.)

Prerequisite: courses 260A, 269A.

Advanced topics relating to current dynamical problems.

**260C. Wave Propagation in Solids. (2) I.** Mr. Thomson

Prerequisite: graduate standing in engineering.

Elastic waves in an extended medium, reflection and refraction at boundaries; propagation in bounded media, experimental measurements; stress waves in imperfectly elastic media, visco-elastic solids, internal friction, plastic and shock waves.

**261A. Advanced Kinematics. (3) II.** Mr. Beggs

Prerequisite: course 161A.

Analysis and synthesis of space mechanisms with special reference to point and line contact members such as gears and cams; complex variable, matrix, tensor dual number methods; deflections, vibrations and stress propagation.

**\*263A. Mechanics of Deformable Solids I. (3) I.** Mr. Zizicas  
(Numbered 298 prior to 1959-1960.)

Prerequisite: course 108B; prerequisite or concurrent: course 281A; or consent of the instructor. Offered in alternate years.

States of stress and strain and their directional dependence, reversible and irreversible isotropic stress-strain relations, local and integral formulation of isotropic problems.

**†263B. Mechanics of Deformable Solids II. (3) II.** Mr. Zizicas  
(Numbered 298 prior to 1959-1960.)

Prerequisite: course 263A. Offered in alternate years.

\* Given alternate years; not to be given 1960-1961.

† Given alternate years; to be given 1960-1961.

Systematic solution of isotropic problems; analysis of anisotropic solids and effects of large strains.

†263C. Applied Elasticity. (3) I. Mr. Lin  
(Numbered 298 prior to 1959-1960.)

Prerequisite: course 108B, Mathematics 110C or equivalent; course 163A, 263C recommended.

Elastic stress-strain relations, plane stress and strain problems in rectangular and cylindrical coordinates, bending of prismatic bars, stress concentration due to circular holes in strained plates, rotating disks and cylinders, torsion of circular and rectangular bars, thermal elastic stresses.

†263D. Applied Plasticity. (3) II. Mr. Lin  
(Numbered 298 prior to 1959-1960.)

Prerequisite: course 263C or consent of instructor.

Deformation theory, flow theory, slip theories of plasticity and their limitations, simple inelastic structures as inelastic beams, shafts, columns, spherical shells, thick cylinders, rotating discs and cylinders, plastic hinges in rigid frames and visco-elastic structures.

†263E. Theory of Discs, Membranes, and Plates. (3) I. Mr. Zizicas  
(Numbered 298 prior to 1959-1960.)

Prerequisite: course 263A or consent of instructor.

Reversible and irreversible deformation of discs; small and large deflections of elastic membranes and plates; thick plates; anisotropic plates; sandwich plates; irreversible deflections of plates; stable and unstable deformations to be considered; typical applications.

†263F. Theory of Shells. (3) II. Mr. Zizicas  
(Numbered 298 prior to 1959-1960.)

Prerequisite: course 263A 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.

264A. Analytical Soil Mechanics. (3) II. Mr. Duke  
(Numbered 298 prior to 1959-1960.)

Prerequisite: course 164A.

Stress and plasticity, passive resistance, bearing capacity, piles, stability of slopes, seepage, consolidation, elasticity problems, soil dynamics, earthquake problems, field studies, foundations, earth structures. Emphasis will vary from year to year.

265A. Advanced Structural Analysis. (3) I. Mr. English  
(Numbered 298 prior to 1959-1960.)

Prerequisite: courses 165A, 165B; or 166A, 166B.

Plastic or ultimate strength analysis of frames; light metal structural systems; indeterminate space frameworks; safety of structures. Application of modern computer techniques. Emphasis will be on stationary structures and will vary from time to time as indicated by current developments.

\*266A. Theory of Elastic and Inelastic Stability. (3) I. Mr. Lin, Mr. Shanley  
(Numbered 298 prior to 1959-1960.)

Columns and beam columns in elastic range, in inelastic range and with creep; bending and buckling of thin rectangular plates under compression and shear; inelastic buckling of plates; bending and buckling of shells.

\* Given alternate years; not to be given 1960-1961.

† Given alternate years; to be given 1960-1961.

**267A. Advanced Structural Design. (3) II.** Mr. English

Prerequisite: courses 165A, 165B, 166A, 167A, 167B.

Design and economics of complex structural systems; various framing systems for concrete, masonry, and metal mill buildings, tall buildings, bridges, and special structures; monolithic structures; development of optimization principles in structural design; comprehensive design project.

**269A. Dynamics of Structures. (3) II.** Mr. Hurty

(Numbered 298 prior to 1959-1960.)

Prerequisite: course 160A.

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.

**†270A-270B-270C-270D. Executive Systems Engineering. (1-4; 1-4; 1-4;**

1-4) 4 semesters, beginning in the fall. Mr. Asimow in charge

Prerequisite: acceptance to the Engineering Executive Program.

Development and application of quantitative methods in the analysis and synthesis of engineering executive systems; recently developed mathematical, statistical and machine methods; optimization of outputs with respect to costs-time-material-energy-information-manpower.

**†271A-271B-271C. The Engineer in the General Environment. (1-4; 1-4;**

1-4) 3 semesters, beginning in the fall. Mr. Lyman in charge

Prerequisite: acceptance to the Engineering Executive Program.

Influences of history, literature, and human relations on development and utilization of natural and human resources; role of the engineer in applying both quantitative and historical methods to problems in transportation, water supply, etc., in local, national, and international communities.

**†272A-272B-272C. The Engineer in the Business Environment. (1-4; 1-4;**

1-4) 3 semesters, beginning in the spring. Mr. Manildi in charge

Prerequisite: acceptance to the Engineering Executive Program.

Accounting theory. Analysis of financial statements with special reference to their use in and effect on engineering activity; economy of business enterprise; organization and management of engineering activity; relationship of the engineering function with sales, marketing, production and financing functions.

**281A-281B. Analytical Methods of Engineering. (3-3) Yr.**

(Numbered 200A-200B prior to 1959-1960.) Mr. Miles in charge

Prerequisite: course 182A or consent of instructor.

Application of mathematical methods to engineering problems; basic problems in the fields of fluid dynamics, heat conduction, and electromagnetic theory will be discussed.

**283B. Advanced Engineering Statistics I. (3) I.** Mr. Brown

(Numbered 298 prior to 1959-1960.)

Prerequisite: courses 183A, 183B.

The application of advanced statistical methods to engineering systems; extensions and additions to standard techniques covered in courses 183A-183B.

**†285A. Waiting Line Theory. (3) I.** Mr. Davis

(Numbered 298 prior to 1959-1960.)

Analysis of those systems which can be described and studied advantage-

† Given alternate years; to be given 1960-1961.

† Open only to Engineering Executive Program students. Consult the ANNOUNCEMENT of the GRADUATE DIVISION, SOUTHERN SECTION.

ously by means of stochastic models of waiting line (queuing) theory. Problems in operations research: toll booth, traffic control, maintenance of multiple machine systems, inventory level control, and materials handling.

**287A. Information Systems. (3) I.**

Mr. Barnes

(Numbered 298 prior to 1959-1960.)

Prerequisite: courses 181A, 183A, and B.S. degree in engineering, physics, or mathematics.

Engineering investigation of information sources, processors, stores, transporters and sinks, with emphasis on the mathematical statistical aspects.

**287B. Stochastic Processes in Linear Systems. (3) II.**

Mr. Barnes

(Numbered 298 prior to 1959-1960.)

Prerequisite: courses 181A, 183A and bachelor's degree in engineering, physics or mathematics.

Formulation and solution of equations of behavior of lumped and distributed linear electrical, rigid- and fluid-mechanical, and thermal systems with stochastic (i.e., chance) excitation, or system change, and response.

**297. Project Studies in Engineering Systems. (1-4) II.**

Mr. Boelter in charge

Prerequisite: acceptance to the Engineering Executive Program.

Studies of actual engineering systems. Technical, economic and human factors involved in the system will all be considered with particular emphasis on the interrelationship among these factors.

**298. Seminar in Engineering. (1-5) I, II.**

Mr. Boelter in charge

Seminars may be organized in advanced technical fields. Course may be repeated provided no duplication exists. If appropriate, field trips may be arranged.

**299. Research in Engineering. (1-5) I, II.**

Mr. Boelter in charge

Occasional field trips may be arranged. Prerequisite: consent of instructor. Application forms for requesting enrollment may be obtained from the Chairman of the Department.

Investigation of advanced technical problems.

**PROFESSIONAL COURSE**

**400. Principles and Techniques of Electron Microscopy. (1) I.** Mr. Froula

Prerequisite: a physics course including light, electricity, and magnetism; or consent of the instructor. Occasional visits to electron microscopy laboratory.

Fundamental principles of electron microscopy. Design and use of electron microscopes and supplementary equipment. Techniques and problems of specimen preparation. Interpretation of micrographs. Application of electron microscopy in various fields.

**ENGLISH**

(Department Office, 2303 Humanities Building)

Martin Perry Andersen, Ph.D., *Professor of Speech.*

<sup>1</sup>Bradford Allen Booth, Ph.D., *Professor of English.*

<sup>1</sup>Hugh Gilchrist Dick, Ph.D., *Professor of English (Chairman of the Department).*

John Jenkins Espey, B.Litt., M.A., (Oxon.), *Professor of English.*

<sup>†</sup> Open only to Engineering Executive Program students. Consult the ANNOUNCEMENT of the GRADUATE DIVISION, SOUTHERN SECTION.

<sup>‡</sup> To be given when there is sufficient demand.

<sup>‡</sup> In residence fall semester only, 1960-1961.

- Majl Ewing, Ph.D., *Professor of English*.  
 Earl Leslie Griggs, Ph.D., D.Lit. (London), *Professor of English*.  
 Elise Stearns Hahn, Ph.D., *Professor of Speech*.  
 †Leon Howard, Ph.D., *Professor of English*.  
 Paul Alfred Jorgensen, Ph.D., *Professor of English*.  
 Wesley Lewis, Ph.D., *Professor of Speech*.  
 Alfred Edwin Longueil, Ph.D., *Professor of English*.  
 William Matthews, 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*.  
 Franklin Prescott Rolfe, Ph.D., *Professor of English*.  
 †John Harrington Smith, Ph.D., *Professor of English*.  
 Hugh Thomas Swedenberg, Jr., Ph.D., *Professor of English*.  
 Lily Bess Campbell, Ph.D., *Professor of English, Emeritus*.  
 Ralph Cohen, Ph.D., *Associate Professor of English*.  
 Vinton Adams Dearing, Ph.D., *Associate Professor of English*.  
 Robert William Dent, Ph.D., *Associate Professor of English*.  
 †Robert Paul Falk, Ph.D., *Associate Professor of English*.  
 Donald Erwin Hargis, Ph.D., *Associate Professor of Speech*.  
 †Claude Jones, Ph.D., *Associate Professor of English*.  
 Robert Starr Kinsman, Ph.D., *Associate Professor of English*.  
 †Charles Wyatt Lomas, Ph.D., *Associate Professor of Speech*.  
 Lois McIntosh, Ph.D., *Associate Professor of English*.  
 †Earl Roy Miner, Ph.D., *Associate Professor of English*.  
 Lowry Nelson, Jr., Ph.D., *Associate Professor of English*.  
 Blake Reynolds Nevius, Ph.D., *Associate Professor of English*.  
 Waldo Woodson Phelps, Ph.D., *Associate Professor of Speech*.  
 †Ralph Richardson, Ph.D., *Associate Professor of Speech*.  
 John Frederic Boss, Ph.D., *Associate Professor of English*.  
 Robert Paul Stockwell, Ph.D., *Associate Professor of English*.  
 Daniel Vandraegen, Ph.D., *Associate Professor of Speech*.  
 Frank Whittemore Wadsworth, Ph.D., *Associate Professor of English*.  
 Llewellyn Morgan Buell, Ph.D., *Associate Professor of English, Emeritus*.  
 Carl Sawyer Downes, Ph.D., *Associate Professor of English, Emeritus*.  
 Harrison Manly Karr, Ph.D., *Associate Professor of Speech, Emeritus*.  
 Michael J. D'Asaro, Ph.D., *Assistant Professor of Speech*.  
 Jonathan Peale Bishop, Ph.D., *Assistant Professor of English*.  
 Robert Adamson Bone, Ph.D., *Assistant Professor of English*.  
 Lawrence Sanford Dembo, Ph.D., *Assistant Professor of English*.  
 †Philip Calvin Durham, Ph.D., *Assistant Professor of English*.  
 Walter Heinrich Evert, Ph.D., *Assistant Professor of English*.  
 Rudolph Everett Habenicht, Ph.D., *Assistant Professor of English*.  
 †Charles Vincent Hartung, Ph.D., *Assistant Professor of English*.  
 Robert Thomas Lenaghan, Ph.D., *Assistant Professor of English*.  
 †Florence H. Ridley, Ph.D., *Assistant Professor of English*.  
 George William Dell, Ph.D., *Instructor in Speech*.  
 James Murray, Ed.D., *Lecturer in Speech*.  
 Frances Clarke Sayers, *Lecturer in English and Lecturer in the School of Library Science*.  
 William H. Buell, M.A., *Associate in English*.  
 Harriett Ramras, M.S., *Associate in English*.

† Absent on leave, 1960-1961.

‡ Sabbatical leave in residence, spring semester, 1960-1961.

§ Sabbatical leave in residence, fall semester, 1960-1961.

\* In residence fall semester only, 1960-1961.

† In residence spring semester only, 1960-1961.



George M. Savage, Ph.D., *Professor of Theater Arts.*

Lawrence Clark Powell, Ph.D., *Lecturer in English.*

Joseph Sheehan, Ph.D., *Associate Professor of Psychology.*

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 24 C of this bulletin.

*Letters and Science List.*—All undergraduate courses in English except 370 and all undergraduate courses in speech except 142A, 142B, and 370 are included in the Letters and Science List of Courses. For regulations governing this list, see page 2.

*Preparation for the Major.*—Courses 1A-1B and 46A-46B or the equivalent, with an average grade of C or higher; History 5A-5B, or History 151A-151B for junior transfers, or the equivalent (except under Plan III).

Recommended: Ancient and modern foreign languages. A reading knowledge of French or German is required for the M.A. degree. For the Ph.D. degree a reading knowledge of both French and German is required; a reading knowledge of Latin is essential for work in some fields.

*The Major.*—Plan I. For the general undergraduate: 24 units of upper division courses in English, including (1) English 117J; (2) one of the Type courses (6 units); (3) three of the Age courses (not more than two courses in adjacent ages); (4) at least 3 units of upper division American literature.

Plan II. For the undergraduate expecting to proceed to the M.A. or Ph.D. degree in English: the student must present, in the first half of the junior year, a program to be examined and approved by the departmental adviser to upper division students. (1) The program must comprise, at a minimum, 24 units of upper division courses in English, including (a) English 117J, to be taken in the junior year; (b) one of the Type courses (6 units); (c) three of the Age courses (not more than two courses in adjacent ages); (d) at least 3 units of upper division American literature; (e) English 151L, to be taken in the senior year. (2) At the end of the senior year the student must complete the Comprehensive Final Examination. If he fails this examination he may still receive the bachelor's degree, but in order to be approved for graduate study in English, he must pass it with a grade of A or B.

Plan III. The major in English (with speech) for the student taking the general secondary credential.

- (a) The completion of the following: (1) English 1A-1B, 46A-46B; (2) Speech 1 and 2 or 4; (3) English 31 or 106L; 115 or 153; 117J; or 3 units from 131, 132, 133, 190A, 190B; (4) 6 units from English 114A-114B, 122A-122B, 125C-125D, 125G-125H; (5) 6 units from English 152, 156, 158, 167, 177, 187; (6) 3 units from Speech 106, 107, 109, 110, 111, 112A, 112B, 122, 140; (7) Theater Arts 103.
- (b) The passing of the Senior Comprehensive Final Examination with a grade C or better. (The bachelor's degree may still be granted with a grade of less than C.)
- (c) The following courses, ordinarily to be taken in the graduate year, complete the English requirements for the general secondary credential: English 370, taken prerequisite to or concurrent with Education 130; 6 units from English 201, 221, 222, 223A, 223B, 224, 225, 226, or their equivalent.

The minor in English (with speech) for the general secondary credential will consist of the following courses: (1) English 1A-1B, 46A-46B; (2) Speech 1; (3) English 106L or 31; (4) 6 units from English 114A, 114B, 115, 117J, 125C, 125D, 131, 132, 133, 153, 190A, 190B; (5) English 370.

*The Honors Program in English.*—Majors with a 3.0 average in English, and nonmajors with honors status in the College of Letters and Science, may, upon completing at least nine upper division units in the department, apply for admission to the honors program in English. In addition to the minimum grade-point average, admission to the program requires a letter of recommendation from a member of the faculty in the department and satisfactory evidence of the ability to write acceptable prose. Students admitted to the program will enroll in English 196A-196B, and will elect either English 117L or 197. English majors in the honors program may substitute 196A-196B for the type course requirement under Plans I, II, and III. Majors under Plan III may, with the approval of the department chairman, further substitute either 117L or 197 for one of the two required Age courses.

*Requirements for Admission to Graduate Courses*

The requirement is ordinarily the undergraduate major in English or its equivalent. No graduate student may take a graduate course in English who has fewer than 12 units in upper division major courses in English. This requirement is prerequisite to the 24 units demanded for the master's degree. If the candidate is deficient in this prerequisite, he must fulfill it by work undertaken as a graduate student.

*Requirement for the Master's Degree*

1. For the general requirements, see page 66. The department follows Plan II, as described on page 67. The Comprehensive Examinations are given toward the end of each semester for both the M.A. and for the Ph.D. qualifying, and during the Summer Session for the M.A. degree alone.

2. Departmental requirements: (1) Students are required to take the reading test in French or German at the beginning of the first semester of residence. (2) They must complete at least 24 units in English, including the following: course 201; either 110 or 111; two courses chosen from 221, 222, 223A, 223B, 224, 225, 226. To meet the general University requirements, at least 12 units must be in strictly graduate courses. The Comprehensive Examination for the M.A. consists of an oral examination of not less than one hour covering the candidate's general knowledge of English and American literature. For the M.A. leading to the Ph.D., see "Requirements for the Doctor's Degree," following.

*Requirements for the Doctor's Degree*

1. For the general requirements, see page 68.

2. Departmental requirements: (a) On entering the department the candidate will present to the chairman a written statement of his preparation in French, German, and Latin. He must take the reading test in one of the two required modern foreign languages (French and German) at the beginning of the first semester of residence, the test in the other not later than the beginning of the third semester of residence. For work in some fields a reading knowledge of Latin is necessary. (b) In the first year (normally two semesters) of graduate study, the candidate will take courses in preparation for Part I of the Qualifying Examinations for the doctor's degree (200, 211; four courses chosen from 221, 222, 223A, 223B, 224, 225, 226; one graduate seminar and three units of elective). Passing this examination will entitle him to the master's degree. Part I of the Qualifying Examinations will consist of four written examinations, each one and one-half hours long, and a two-hour oral examination. Part I of the Qualifying Examinations must be taken before the candidate has completed more than 30 units of graduate work. If the candidate does well in these examinations, he will be encouraged to proceed further with graduate study. (c) Normally the candidate will devote a second year to the completion of the language requirement (211,

212, 213) and the taking of graduate seminars in English or suitable courses in other departments, after which he will take Part II of the Qualifying Examinations and be advanced to candidacy. Of course this period may be curtailed or extended according to circumstances. Part II of the Qualifying Examinations will consist of three three-hour written examinations and a two-hour oral examination in the candidate's special field and in two other fields to be chosen in consultation with his adviser. No special examination in linguistics is required, but questions on the language will appear at appropriate points in the examinations on literature. (d) A final year (which under the University rules may not be curtailed) 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 requirement either by taking additional seminars or by registering in English 290.

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 a course or examination validated by the department before he can proceed toward completion of the requirements.

### LOWER DIVISION COURSES

#### *Freshman Courses*

#### 1A. First-Year Reading and Composition. (3) I, II.

Mr. Lenaghan in charge

Open to all students who have received a passing grade in Subject A.

Principles and methods of expository writing.

#### 1B. First-Year Reading and Composition. (3) I, II.

The Staff

Prerequisite: English 1A.

Introduction to the types of modern literature: the novel, the short story, drama, and poetry.

#### 4A. Great Books: Dramatic Comedy. (1) I.

Mr. Nelson in charge

#### 4B. Great Books: Dramatic Tragedy. (1) II.

Mr. Nelson in charge

#### \*4C. Great Books: the English Novel. (1) I.

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#### \*4D. Great Books: the Continental Novel. (1) II.

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#### \*4E. Great Books: Lyric Poetry. (1) I.

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#### \*4F. Great Books: Narrative Poetry. (1) II.

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#### \*4G. Great Books: Famous Utopias. (1) I.

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#### \*4H. Great Books: Great Satirists. (1) II.

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#### *Sophomore Courses*

#### 30A. American Literature of the Pre-Civil War Period. (2) I, II.

Mr. Howard in charge

Prerequisite: course 1A. Not open for credit to students who have taken upper division courses in the same period.

#### 30B. American Literature of the Post-Civil War Period. (2) I, II.

Mr. Howard in charge

Prerequisite: course 1A. Not open for credit to students who have taken upper division courses in the same period.

\* Not to be given, 1960-1961.

- 31. Intermediate Composition.** (2) I, II. Mr. Ewing in charge  
Prerequisite: course 1A-1B.
- 46A-46B. Survey of English Literature.** (3-3) Yr. Beginning each semester  
Prerequisite: course 1A-1B. Mr. Jorgensen in charge

## UPPER DIVISION COURSES

Upper division standing is required for all upper division courses in English. Courses 1A-1B and 46A-46B are prerequisite to all upper division courses in English, except 106S, 110, 111, 115, 116, 117J, 118, 125C-125D, 130, 133, 135, 136, 151M, 153, 190A, 190B, for which 1A is prerequisite, and 195, for which 1A and 1B are prerequisite. Theater Arts students may substitute Humanities 1A-1B for course 46A-46B as a prerequisite for 113A and 113B. Students who have not passed English 31 will be admitted to 106C and 106F only upon a test given by the instructor.

A. *The Junior Course*: Course 117J. Required of juniors whose major is English.

B. *The Type Courses*: Courses 114A-114B, 122A-122B, 125C-125D, and 125G-125H. It is understood that major students in English will take one of these year courses.

C. *The Age Courses*: Courses 152, 156, 158, 167, 177, and 187. It is understood that major students in English under Plans I and II will take three of these courses, and majors under Plan III will take two.

D. *Courses in American Literature*: Courses 130, 131, 132, 133, 135, and 136. It is understood that major students in English under Plans I and II will take at least 3 units of these courses.

E. *The Senior Course*: Course 151L. Required of seniors whose major subject is English under Plan II.

- 106A. The Short Story.** (2) I, II. Mr. Espey  
Prerequisite: consent of the instructor.

- 106C. Critical Writing.** (2) I, II. Mr. Jorgensen, Mr. Ross

- 106D-106E. Fundamentals of Dramatic Writing.** (3-3) Yr. Mr. Savage  
For admission to this course, candidates should submit to the instructor an original one-act play or one act of a full-length play by September 14, 1960.

- 106F. Exposition.** (2) I, II. Mr. Espey

- 106L. Advanced Composition for Teachers.** (2) I, II.  
Mr. Hartung, Mr. Jorgensen, Mr. Lenaghan

Designed primarily for candidates for the general secondary teaching credential.

- 106S. Advanced Composition for Majors in the Physical and Life Sciences.**  
(3) I, II. Mr. Bishop, Mr. Durham

- 110. Introduction to the English Language.** (3) I.  
Mr. Matthews, Mr. Stockwell

A survey of the changes in the English systems of sounds, grammar, and lexicon from 750 A.D. to the present, with consideration of the broader linguistic principles exemplified by these changes.

- 111. The English Language in America.** (3) II. Mr. Matthews, Mr. Stockwell

- 113A. British and Continental Drama, 1500-1850. (3) I, II.**  
 Mr. Wadsworth, Mr. Smith  
 Prerequisite: English 46AB or Humanities 1AB; and English 117J or Classics 113. Not open for credit to students who have completed English 114A-114B.  
 A study of the major European dramatic traditions, with emphasis on significant plays of Britain, France, Spain, Germany, and Russia.
- 113B. Modern Drama. (3) I, II.**  
 Mr. Wadsworth, Mr. Smith  
 (Former number, 114C.)  
 Prerequisite: English 113A, or English 46A-46B, or Humanities 1A-1B.  
 A comparative study of the drama from Ibsen to the present, with consideration of significant continental, British, and American playwrights.
- 114A-114B. English Drama from the Beginning to 1900. (3-3) Yr.**  
 Mr. Dent, Mr. Smith
- 115. Primitive Literature. (3) II.**  
 Mr. Jones  
 The study of primitive types, such as the fable, folk tale, myth, legend, ballad, and hero tales, as to characteristics and theories of origin and diffusion. The comparative study of typical stories, and the work of collectors and adapters.
- 116. The English Bible as Literature. (3) II.**  
 Mr. Dearing
- 117J. Shakespeare. (3) I, II.**  
 The Staff  
 A survey of from twelve to fifteen plays, with special emphasis on one chronicle, one comedy, and one tragedy.
- 117L. Advanced Shakespeare. (3) I, II.**  
 Mr. Dent, Mr. Jorgensen, Mr. Wadsworth  
 Prerequisite: course 117J.  
 Intensive study of three to five plays, with consideration of sources, textual problems, and various critical approaches.
- 118. Children's Literature. (3) I, II.**  
 Mrs. Sayers
- 122A-122B. English Poetry from the Beginning to the Present. (3-3) Yr.**  
 Mr. Espey, Mr. Longueil
- 125C-125D. The English Novel from the Beginning to the Present. (3-3) Yr.**  
 Mr. Booth, Mr. Jones
- 125G-125H. English Prose from the Beginning to the Present. (3-3) Yr.**  
 Mr. Bishop, Mr. Ewing
- 130. American Literature of the Colonial and Early National Periods. (2) II.**  
 Mr. Falk, Mr. Howard
- 131. American Literature of the Nineteenth Century. (3) I.**  
 Not open to students who have not had 46A-46B. Mr. Falk, Mr. Nevius
- 132. American Literature in the Twentieth Century. (3) I, II.**  
 Mr. Bone, Mr. Durham, Mr. Nevius  
 Not open to students who have not had 46A-46B.
- 133. American Life in American Letters. (3) I.**  
 Mr. Durham, Mr. Falk  
 The main currents of thought in American life as reflected in literature.
- 135. American Fiction. (3) I, II.**  
 Mr. Bone, Mr. Booth, Mr. Howard  
 The history of the American novel and short story from the beginning to the present day.

- \*136. **American Humor and Satire.** (3) II. Mr. Ross  
From the colonial period to the twentieth century.
- 151L. **Chaucer.** (3) I, II. Mr. Longueil, Miss Ridley
- 151M. **Milton.** (3) II. Mr. Swedenberg  
A survey of the major and minor poems of Milton and his more significant prose works.
152. **English Literature of the Later Middle Ages.** (3) II.  
Mr. Lenaghan, Mr. Matthews
153. **Introduction to the Study of Poetry.** (3) I, II. Mr. Jones, Miss Nisbet
155. **Literary Criticism.** (3) I. Mr. Cohen, Mr. Nelson
156. **The Age of Elizabeth.** (3) I, II. Mr. Kinsman, Mr. Phillips, Mr. Dick
158. **The Age of the Stuarts.** (3) I, II. Mr. Miner, Mr. Swedenberg
167. **The Age of Pope and Johnson.** (3) I, II.  
Mr. Cohen, Mr. Dearing, Mr. Swedenberg
177. **The Romantic Age: 1784-1832.** (3) I, II. Mr. Longueil, Mr. Griggs
187. **The Victorian Age: 1832-1892.** (3) I, II.  
Mr. Booth, Mr. Rolfe, Miss Nisbet
- 190A. **English Literature since 1900.** (3) I. Mr. Ewing, Mr. Nevius  
The novel.
- 190B. **English Literature since 1900.** (3) II. Mr. Ewing, Mr. Espey  
Poetry.
- \*195. **Libraries and Learning.** (2) II. Mr Powell  
A survey of printing, publishing, bookselling, book collecting, and reading from the viewpoint of their relationship to the development and use of libraries.
- 196A. **Honors Course in English.** (3) I. Mr. Kinsman in charge  
Prerequisite: (1) for the English major; senior standing with a minimum 3.0 average in the major and consent of departmental honors committee; (2) for students with honors status in the College of Letters and Science: senior standing with a minimum 3.5 general average and consent of departmental honors committee.  
Intensive study of problems in separate areas of fiction, nonfictional prose, drama, and poetry with discussion, oral reports, and preparation of one or more papers on the subject. Sections limited to ten students.
- 196B. **Honors Course in English.** (3) II. Mr. Kinsman in charge  
Prerequisite: course 196A.  
Supervised preparation of an honors essay (12,000-word) on an aspect of fiction, nonfictional prose, drama, or poetry.
197. **Proseminar.** (3) I, II. The Staff  
Prerequisite: senior standing as an English major and consent of the instructor. Sections limited to twenty students.  
Intensive study of a single author, with discussion, oral reports, and the preparation of one or more papers on the subject. 1960-1961: first semester—James Joyce; second semester—Alexander Pope.

\* Not to be given, 1960-1961.

**199. Special Studies in English. (1-3) I, II.**

The Staff

Prerequisite: senior standing and consent of the instructor.

**COMPREHENSIVE FINAL EXAMINATION**

The Comprehensive Final Examination is taken at the end of the senior year by majors working under Plans II and III. It will consist of one two-hour paper and one three-hour paper. The examination will cover English literature from the beginning to the present. The papers will be set by the examining committee of the department. The student's preparation for this examination will presumably extend throughout the entire college course. A portion of the examination will be based on the required section of the departmental reading list. Upon his passing the examination the grade assigned by the department will be recorded. The examination is given each semester—first semester, December 6, 7; second semester, May 2, 3. Mr. Kinsman in charge

**GRADUATE COURSES**

200. Bibliography. (3) I, II. Mr. Dearing, Mr. Dick
201. The Functions of Literary Criticism. (3) I, II. Mr. Longueil
211. Old English. (3) I. Mr. Matthews, Mr. Stockwell
212. Middle English. (3) II. Mr. Matthews, Mr. Stockwell  
Prerequisite: course 211.
213. The Development of Modern English. (3) I.  
Prerequisite: course 212. Mr. Matthews, Mr. Stockwell
221. Medievalism. (3) II. Mr. Matthews
222. The Renaissance. (3) I, II. Mr. Dick, Mr. Jorgensen
- 223A. Jacobean and Caroline Literature. (3) II. Mr. Miner, Mr. Swedenberg
- 223B. Neo-Classicism. (3) I. Mr. Cohen, Mr. Dearing, Mr. Swedenberg
224. Romanticism. (3) I. Mr. Griggs, Mr. Longueil
225. Victorianism. (3) I, II. Miss Nisbet, Mr. Rolfe
226. American Literature. (3) I, II. Mr. Falk, Mr. Howard, Mr. Nevius
- 250A, B. English Linguistics. Seminar.
- \*†250A. Phonological Structure and Dialectology. (3) II.  
Mr. Matthews, Mr. Stockwell
- †250B. Grammatical and Lexical Structure. (3) II.  
Mr. Matthews, Mr. Stockwell
- 260A, B, C. Studies in Old and Middle English. Seminar.
- \*260A. Old English Poetry. (3) II. Mr. Matthews
- 260B. Medieval English Poetry. (3) I. Mr. Matthews
- 260C. Chaucer and His Contemporaries. (3) II. Mr. Matthews
261. Studies in Early Tudor Literature. Seminar. (3) I. Mr. Kinsman

\* Not to be given, 1960-1961.

† Offered in alternate years.

**262A, B, C, D, E, F. Studies in Elizabethan Literature. Seminar.**

- \*262A. Shakespeare. (3) I. Mr. Jorgensen, Mr. Phillips  
 \*262B. Shakespeare. (3) II. Mr. Jorgensen, Mr. Phillips  
 \*262C. Spenser. (3) II. Mr. Phillips, Mr. Dick  
 \*262D. Studies in Elizabethan and Jacobean Drama. (3) I.  
     Mr. Dick, Mr. Smith  
 262E. Elizabethan Prose. (3) I. Mr. Dick, Mr. Jorgensen  
 262F. Elizabethan Poetry. (3) II. Mr. Dick, Mr. Phillips

**263A, B, C, F. Studies in Seventeenth-Century Literature. Seminar.**

- 263A. Trends in Seventeenth-Century Prose. (3) I. Mr. Swedenberg  
 \*263B. Trends in Seventeenth-Century Poetry. (3) I. Mr. Swedenberg  
 263C. Studies in Drama, 1660-1790. (3) I. Mr. Smith  
 \*263F. Dryden and His Contemporaries. (3) I. Mr. Swedenberg

**264A, C. Studies in Eighteenth-Century Literature. Seminar.**

- 264A. Pope and His Contemporaries. (3) II. Mr. Cohen, Mr. Swedenberg  
 \*264C. Johnson and His Contemporaries. (3) II.  
     Mr. Cohen, Mr. Swedenberg

**265A, B, C, D. Studies in Nineteenth-Century Literature. Seminar.**

- \*265A. Studies in the Romantic Writers. (3) I. Mr. Griggs  
 265B. Studies in Victorian Prose. (3) I. Mr. Griggs  
 \*265C. Studies in Victorian Poetry. (3) I. Mr. Griggs  
 265D. Studies in the English Novel. (3) II. Mr. Booth, Miss Nisbet

**266A, B. Studies in Contemporary Literature. Seminar.**

- 266A. (3) II. Mr. Espey, Mr. Ewing  
 266B. (3) I. Mr. Ewing, Mr. Nevius

**270A, B, C, D, E, F. Studies in American Literature. Seminar.**

- 270A. American and European Literary Relations. (3) I. Mr. Falk  
 270B. American and European Literary Relations. (3) II. Mr. Howard  
 \*270C. American Literature and Its Intellectual Background. (3) I.  
     Mr. Howard  
 \*270D. American Literature and Its Intellectual Background. (3) II.  
     Mr. Howard  
 \*270E. American Literature and History. (3) I. Mr. Howard  
 \*270F. American Literature and History. (3) II. Mr. Howard

\* Not to be given, 1960-1961.



290. **Special Problems.** (1-6) I, II.

The Staff

**PROFESSIONAL COURSE IN METHOD****370. The Teaching of English.** (8) I, II.

Mr. Hartung

Required of candidates for the general secondary credential with the field major in English and speech.

**COURSES IN ENGLISH AS A SECOND LANGUAGE**

Courses 33A and 33B are only for students whose first language was other than English and are not open to those who have received a satisfactory grade in English 1A at the University of California. Permission to enroll in 33A and 33B is given on the basis of the entrance examination which students whose native language is not English must take instead of the Subject A examination (see page 24 C of this bulletin). Depending on the result of this examination, entering students are: (1) required to spend a semester studying elementary English; (2) required to take 33A followed by 33B; (3) required to take 33B; or (4) credited as having met the Subject A requirement.

**CERTIFICATE IN THE TEACHING OF ENGLISH AS A SECOND LANGUAGE**

To qualify for this certificate students must meet the following requirements: (1) Both students educated in the United States and in foreign countries must have an educational background sufficient to qualify them as teachers in their home state or country, and 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 bona fide foreign students solely for the purpose of pursuing the courses leading to this certificate, provided they meet 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 leading to the certificate. (2) All students must complete a 24-unit program of graduate work. Courses to be completed in the first semester are Speech 103K, Linguistics 170, English 370K, 3 units of nondepartmental elective (Education 110A-110B, 119; Folklore 106; History 177; Political Science 113). Depending upon the results of the University's entrance examination for foreign students, nonnative speakers may be required to take English 33B in lieu of this elective. Courses to be completed in the second semester are English 106K, English 111, English 370L, 3 units from English 118, 132, 133, 135, or 201. (3) Certificate candidates in graduate status must maintain a grade average equivalent to that required of candidates for a University-recommended general secondary teaching credential.

*Special Language Requirement for Native Speakers of English.*—Students whose mother tongue is English will not be held to the 6 units of electives. Instead they will be required to devote those 6 units to acquiring or perfecting their 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 wherever 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-Indo-European language should be chosen.

**English 33A. Intermediate English for Foreign Students.** (4) I, II.

Mr. Buell, Miss Ramras

Intensive drill in pronunciation, structural patterns, vocabulary, conversation, and composition. Meets five hours weekly.

**English 33B. Intermediate English for Foreign Students. (4) I, II.**

Mr. Buell, Miss Ramras

Continuation of course 33A. Meets five hours weekly.

**Speech 103K. Phonetics for Foreign Students. (3) I.**

Mr. Prator

Prerequisite: consent of the instructor.

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 and to the training of teachers of English as a second language.

**English 106K. Advanced Composition for Foreign Students. (3) II.**

Prerequisite: course 33B or the equivalent.

Mr. Prator

Exercises in writing based on literature dealing with American life and thought, with the aim of developing control of idiomatic expression.

**English 370K. The Teaching of English as a Second Language. (3) I.**

Mr. Prator

Prerequisite: an educational background sufficient to qualify the student as a teacher in his home country or in the United States.

Bibliography, survey, and evaluation of methods and materials; the nature of language learning; analysis of the differences between two languages as the basis of instruction.

**English 370L. Problems in the Teaching of English as a Second Language.**

(3) II

Mr. Prator

Prerequisite: English 370K.

The development of plans and materials to meet the various needs of pupils of different language backgrounds in elementary schools, secondary schools, and adult classes. Observation of classes and practice teaching.

**SPEECH**

Students must have passed Subject A (either examination or course) before taking any course in speech. Regulations concerning Subject A will be found on page 24 C of this bulletin.

*Preparation for the Major.*—Speech 1, 2, 3, 4, with an average grade of C or higher; English 1A-1B, 46A-46B; Psychology 1A, 1B.

*The Major.*—Plan I. For the general undergraduate: the program must include (a) Speech 111 (or 112A); 134, or 135, or 137; 6 units from 106, 107, 109 (or 110); (b) 12 units of electives in upper division courses in speech; (c) 6 units of electives in upper division courses in each of two of the departments of Anthropology and Sociology, Economics, English, Education (100A-100B, 110A-110B), History, Philosophy, Political Science, Psychology, Theater Arts (118A-118B, 119, 122, 130, 173), the courses to be approved by the departmental adviser.

Plan II.—The major in speech (with English) for the student taking the general secondary credential.

- (a) The completion of the following: (1) Speech 1, 2, 3, 4; (2) English 1A-1B, 46A-46B, English 31 or 106L, English 117J; (3) 3 units from English 131, 132, 133, or 190A-190B; (4) Speech 140; (5) Theater Arts 103; (6) 12 or 13 units selected, in consultation with the departmental adviser, to complete a 24-unit upper division major: 6 units from 106 (or 107), 109 (or 110), 111 (or 112A); 6 or 7 additional units of electives in upper division speech courses.
- (b) The attainment of a satisfactory level of skill in oral reading and public speaking.

- (c) The following courses, ordinarily to be taken in graduate year, complete the speech requirements for the general secondary credential: Speech 370; 6 units from graduate courses in two major areas of speech.

The minor in speech (with English) for the general secondary credential will consist of the following courses: (1) Speech 1, 2, 3, 4; (2) English 1A-1B; (3) 6 units in speech from one of the following sequences: (a) 106, 107, 109, 110, (b) 111, 112A, 112B, (c) 103, 140, 142A, 142B.

For the field major and the field minor in English (with speech), see page 204.

*Requirement for the Credential to Teach Exceptional Children: Speech Correction and Lipreading.*

1. For general requirements, see the ANNOUNCEMENT OF THE SCHOOL OF EDUCATION, LOS ANGELES.

2. Specific course requirements:

(a) The general area of preparation (12 units): Education 116 or Psychology 161; Education 118 or 216A; Speech 140, Education 328SC.

(b) Area of specialization—Speech correction and lipreading (15 units): Psychology 162; Speech 103, 142A-142B, 145, 146.

*Requirements for Admission to Graduate Courses*

A bachelor's degree with a major consisting of at least 24 upper division units in speech or speech and English or speech and drama. (No graduate student may take a graduate course in speech who has to his credit fewer than 12 upper division units in speech.) This requirement is prerequisite to the 24 units demanded for the master's degree. If the candidate is deficient in this prerequisite, he must fulfill it by work undertaken as a graduate student.

*Requirements for the General Secondary Credential*

Consult the ANNOUNCEMENT OF THE SCHOOL OF EDUCATION, LOS ANGELES.

*Requirements for the Master's Degree*

1. For the general requirements see page 66. The department follows Plan II as described on page 67. The Master's Comprehensive Examination is given toward the end of each semester.

2. Departmental requirements: (a) Students are required to take the reading test in French or German in the first year of residence. (b) During the first semester of residence, students must pass a speech proficiency examination in public speaking and oral reading. (c) They must complete the requirements under Plan II as follows: English 200, Section 2; 12 units of graduate courses in speech, including 3 units of Speech 290, selected from two speech fields (interpretation, public address, speech correction); 9 units of upper division or graduate courses to complete a 24-unit program (6 of these may be in related courses in other departments selected with the approval of the graduate adviser). (d) They must pass a comprehensive final examination consisting of four written tests of one and one-half hours each, as follows: (1) one examination in general speech; (2) two examinations in one major speech area (public address, interpretation, speech correction); and (3) one examination in a second major speech area. Specific information about these examinations may be secured from departmental advisers.

*Requirements for the Doctor's Degree*

1. For general requirements, see page 68.

2. Departmental requirements: (a) On entering the department the student will present to the Graduate Committee a written statement of his preparation in French and German. He must take the reading test in one of the

languages not later than the first semester of residence, and the test in the other foreign language not later than the third semester of residence. No student will be permitted to take Part II of the Qualifying Examination until the language requirements have been met. (b) During the first semester of residence, the candidate must demonstrate proficiency in public speaking and oral reading (see M.A. requirements above). (c) The Qualifying Examination for the Ph.D. will be given in two parts, each of which consists of oral and written sections. Part I is normally taken after one year of graduate work and Part II at the end of a second year. The written portion of Part I is the same as the comprehensive examination for the master's degree, and students receiving that degree from this University will have completed this requirement. Students transferring here with a master's degree in speech will normally take this written examination at the end of the first semester of residence. Those who show promise of superior scholarship in the written examination will be given a two-hour oral examination by a departmental committee. If they do well in this, they will be encouraged to proceed with further graduate study. (d) In the year following successful completion of Part I of the Qualifying Examination, the candidate will take additional courses in his fields of major and minor interests in speech, and such courses in other departments as are necessary in preparation for writing his dissertation, after which he will take Part II of the Qualifying Examination and be advanced to candidacy. Of course, this period may be curtailed or extended according to circumstances. Part II will consist of two three-hour written examinations in the major speech area and one three-hour written examination in the minor area. It will also include 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. (e) A final year (which under the University rules may not be curtailed) 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 requirement either by taking additional seminars or by registering in Speech 290.

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. Introduction to Speech. (3) I, II.<br>(Formerly numbered 1A.)   | The Staff |
| The basic principles and practices of effective oral communication in platform speaking, group discussion, and oral reading.         |           |
| 2. Elements of Public Speaking. (3) I, II.<br>(Formerly numbered 1B.)  | The Staff |
| Prerequisite: course 1.<br>The principles of effective speech composition in public address.   |           |
| 3. Basic Voice Training. (2) I, II.<br>(Formerly numbered 3A.)   | The Staff |
| Lecture and discussion, 3 hours. Prerequisite: course 1.<br>Voice physiology, phonetics, and voice drills.                           |           |
| 4. Elementary Interpretation. (3) I, II.<br>(Formerly numbered, 3B.)   | The Staff |
| Prerequisite: course 1.<br>Principles and methods of the oral communication of prose and poetry with understanding and appreciation. |           |

## UPPER DIVISION COURSES

- 103. Phonetics. (3) I.** Mr. Hargis  
 Prerequisite: consent of the instructor.  
 A study of the physical production and acoustic characteristics of the sounds of American English; modifications of the sounds in connected speech; extensive practice in phonetic recording of general American speech and its deviate forms.
- 106. Principles and Types of Public Discussion. (3) I, II.** Mr. Andersen  
 Prerequisite: course 2 or consent of the instructor.  
 Analysis of the purposes, principles, and types of public discussion. Practice in organizing group discussion.
- 107. Principles of Argumentation. (3) I, II.** Mr. Lewis  
 Prerequisite: course 2 or consent of the instructor.  
 Analysis of propositions, tests of evidence, briefing. Study of hindrances to clear thinking, ambiguity of terms, or prejudices. The critical analysis of selected argumentative speeches.
- 109. Principles of Audience Analysis. (3) I, II.** Mr. Lewis, Mr. Lomas  
 (Formerly numbered 110A.)  
 Prerequisite: course 2 or the equivalent.  
 Theory of audience analysis and adaptation. Preparation and delivery of the occasional speech.
- 110. Analysis of Style in Speech Composition. (3) II.** Mr. Lewis. Mr. Lomas  
 (Formerly numbered 110B.)  
 Prerequisite: course 2 or the equivalent.  
 Development of speaking style through critical study of selected speeches and the preparation of special forms of public address.
- 111. Theories and Techniques of Interpretation. (3) I, II.**  
 (Formerly numbered 111A.) Mr. Hargis, Mr. Vandraegen  
 Prerequisite: course 4 or the equivalent.  
 A study of the schools, principles, and techniques of oral interpretation.
- 112A-112B. Oral Interpretation of Literature. (3-3) Yr.**  
 (Formerly numbered 111B.) Mr. Hargis, Mr. Vandraegen  
 Prerequisite: course 4 or equivalent.  
 A study of the literary, aesthetic, and oral bases for the analysis and communication of prose and poetry.
- 122. Scientific Bases of Speech. (3) I.** Mr. D'Asaro  
 Prerequisite: course 3.  
 An introduction to the development of speech, and to its physical, anatomical, and physiological bases.
- 134. Classical Public Address. (3) I.** Mr. Lewis, Mr. Lomas  
 A critical study of speeches by leading Greek and Roman orators.
- \*135. British Public Address. (3) I.** Mr. Lomas  
 Critical study of speeches by leading British orators from the eighteenth century to the present time. Relationship of speakers to issues and social movements of their day.

\* Not to be given, 1960-1961.

- 137. American Public Address.** (3) II. Mr. Lomas, Mr. Richardson  
Critical study of speeches by leading American orators from the colonial period to the present time. Relationship of speakers to issues and social movements of their day.
- 140. Principles of Speech Correction.** (3) I, II. Mrs. Hahn  
Types and causations of speech disorders, the developmental and communicative approach to correction with emphasis on defects of articulation and voice; observation of Speech Clinic (Articulation Division) required.
- 142A. Methods of Speech Correction.** (2) I, II. Mrs. Hahn  
One hour lecture, 3 hours Laboratory. Prerequisite: Speech 140.  
Study of literature of speech correction and practice in the Speech Clinic (Articulation).  
Observation of methods in the Speech Clinic of the Psychological Clinic.
- 142B. Methods of Speech Correction.** (2) I, II.  
Prerequisite: Speech 142A and Psychology 162.  
Observation and discussion of cases, study of research data, practice in the Speech Clinic (Articulation Division).
- 145. Introduction to Audiology.** (2) I. Mr. Gibbons  
Prerequisite: Speech 1, 3.
- 146. Principles of Aural Rehabilitation.** (3) II. Mr. Gibbons  
Prerequisite: Speech 145.  
History and methods of improving the speech of the hard of hearing, including the principles and practice of audiometry and lip-reading.
- 190A-190B. Forensics.** (1-1) Yr. Mr. Lewis, Mr. Murray  
Prerequisite: consent of the instructor. May be repeated once for credit.
- 199. Special Studies.** (1-3) I, II. The Staff  
Prerequisite: senior standing and consent of instructor.

## GRADUATE COURSES

- \*204. The Development of Speech in the Child. (3) I. Mrs. Hahn
206. Backgrounds and Theories of Discussion. (3) I. Mr. Andersen
- \*207. Forms and Methods of Argumentation. (3) II. Mr. Lewis
- 211A, B. Backgrounds and Theories of Oral Interpretation.
- 211A. From Quintilian to Bush. (3) I. Mr. Vandraegen
- \*211B. From Bush to the Present. (3) I. Mr. Hargis
- 234A, B. Rhetorical Theory.
- \*234A. Classical Theory. (3) I. \_\_\_\_\_
- 234B. Modern Theory. (3) I. Mr. Phelps
- 240A, B. Organic Speech Disorders.
- 240A. Voice Defects and Cleft Palate. (3) II. Mrs. Hahn
- 240B. Cerebral Palsy and Aphasia. (3) I. Mr. D'Asaro

## 250A, B. Seminar in Oral Interpretation.

250A. Theory. (3) II.

Mr. Hargis

\*250B. Analysis of Materials. (3) II.

Mr. Vandraegen

## 260A, B. Seminar in the Criticism of Public Address.

260A. Historical and Social Settings. (3) II.

Mr. Richardson

\*260B. Rhetorical Criticism. (3) II.

Mr. Lomas

## 266. Seminar in Critical Analysis of Discussion. (3) II.

Mr. Andersen

## \*267. Seminar in Critical Analysis of Argumentation. (3) II.

Mr. Lewis

## 270A, B. Seminar in Speech Correction.

270A. Speech Correction. (3) II.

Mr. D'Asaro

\*270B. Speech Therapy. (3) II.

Mrs. Hahn

## 275. Seminar in Audiology. (3) II.

## 290. Individual Directed Research. (3) I, II.

The Staff

## PROFESSIONAL COURSE IN METHODS

## 370. The Teaching of Speech. (3) I, II.

Mr. Phelps

Required of candidates for the general secondary credential with the field major in speech and English.

## ENTOMOLOGY

(Department Office, 297 Physics-Biology Building)

John N. Belkin, Ph.D., *Professor of Entomology.*Walter Ebeling, Ph.D., *Professor of Entomology (Vice-Chairman of the Department).*Roland N. Jefferson, Ph.D., *Professor of Entomology.*Leland R. Brown, Ph.D., *Associate Professor of Entomology.*I. Barry Tarshis, Ph.D., *Assistant Professor of Entomology.*

Completion of the curriculum requires residence during the last two years on the Berkeley or Davis campus. See the BULLETIN OF THE COLLEGE OF AGRICULTURE and consult the appropriate adviser for students in agriculture.

## UPPER DIVISION COURSES

## 100. General Entomology. (4) II.

Mr. Belkin

Lecture, two hours; laboratory, six hours. Offered in alternate years.

The classification, life history, structure, and physiology of insects.

## 100C. Entomotaxy. (1) II.

Mr. Belkin

Laboratory, three hours; four or five Saturday field trips. Prerequisite or concurrent: course 100. Offered in alternate years.

Collection, preservation and preparation of insects for study; rearing methods; identification of local forms.

\* Not to be given, 1960-1961.

\*105. **Introduction to Structure and Function in Insects.** (5) II. Mr. Belkin  
Lecture, two hours; laboratory, nine hours. Prerequisite: course 100 or equivalent. Offered in alternate years.

Comparative anatomy and physiology of selected insect types; anatomical and histological techniques; general principles of insect physiology.

112A. **Systematic Entomology.** (3) I. Mr. Belkin

Lecture, three hours. Offered in alternate years.

History and principles of classification; taxonomic categories and procedure; nomenclature, bibliographical methods; museum practices.

126. **Medical Entomology.** (4) I. Mr. Belkin

Lecture, two hours; laboratory, six hours.

The role of insects and other arthropods in the transmission and causation of diseases of humans and other warm-blooded vertebrates; their structure, classification, and life history. Principles of vector control.

126C. **Laboratory and Field Methods in Medical Entomology.** (1) I.

Laboratory, three hours; four or five Saturday field trips. Mr. Belkin

Prerequisite or concurrent: course 126.

Collection, preservation and preparation of arthropods for study; laboratory and field survey methods; rearing techniques; identification of local forms.

134. **Insects Affecting Subtropical Fruit Plants.** (4) II. Mr. Ebeling

Lecture, two hours; laboratory, six hours; several field trips.

Biology, economic importance, and control of insects affecting citrus and other subtropical fruit plants. Insecticides; spraying, dusting, and fumigating methods and equipment.

\*144. **Insects Affecting Ornamental Plants and Flower Crops.** (4) II.

Mr. Jefferson, Mr. Brown

Lecture, three hours; laboratory, three hours; several field trips. Offered in alternate years.

Biology, economic importance, and control of insects affecting field flower crops, greenhouse and nursery plants, and ornamental trees and shrubs. Insecticides; spraying, dusting, and fumigating methods and equipment.

199. **Special Studies.** (2-4) I, II.

The Staff

Prerequisite: senior standing and consent of the instructor.

#### GRADUATE COURSES

226. **Advanced Medical Entomology.** (2) II. Mr. Belkin, Mr. Tarshis

Lecture, two hours. Prerequisite: course 126; Zoology 111. Recommended: Course 100, 105; Zoology 110, 115. Offered in alternate years.

Genesis and entomological aspects of arthropod-borne diseases.

226C. **Laboratory in Advanced Medical Entomology.** (1) II.

Mr. Belkin, Mr. Tarshis

Laboratory, three hours. Prerequisite: course 226 (may be taken concurrently.) Offered in alternate years.

Laboratory work to accompany course 226.

251A-251B. **Seminar in Entomology.** (1-1) Yr. Mr. Belkin

283A-283B. **Research in Entomology.** (2-6; 2-6) Yr. The Staff

\* Not to be given, 1960-1961.



## FLORICULTURE AND ORNAMENTAL HORTICULTURE

(Department Office, 357 Physics-Biology Building)

B. Lennart Johnson, Ph.D., *Professor of Ornamental Horticulture.*

Vernon T. Stoutemyer, Ph.D., *Professor of Ornamental Horticulture and Assistant Director of the Botanical Garden (Chairman of the Department).*

Anton M. Kofranek, Ph.D., *Associate Professor of Floriculture.*

† Harry C. Kohl, Jr., Ph.D., *Associate Professor of Floriculture.*

Roy M. Sachs, Ph.D., *Assistant Professor of Ornamental Horticulture.*

Joseph W. Towner, Ph.D., *Assistant Professor of Ornamental Horticulture.*

Victor B. Youngner, Ph.D., *Assistant Professor of Ornamental Horticulture.*

*Preparation for the Major.*—Required courses, or the equivalent: Chemistry 1A, 1B, 8; Botany 1, 107; Irrigation and Soil Science 101. Recommended: Botany 3, 6, 151; Entomology 144; Plant Pathology 140; Agricultural Economics 130.

*The Major.*—Minimum of 12 units of upper division courses in the major, including courses 131A or 131B, 136B, and two courses from the following: 121, 131A or 131B, 136A, 139, 146A or 146B or Horticultural Science 110.

### UPPER DIVISION COURSES

#### \*121. Taxonomy. Ecology and Physiology of Turfgrasses. (3) II.

Mr. Youngner

Lecture, two hours; laboratory, three hours. Prerequisite: Botany 1 or the equivalent.

Taxonomy, identification, adaptation, and breeding of turfgrasses and ground covers. Ecological relationships of grasses and other components of the turfgrass community. Basic principles underlying turfgrass cultural practices, including soil management, nutrition, and water relations.

#### 131A-131B. Taxonomic Classification and Ecology of Ornamental Plants.

(3-3) Yr.

Mr. Stoutemyer, Mr. Towner

Lecture, two hours; laboratory, three hours; several field trips. Prerequisite: Botany 1 or the equivalent. 131A is not a prerequisite to 131B.

The botanical classification, relationships, and identification of the more important ornamental plants in southern California, with special emphasis on their environmental requirements and adaptations.

#### 136A-136B. General Floriculture. (4-4) Yr.

Mr. Kofranek, Mr. Kohl

Lecture, three hours; laboratory, three hours; several field trips. Prerequisite: Botany 107 or the equivalent. 136A is not a prerequisite to 136B.

The basic practices and principles of floricultural crop production from a commercial standpoint, including photoperiod, temperature, nutrition, and water relations, with special reference to the more important crops grown in California.

#### 139. Advanced Floriculture. (2) II.

Mr. Kofranek, Mr. Kohl

Lecture, two hours. Prerequisite: senior standing in Floriculture.

Interpretation of current floricultural literature and research; future trends in production; scheduling production; diagnosing field problems; control of environmental factors, including photoperiod, temperature, nutrition, water and gas relations.

\* Offered in spring, 1962, and alternate years.

† Absent on leave, 1960-1961.

**146A. Plant Breeding. (3) I.** Mr. Towner  
Lecture, two hours; laboratory, three hours. Prerequisite: Botany 140 or the equivalent, and consent of the instructor.

Application of cytogenetics to the problems and methods of plant breeding, including studies of interspecific hybridization, sterility phenomena, inbreeding acceleration, gene transfer, chromosomal aberrations, and special linkage problems.

**146B. Plant Breeding. (3) II.** Mr. Johnson  
Lecture, two hours; laboratory, three hours. Prerequisite: Botany 140 or the equivalent.

Application of biometrical genetics to the problems and methods of plant breeding, including studies of linkage, inbreeding and heterosis, quantitative inheritance, selection in populations, backcrossing and hybridization.

**\*148. Design and Analysis of Horticultural Experiments. (3) II.** Mr. Johnson  
Lecture, two hours; laboratory, three hours. Prerequisite: Statistics 1 or the equivalent.

Principles of experimental design, including tests of significance, analysis of variance and covariance; types of designs, including randomized blocks, Latin squares, factorial and other designs.

**199. Special Studies. (2-4) I, II.** The Staff  
Prerequisite: senior standing and consent of the instructor.

**GRADUATE COURSES**

**260A-260B. Seminar in Floriculture. (2-2) Yr.** The Staff

**266A-266B. Research in Ornamental Horticulture. (2-6; 2-6) Yr.** The Staff

**FOLKLORE GROUP**

†Wayland D. Hand, Ph.D., *Professor of German and Folklore.*  
John Greenway, Ph.D., *Visiting Assistant Professor of Anthropology and Folklore.*



James Richard Andrews, Ph.D., *Assistant Professor of Spanish.*  
Gustave Otto Arlt, Ph.D., *Professor of German.*  
Samuel G. Armistead, Ph.D., *Assistant Professor of Spanish.*  
Pedro Carrasco, Ph.D., *Assistant Professor of Anthropology.*  
John A. Crow, Ph.D., *Professor of Spanish.*  
Alma Hawkins, Ed.D., *Associate Professor of Physical Education.*  
John T. Hitchcock, Ph.D., *Assistant Professor of Anthropology.*  
Mantle Hood, Ph.D., *Associate Professor of Music.*  
Claude Jones, Ph.D., *Associate Professor of English.*  
Boris A. Kremenliev, Ph.D., *Professor of Music.*  
William A. Lessa, Ph.D., *Associate Professor of Anthropology.*  
William Matthews, Ph.D., *Professor of English.*  
Laurence A. Petran, Ph.D., *Professor of Music.*  
William F. Pillich, M.S., *Associate Supervisor of Physical Education.*  
Jaán Puhvel, Ph.D., *Assistant Professor of Classics and Indo-European Linguistics.*  
John Frederic Ross, Ph.D., *Associate Professor of English.*  
Richard C. Rudolph, Ph.D., *Professor of Oriental Languages.*  
Frances Clark Sayers, *Lecturer in English.*

\* Offered in spring, 1962, and alternate years.  
† Absent on leave, 1960-1961.

Carol J. Seothorn, M.A., *Assistant Supervisor of Physical Education.*  
 Charles Speroni, Ph.D., *Professor of Italian.*  
 Council Taylor, Ph.D., *Assistant Professor of Anthropology.*  
 Erik Wahlgren, Ph.D., *Professor of Scandinavian Languages.*  
 Harry F. Williams, Ph.D., *Associate Professor of French.*  
 Marion Albert Zeitlin, Ph.D., *Professor of Spanish.*

Charles Seeger, A.B., *Research Associate in Music (Ethnomusicology and Folk Music).*

*Letters and Science List.*—All undergraduate courses in folklore and all related courses in anthropology, art, English, German, Italian, music, and Spanish.

Although no 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, history, sociology); (3) Folk Arts (art, music, physical education, theater arts). Students with undergraduate preparation in folklore may continue their work on the graduate level. For the planning of course work, students should consult departmental advisers and Mr. Hand.

#### UPPER DIVISION COURSES

- \*101. **Introduction to Folklore.** (3) I. Mr. Hand  
 Prerequisite: junior standing. A reading knowledge of a foreign language is desirable, but not prerequisite to the course.  
 The various fields of folklore, their literature, and problems.
105. **American Folklore.** (3) II. Mr. Greenway  
 Prerequisite: junior standing.  
 A survey of American folklore with illustrative materials from all genres (folk songs, folk tales, legends, superstitions, proverbs, folk speech).
106. **American Folk Song.** (3) I. Mr. Greenway  
 Prerequisite: junior standing.  
 A survey of American balladry and folk song, with attention to historical development, ethnic background, and poetic and musical values.
- \*190. **Research Methods and Field Collecting.** (2) II. The Staff  
 Lecture, one hour; laboratory, two hours. Prerequisite: Folklore 101 and any one of the following courses: Folklore 105, Anthropology 102, 124, English 115, German 102, Italian 105, Music 136A or 136B.  
 The bibliography and methods of folkloristic research. Attention will also be given to field collecting, including the use of mechanical apparatus, and to the problem of folklore archiving.
199. **Special Studies in Folklore.** (1-3) I, II. The Staff  
 Prerequisite: senior standing and consent of the instructor.

#### GRADUATE COURSES

- \*245. **The Folk Tale.** (2) II. Mr. Hand  
 Prerequisite: course 101, or any one of the following courses: Folklore 105, Anthropology 102, 124, English 115, German 102, Italian 105, Music 136A or 136B.
- 298A-298B. **Special Studies in Folklore.** (1-5; 1-5) Yr. The Staff

\* Not to be given, 1960-1961.

## RELATED COURSES IN OTHER DEPARTMENTS

## UPPER DIVISION COURSES

- Anthropology 102. Ethnology. (3) I, II.  
Mr. Carrasco, Mr. Hitchcock, Mr. Taylor
- Anthropology 124. Comparative Religion. (3) I, II. Mr. Lessa
- Anthropology 127. Primitive Art. (3) II. Mr. Taylor
- Art 119A-119B. Art of the Americas. (2-2) Mr. Bloch, Mr. Sheppard
- Classics 178. Greek and Roman Mythology. (3) II. Mr. Puhvel
- English 115. Primitive Literature. (3) II. Mr. Jones
- English 118. Children's Literature. (3) I, II. Mrs. Sayers
- English 136. American Humor and Satire. (3) I. Mr. Ross
- \*German 102. German Folklore. (3) II. Mr. Hand
- Integrated Arts 1A-1B. Man's Creative Experience in the Arts. (3-3) Yr.  
Mr. With
- Italian 105. Italian Folklore. (3) I. Mr. Speroni
- Music 122. Music of Indonesia. (3) I. Mr. Hood
- \*Music 129. Music of the Balkans. (3) II. Mr. Kremenliev
- Music 136A-136B. Musical Cultures of the World. (3-3) Yr.  
Mr. Hood, Mr. Petran
- Music 197. Proseminar in Ethnomusicology. (3) II. Mr. Hood
- Oriental Languages 32. History of Japanese Civilization. (2) II.  
Mr. Rudolph
- Oriental Languages 42. History of Chinese Civilization. (2) I. Mr. Ch'en
- Physical Education 150A-150B. History of Dance and the Related Arts.  
(3-3) Yr. Mrs. Scothorn
- Physical Education 151. History of Dance. (3) II. Mrs. Scothorn
- Physical Education 155. Folk Festivals. (2) II. \_\_\_\_\_
- Spanish 108. The Folk Song in Spain and Spanish America. (1) II.  
Mr. Crow
- Spanish. 119. Readings in Spanish Literature of the Middle Ages. (2) I.  
Mr. Zeitlin, Mr. Andrews, Mr. Armistead

## GRADUATE COURSES

- Anthropology 251A-251B. Myth and Ritual. (2-2) Yr. Mr. Lessa
- Classics 260. Seminar in Indo-European Mythology. (3) II. Mr. Puhvel
- English 221. Medievalism. (3) II. Mr. Matthews

\* Not to be given, 1960-1961.

- French 206A-206B. Survey of Medieval Literature. (2-2) Yr. Mr. Williams
- \*German 208. The Sixteenth and Seventeenth Centuries. (3) I. Mr. Arlt
- \*German 240. Folklore of the Germanic Peoples. (3) I. Mr. Hand
- Music 254. Seminar in Notation and Transcription in Ethnomusicology. (3) I. Mr. Hood
- Music 255. Musical Instruments of the World. (3) II. Mr. Petran
- Music 280A-280B. Seminar in Ethnomusicology. (3-3) Yr. Mr. Hood
- Physical Education 227. Comparative Study of Materials and Methods in Dance. (2) II. Miss Hawkins
- Scandinavian 244. Old Norse-Icelandic Prose and Poetry. (2) II. Mr. Wahlgren
- Scandinavian 244. Old Norse-Icelandic Prose and Poetry. (2) II. Mr. Wahlgren

## 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:

- Classics* 113. Ancient Drama. (2)
- \*Greek 180A-180B. A Survey of Greek Literature in English. (2-2)
- Latin 180. A Survey of Latin Literature in English. (3)
- English* 4A. Great Books: Dramatic Comedy. (1)
- 4B. Great Books: Dramatic Tragedy. (1)
- \*4C. Great Books: The English Novel. (1)
- \*4D. Great Books: The Continental Novel. (1)
- \*4E. Great Books: Lyric Poetry. (1)
- \*4F. Great Books: Narrative Poetry. (1)
- \*4G. Great Books: Famous Utopias. (1)
- \*4H. Great Books: Great Satirists. (1)
- 113A. British and Continental Drama, 1500-1850. (3)
- 113B. Modern Drama. (3)
- French* 109M-109N. A Survey of French Literature. (3-3)
- 110A-110B. The Novel of the Nineteenth and Twentieth Centuries. (2-2)
- 122A-122B. Medieval Literature in English Translation. (2-2)
- German* 121A-121B. German Literature in Translation. (2-2)
- Humanities* 1A-1B. World Literature. (3-3)
- Italian* \*152. Italian Literature in English Translation. (3)
- Near Eastern Languages*
- Arabic 150A-150B. A survey of Arabic Literature. (2-2)  
(Numbered 142A-142B prior to 1960-1961.)
- Hebrew 150A-150B. A Survey of Hebrew Literature in English. (2-2)  
(Numbered 182A-182B prior to 1960-1961.)
- Persian 150A-150B. A Survey of Persian Literature in English. (2-2)
- Oriental Languages* 112. Chinese Literature in Translation. (2)
132. Japanese Literature in Translation. (2)
- Scandinavian* 141A-141B. Scandinavian Literature in English Translation. (2-2)
- Slavic Languages* 130. Survey of Russian Literature to 1917. (3)
132. Russian Literature Since 1917. (3)

\* Not to be given, 1960-1961.

- \*137. The Russian Drama. (3)  
 143A-143B. Russian Novelists of the Nineteenth Century. (2-2)  
 145. Tolstoy. (3)  
 147. History of Russian Poetry. (3)

*Spanish* 150A-150B. Spanish and Spanish-American Literature in English Translation. (2-2)

## FRENCH

(Department Office, 4303 Humanities Building)

- Gabriel Bonno, Docteur ès Lettres, *Professor of French*.  
 Francis J. Crowley, Ph.D., *Professor of French*.  
 John C. Lapp, Ph.D., *Professor of French (Chairman of the Department)*.  
 Raymond Picard, Docteur ès Lettres, *Visiting Professor of French*.  
 Oreste F. Pucciani, Ph.D., *Professor of French*.  
 \*Myron Irving Barker, Ph.D., *Associate Professor of French*.  
 \*Judd D. Hubert, Ph.D., *Associate Professor of French*.  
 Clinton C. Humiston, Ph.D., *Associate Professor of French*.  
 L. Gardner Miller, Docteur de l'Université de Strasbourg, *Associate Professor of French*.  
 Neal Oxenhandler, Ph.D., *Associate Professor of French*.  
 Leland J. Thielemann, Ph.D., *Associate Professor of French*.  
 Harry F. Williams, Ph.D., *Associate Professor of French*.  
 Alexander Green Fite, Ph.D., *Associate Professor of French, Emeritus*.  
 Hassan El Nouty, Docteur ès Lettres, *Assistant Professor of French*.  
 Paul Pimsleur, Ph.D., *Assistant Professor of French*.  
 Marius Ignace Biencourt, Docteur de l'Université de Paris, *Assistant Professor of French, Emeritus*.  
 Colette Brichant, Docteur de l'Université de Paris, *Associate in French*.  
 Jacqueline Hamel, Licence ès Lettres, *Associate in French*.  
 Madeleine Korol, Ph.D., *Associate in French*.  
 Yvone Lenard, M.A., *Associate in French*.  
 Jacqueline Van Baelen, M.A., *Associate in French*.

*Letters and Science List.*—All undergraduate courses in French except 370 are included in the Letters and Science List of Courses. For regulations governing this list, see page 2.

*Preparation for the Major.*—Required: courses 1, 2, 3, and 4, or their equivalents.

*The Major.*—Required: at least 24 units of upper division French, including 101A-101B, 109A-109B, 120A-120B, and at least one other year course in literature. With permission of the department 4 units of the 24 may be satisfied by appropriate upper division courses in the following departments: Classics, English, German, History, Italian, Philosophy or Spanish. Students who fail to maintain a C average or better on 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 major adviser before registering for French courses in the upper division.

### *Requirements for the Master's Degree*

I. 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.

\* Not to be given, 1960-1961.

<sup>2</sup> In residence spring semester only, 1960-1961.

## II. Department requirements:

(1) Language requirements: for all candidates for the M.A. in French, the foreign language requirement will be fulfilled by passing a reading test in one of the following languages: German, Spanish, Italian, or Latin. 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 test in a second foreign language before the end of the second semester of residence.

### (2) Course requirements:

Plan A: At least 24 units in French, including the following courses: 131A-131B, 201, 220, and 230. To meet the general University requirements, at least 12 units must be in graduate courses.

The comprehensive examination will consist of a written examination in three out of five fields (16th-20th century), a sight translation, from English to French (for native French students, from French to English), a literary composition in French (in the modern field only) of not less than two hours, an *explication de texte* and an oral examination in French covering the candidate's general knowledge of French literature. For native French students the oral examination will be conducted in English.

Plan B: At least 24 units in French, including the following courses: 131A-131B, 201, 220, and 230. To meet the general requirements, at least 12 units must be in graduate courses.

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 hour oral examination. Passing this examination will be equivalent to passing Part I of the qualifying examination.

## Requirements for the Ph.D. Degree

### III. Department requirements:

(a) On entering the department, the candidate will present to the chairman a written statement of his preparation in German, Latin, and either Italian or Spanish. He must take the reading test in one of the two required modern languages during the first year of residence, the test in the other language not later than the fourth semester of residence.

(b) In the first year (normally two semesters) of graduate study, the candidate will take the following courses: 131A-131B, 201, 202, 220, and 235, one seminar, and four units of electives.

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 credit given towards the course requirements. These 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.

(c) 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 hour oral examination. If he does well on these examinations, he will be encouraged to proceed further with graduate study toward either the Ph.D. in French or romance languages.

(d) Normally the candidate will devote a second year to the completion of the language requirements and seminars in French or in related subjects, after which he will take Part II of the qualifying examination and the qualifying oral, and be advanced to candidacy. This period will be curtailed or extended according to circumstances. Part II will consist of 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; and 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 Enlightenment
- IV. Modern

No examination in linguistics is required; grade A or B in courses 201 and 202 satisfy this requirement.

The passing grade for Parts I and II is an average grade of B (3.0).

(e) All candidates for the M.A. and Ph.D. must satisfy the department as to their proficiency in spoken French. For English-speaking students this will normally mean passing French 107 with a grade of A or B.

(f) A final year will be devoted to the dissertation after which the student will take the final oral. The thesis subject and outline should be approved by the student's guidance committee no later than October 1st of the year in which it is to be submitted.

(g) If seven years have elapsed since any of the requirements have been taken, these requirements must be revalidated by the department.

*Requirements for the Ph.D. Degree in Romance Languages and Literature*

See page 106 of the ANNOUNCEMENT OF THE GRADUATE DIVISION, SOUTHERN SECTION.

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, be permitted a more advanced program; or such students may be transferred to a more advanced course by recommendation of the instructor.

- |  |           |
|--|-----------|
| 1. Elementary French. (4) I, II.<br>Sections meet five hours weekly.   | The Staff |
| 1G. Reading Course for Graduate Students. (No credit) I, II.   | The Staff |
| 2. Elementary French. (4) I, II.<br>Sections meet five hours weekly.<br>Prerequisite: course 1 or two years of high school French.     | The Staff |
| 3. Intermediate French. (4) I, II.<br>Sections meet five hours weekly.<br>Prerequisite: course 2 or three years of high school French. | The Staff |
| 4. Intermediate French. (4) I, II.<br>Sections meet four hours weekly.<br>Prerequisite: course 3 or four years of high school French.  | The Staff |

8A-8B-8C-8D. French Conversation. (1-1-1-1) Beginning each semester.  
The Staff

The class meets two hours weekly. Open only to students who have completed course 2 or its equivalent with Grade A or B; or by permission of the department.

UPPER DIVISION COURSES

The prerequisite to all upper division courses except those in translation is 16 units of lower division courses, including course 4 with a grade of B or higher.

All upper division courses, except where so designated, are conducted mainly in French. Courses 101A-101B and 109A-109B are ordinarily pre-



requisite to other upper division courses but unusually well-prepared students, or those whose major is not French, may be admitted to any upper division courses by permission of the major adviser and the instructor.

**101A-101B. Intensive Reading. Grammar and Composition. (3-3) Yr.**  
Beginning either semester. Mr. Oxenhandler in charge

**107. French Phonetics. (3) I, II.** Mr. Pimsleur  
Prerequisite: consent of the instructor.

French pronunciation, diction, intonation in theory and practice; phonetic transcription, phonetic evolution of the modern language; remedial exercises; recordings.

**109A-109B. A Survey of French Literature from the Middle Ages to the Present. (3-3) Yr.** Beginning either semester.

Mr. Oxenhandler, Mr. Pucciani, Mr. Nouty

Prerequisite: French 101A-101B or the equivalent.

Open to majors in Romance languages, and others sufficiently prepared, with the consent of the instructor. Not open to students who have taken or are taking courses 109M, 109N.

**112A-112B. The Nineteenth Century. (2-2) Yr.** Mr. Nouty

**114A-114B. Contemporary French Literature. (2-2) Yr.**

Mr. Oxenhandler, Mr. Pucciani

The French novel, poetry, and essay since 1885. Symbolism, surrealism, existentialism, as represented by Rimbaud, Mallarmé, Gide, Proust, Apollinaire, Valéry, Malraux, Sartre, and others.

**118A-118B. The Sixteenth Century. (2-2) Yr.** Mr. Humiston

Literature and thought in the sixteenth century as represented by Rabelais, Marot, Calvin, Marguerite de Navarre, the *Pléiade*, Montaigne, and others.

**120A-120B. The Seventeenth Century. (2-2) Yr.** Mr. Hubert, Mr. Lapp

A study of the development of Classicism through representative works of Corneille, Molière, Racine, Descartes, Pascal, and others.

**121A-121B. The Eighteenth Century. (2-2) Yr.**

Mr. Crowley, Mr. Thielemann

121A. Readings and discussions of the outstanding works of the literature and thought of the period (1680-1789), omitting Voltaire and Rousseau.

121B. Limited to study of Voltaire and Rousseau.

**\*124. French Lyric Poetry from Villon to the Present. (3) II.** Mr. Lapp

A course in the history of French poetry: versification, imagery, changing themes and approaches to poetry through the ages.

**130A-130B. Advanced Grammar and Composition. (3-3) Yr.** Mr. Bonno

Prerequisite: course 101A-101B.

This course is required of all candidates for the Certificate of Completion of the teacher training curriculum.

**131A-131B. Advanced Literary Composition. (3-3) Yr.**

Prerequisite: course 101A-101B.

Mr. Pucciani, Mr. Hubert

A course in the writing of literary French. Advanced syntax, problems of style, creative translation. Required of all candidates for the M.A.

**134A-134B. Survey of French Culture and Institutions. (3-3) Yr.**

Required for the Certificate of Completion.

Mrs. Brichtant

\* Not to be given, 1960-1961.

199. **Special Studies in French.** (1-5) I, II. The Staff  
Prerequisite: senior standing and consent of the instructor.

COURSES IN WHICH NO KNOWLEDGE OF FRENCH IS REQUIRED  
(May not be taken for major or graduate credit)

- 109M-109N. **Survey of French Literature.** (3-3) Yr. Beginning either semester. Mr. Humiston, Mr. Barker
- 110A-110B. **The Novel of the Nineteenth and Twentieth Centuries.**  
(2-2) Yr. Mr. Barker
- 122A-122B. **Medieval Literature in English Translation.** (2-2) Yr.  
A. Epic, Romance, history. Mr. Barker  
B. Drama, lyric and allegorical poetry.

## GRADUATE COURSES

Concerning conditions for admission to graduate courses, see page 72 of this bulletin.

201. **History of the French Language.** (3) I, II. Mr. Williams  
Phonology, morphology, syntax and lexicography of the French language from its origin to the present.
202. **Old French.** (3) I, II. Mr. Williams  
Grammar of medieval northern dialects; intensive reading and translation of representative texts.
205. **Contemporary French Linguistics.** (3) II. Mr. Pimsleur  
The major areas of current French linguistics: experimental phonetics; phonology, morphology; acoustic phonetics; semantics.
- 206A-206B. **Survey of Medieval Literature.** (2-2) Yr. Mr. Williams  
Prerequisite: French 202 or the equivalent.  
Religious and profane literature of the Old French periods: Saints' lives, epics, romances, *fabliaux*, lyric poetry, drama.
- 208A-208B. **The Renaissance.** (2-2) Yr. Mr. Humiston  
The development of poetry; prose writers and dramatists; the early Baroque.
- 212A-212B. **The Age of Enlightenment.** (2-2) Yr. Mr. Thielemann  
Main currents and figures of eighteenth-century French literature.
220. **Explication de Textes.** (2) I, II. Mr. Bonno
230. **French Literary Criticism.** (2) I, II. Mr. Oxenhandler, Mr. Pucciani  
The history of literary criticism from the Renaissance to the present.
235. **Methods of Literary Research.** (2) I, II. Mr. Crowley
- 250A-250B. **Studies in Medieval French Literature. Seminar.**  
\*A. Medieval Literature to the 14th Century. (3) I. Mr. Williams  
\*B. Medieval Literature of the 14th and 15th Centuries. (3) II. Mr. Barker
- 251A-251B.-251C-251D. **Studies in the Renaissance.**  
\*A. Rabelais. (3) I. Mr. Lapp  
\*B. Montaigne. (3) II. Mr. Lapp  
\*C. Poetry. (3) I. Mr. Humiston  
\*D. Drama. (3) II. Mr. Humiston

\* Not to be given, 1960-1961.

**252A-252B-252C-252D. Studies in Classicism.**

- A. Classic Tragedy. (3) I. Mr. Bonno  
 \*B. Classic Comedy. (3) II. Mr. Hubert  
 \*C. Classic Prose. (3) II. Mr. Bonno  
 \*D. Non-Dramatic Poetry. (3) I. Mr. Lapp

**253A-253B-253C-253D. Studies in the Enlightenment and Neo-Classicism.**

- A. The Philosophes: Voltaire. (3) I. Mr. Crowley  
 B. Eighteenth-Century Prose. (3) II. Mr. Hubert  
 \*C. The Philosophes: Diderot. (3) II. Mr. Thielemann  
 D. The Drama. (3) II. Mr. Crowley

**254A-254B-254C-254D. Studies in the Nineteenth Century.**

- \*A. Romantic Prose. (3) I. Mr. Nouty  
 \*B. Romantic Poetry. (3) II. Mr. Nouty  
 C. Realism and Naturalism. (3) I. Mr. Lapp  
 D. Theater. (3) II. Mr. Nouty

**255A-255B-255C. Studies in Contemporary Literature.**

- A. The Novel. (3) I. Mr. Pucciani  
 B. The Theater. (3) II. Mr. Oxenhandler  
 \*C. Lyric Poetry. (3) I.

**297. Directed Studies. (1-6) I, II.**

The Staff

**299. Research on Theses. (1-6) I, II.**

The Staff

## PROFESSIONAL COURSE IN METHOD

**370. The Teaching of French. (3) I.**

Mr. Miller

Prerequisite: courses 101A-101B and 109A-109B, the latter being permitted concurrently. Required of all candidates for the Certificate of Completion in French; should be completed before practice teaching.

## RELATED COURSES IN ANOTHER DEPARTMENT

**Latin 220. Vulgar Latin. (3) I.**

Mr. Puhvel

**Classics 178. Greek and Roman Mythology. (3) I.**

Mr. Puhvel

**GEOGRAPHY**

(Department Office, 55A Haines Hall)

Henry J. Bruman, Ph.D., *Professor of Geography (Chairman of the Department)*.

\*Robert M. Glendinning, Ph.D., *Professor of Geography*.

†Clifford H. MacFadden, Ph.D., *Professor of Geography*.

Joseph E. Spencer, Ph.D., *Professor of Geography*.

‡Clifford M. Zierer, Ph.D., *Professor of Geography*.

Ruth Emily Baugh, Ph.D., *Professor of Geography, Emeritus*.

George McCutchen McBride, Ph.D., *Professor of Geography, Emeritus*.

Harry P. Bailey, Ph.D., *Associate Professor of Geography*.

John F. Gaines, Ph.D., *Associate Professor of Geography*.

H. Louis Kostanick, Ph.D., *Associate Professor of Geography*.

\* Not to be given, 1960-1961.

† Absent on leave, 1960-1961.

‡ In residence fall semester only, 1960-1961.

§ In residence spring semester only, 1960-1961.

Richard F. Logan, Ph.D., *Associate Professor of Geography.*  
 Howard J. Nelson, Ph.D., *Associate Professor of Geography.*  
 Benjamin E. Thomas, Ph.D., *Associate Professor of Geography.*  
 Charles F. Bennett, Ph.D., *Assistant Professor of Geography.*  
 Ernest A. Boateng, M.A., B.Litt., *Visiting Assistant Professor of Geography.*  
 Richard E. Dahlberg, Ph.D., *Assistant Professor of Geography.*  
 Tom L. McKnight, Ph.D., *Assistant Professor of Geography.*  
 †William D. Pattison, Ph.D., *Assistant Professor of Geography.*  
 †Norman J. W. Thrower, Ph.D., *Assistant Professor of Geography.*  
 Myrta L. McClellan, M.A., *Assistant Professor of Geography, Emeritus.*

*Letters and Science List.*—All undergraduate courses in geography are included in the Letters and Science List of Courses. For regulations governing this list, see page 2.

Two principal objectives may be recognized for those who select geography as a major: (1) *professional* training in the subject and preparation for graduate study, and (2) *semiprofessional* training for the student who wishes to gain a broad understanding of the world and its people. Most courses in the department are designed to meet the needs of both groups of students but some are offered primarily to meet the special requirements of students who plan to make professional use of geography.

*Preparation for the Major.*—Geography 1, 2, 3, and 4 are required of all majors. In addition, Geology 2 or 101 is required of professional majors. Introductory courses in anthropology, botany, economics, geology, history, political science, and the modern foreign languages are recommended for all majors.

*The Major.*—The minimum requirement for all majors is 30 units of upper division work in geography.

*Professional majors* are required to take as Group I: Geography 101, 105, 115, 175; two courses from Group II: Geography 121, 122A, 122B, 123A, 123B, 124A, 124B, 125, 126, 127, 131; two courses from Group III: Geography 141, 142, 155, 161, 165, 171, 173, 181, 199, and two courses from Group IV: Geography 106, 108, 113, 117, 118, 119.

*Semiprofessional majors* are required to take as Group I: Geography 115 and 175; three courses from Group II: Geography 121, 122A, 122B, 123A, 123B, 124A, 124B, 125, 126, 127, 131; three courses from Group III: Geography 141, 142, 155, 161, 165, 171, 173, 181, 199; and two courses from Group IV: Geography 106, 108, 113, 117, 118, and 119.

#### LOWER DIVISION COURSES

##### 1. Introduction to Geography: Physical Elements. (3) I, II.

Mr. Gaines in charge  
 Students who have had course 5A or 100 will receive only half credit for course 1.

A study of the basic physical elements of geography (especially climate, land forms, soils, and natural vegetation), and their integrated patterns of world distribution.

##### 2. Introduction to Geography: Cultural Elements. (3) I, II.

Mr. Spencer in charge  
 Students who have had course 5B or 100 will receive only half credit for course 2.

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.

† Sabbatical leave in residence, fall semester, 1960–1961.

‡ In residence fall semester only, 1960–1961.

§ In residence spring semester only, 1960–1961.

- 3. Introduction to Climate and Weather.** (3) I, II. Mr. Bailey  
Not open for credit to students who have credit for Meteorology 3.

A survey of the earth's atmospheric phenomena, with special reference to the causes and regional distribution of climate and weather.

- 4. Map Reading and Interpretation.** (3) I, II. Mr. Dahlberg  
Lecture, one hour; laboratory, three hours.

Interpretation of maps, charts, and aerial photographs; coverage and quality of world mapping; sources; properties of map projections; interpretation of symbols, terrain characteristics and settlement patterns on foreign and domestic maps.

- 5A. Economic Geography.** (3) I. Mr. Dahlberg in charge

Not open to students who have credit for courses 1 and 2. Students who have credit for course 1 or 100 will receive only 1½ units of credit for course 5A.

A study of those physical and cultural elements of the environment essential to the geographic interpretation of economic activities.

- 5B. Economic Geography.** (3) I, II. Mr. Nelson

Prerequisite: course 1, or 5A, or 100. Students who have credit for course 2 will receive only half credit for course 5B.

The principles of economic geography as developed through studies of representative occupations, commodities, and trade.

#### UPPER DIVISION COURSES

Prerequisite for all upper division courses: upper division standing, except as indicated below.

- 100. Principles of Geography.** (3) I, II. Mr. Pattison

Not open to those who have credit for courses 1 and 2 or 5A-5B; may not be counted on the major in geography.

A brief survey of the fundamental physical and cultural elements of geography and their integration on a world-wide regional basis.

- 101. Fundamentals of Geographic Field Work.** (3) I, II.

Mr. Bennett, Mr. Logan  
Saturdays. Prerequisite: courses 1 and 2 or 5A-5B, and consent of instructor. To be taken by major students normally in the junior year.

Selected field studies in the Los Angeles area. The course affords training in field mapping of rural and urban types and in techniques of area analysis.

- 105. Introductory Cartography.** (3) I. Mr. Dahlberg

Prerequisite: course 4 and one of the following: 1 and 2, or 5A-5B, or 100, or consent of instructor.

Survey of the field of cartography. Includes theory and construction of map projections, compilation procedures, principles of generalization and symbolization, cartographic drafting and lettering techniques, and map reproduction methods.

- 106. Intermediate Cartography.** (3) II. Mr. Dahlberg

Prerequisite: courses 4 and 105, or consent of the instructor.

Examination of principles of map design and their relationship to representation and reproduction methods. Theory and practice of quantitative mapping, graphics, and lettering.

**\*113. General Climatology. (3) I.** Mr. Bailey  
Prerequisite: course 3 or consent of instructor. To be taken by major students normally in the junior year.

A study of the causes of climatic phenomena and of the larger features which characterize the climates of the earth.

**115. Physical Bases of Geography. (3) I, II.** Mr. Glendinning, Mr. Logan  
Prerequisite: course 1 or equivalent, or consent of instructor. One or two field trips may be required. To be taken by major students in the junior year; by others in either the junior or senior year.

A study of the basic physical factors existing in each of the major geographic realms, with special emphasis on the interrelationships of climates, land forms, soils, drainage, and natural vegetation.

**117. Animal Geography. (3) I.** Mr. Bennett  
A study of the physical and cultural factors of animal distribution and an examination of the role of animals in human societies.

**118. Plant Geography. (3) II.** Mr. Gaines  
Prerequisite: course 1 or consent of instructor.  
Character, distribution, and environmental relationships of the principal vegetation regions of the world.

**119. Geography of the Arid Lands. (3) I.** Mr. Thomas in charge  
Prerequisite: courses 1 and 2, 101, 115, 118, 175 and/or consent of 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.

**121. The Geography of Anglo-America. (3) I.** Mr. Zierer  
Prerequisite: courses 1 and 2, or 5A-5B, or 100.  
Delimitation and analysis of the principal economic geographic divisions of the United States, Canada, and Alaska.

**122A. The Geography of Middle America. (3) I.** Mr. Bruman  
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 social geography of Mexico and the countries of Central America and the West Indies.

**122B. The Geography of South America. (3) II.** Mr. Bruman  
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 social geography of the individual South American countries.

**123A. The Geography of Western Europe. (3) I.** Mr. Kostanick  
A study of geographic conditions and their relation to economic, social, and political problems in the Atlantic states of Europe. Emphasis on France, Germany, the British Isles, Scandinavia, and the Benelux Countries.

**123B. The Geography of Eastern Europe and the Soviet Lands. (3) II.** Mr. Kostanick  
A study of geographic conditions and their relation to economic, social, and political problems in eastern and southern Europe, including Soviet Asia.

\* Not to be given, 1960-1961.

- \*124A. The Geography of Southern Asia. (3) I.** Mr. MacFadden  
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.
- 124B. The Geography of Eastern Asia. (3) II.** Mr. Spencer  
A regional survey of the physical and cultural features which characterize the economic, social, and political geography of eastern Asia (China, Korea, and Japan).
- 125. The Geography of Australia and Oceania. (3) II.** Mr. Zierer  
Prerequisite: courses 1 and 2, or 5A-5B, or 100.  
A regional synthesis of the physical and human features which characterize Australia and New Zealand, Hawaii, and the islands of the South Pacific.
- 126. The Geography of Africa. (3) II.** Mr. Thomas  
The regions of Africa in terms of physical features, human settlement, economic production, and political patterns.
- 127. The Geography of the Middle East. (3) I.** Mr. Thomas  
A regional survey of the physical and cultural features which characterize the economic, social, and political geography of Asia Minor, the Near East, and the Middle East during historic and modern times.
- 131. The Geography of California. (3) I, II.** Mr. Logan  
An analysis of geographic conditions in the seven major provinces of California. Utilization of resources, routes of communication, location of settlements, and distribution of population in their geographical and historical aspects.
- 141. Commercial Geography. (3) I.** Mr. Nelson  
Analysis of the geographic distribution of basic raw materials in relation to world trade centers and trade routes.
- 142. Industrial Geography. (3) II.** Mr. McKnight  
Analysis of the distribution of the manufacturing industries.
- 155. Urban Geography. (3) II.** Mr. Nelson  
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.
- 161. The Conservation of Natural Resources. (3) I.** Mr. Zierer  
The general principles of conservation and their application, especially in the United States.
- \*165. Geographical Aspects of Land Planning. (3) I.** Mr. Glendinning  
Prerequisite: courses 1 and 2, or 5A-5B, and consent of the instructor. Normally limited to ten students.  
A study of the role of geographic discipline in land-planning activities.
- \*171. Historical Geography of Anglo-America. (3) II.** Mr. Zierer  
The geography of the major divisions of the United States and Canada at selected times in the past.
- 173. The Historical Geography of the Mediterranean Region. (3) II.**  
Prerequisite: course 1, or 5A, or 100. Mr. Pattison  
A study of the geographic factors operative in the Mediterranean lands from ancient to modern times.

\* Not to be given, 1960-1961.

**175. The Cultural Bases of Geography.** (3) I, II. Mr. Bruman, Mr. Spencer  
Prerequisite: course 2 or consent of instructor.

The geographic factor in the evolution of primitive cultures and of advanced civilizations.

**181. Political Geography.** (3) I, II. Mr. Kostanick

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.

**199. Special Studies.** (1-5) I, II. The Staff

Prerequisites: senior standing and consent of the instructor.

#### GRADUATE COURSES†

**\*205. Advanced Cartography.** (3) II. Mr. Thrower

Prerequisite: course 105 or the equivalent, and consent of the instructor.

Advanced work in cartographic methodology, including terrain representation, symbolization, color, and reproduction. Laboratory work in advanced construction techniques.

**250. The Growth of Geographic Thought. Seminar.** (3) I. Mr. Spencer

Prerequisite: consent of instructor.

Normally the first seminar to be taken by graduate students in geography.

**\*255. Seminar in the Geography of Asia.** (3) II. Mr. MacFadden

Prerequisite: course 124A, or 124B, or the equivalent, and consent of instructor.

**256. Seminar in the Geography of Anglo-America.** (3) I. Mr. Zierer

Prerequisite: course 121 or the equivalent, and consent of instructor.

**257. Seminar in the Geography of Latin America.** (3) I. Mr. Bruman

Prerequisite: course 122A, or 122B, or the equivalent, and consent of instructor.

**258. Seminar in California Geography.** (3) II. Mr. Gaines

Prerequisite: consent of instructor.

**\*259. Seminar in the Geography of Australia and Oceania.** (3) II. Mr. Zierer

Prerequisite: course 125 or the equivalent, and consent of the instructor.

**\*261. Seminar in Climatology.** (3) II. Mr. Bailey

Prerequisite: course 113 or the equivalent, and consent of instructor.

**262. Land Forms and Their Geographic Significance. Seminar.** (3) II. Mr. Glendinning

Prerequisite: course 115 or the equivalent, and consent of instructor.

**\*270. Seminar in Economic Geography.** (3) I. Mr. MacFadden

Prerequisite: course 141 or 142, or the equivalent, and consent of instructor.

**271. Seminar in Political Geography.** (3) II. Mr. Kostanick

Prerequisite: course 181 or the equivalent, and consent of instructor.

\* Not to be given, 1960-1961.

† Requirements for the degree of Master of Arts in geography normally are met via Plan I, although they may be met, at the discretion of the Staff, via Plan II (see below regarding Plan I and Plan II).

Plan I, a strictly professional plan, requires the following courses (or equivalent), as an absolute minimum: 250, 275, and 280; plus a thesis and the passing of examinations in an acceptable foreign language.

Plan II, a semiprofessional plan, requires the following (or equivalent) as an absolute minimum: four courses chosen from the following groups (at least one course from each of four of the six groups): 250; 255, 256, 257, 258, 259, or 278; 261 or 262; 270, 271, or 272; 275; 205, 280, or 290; plus a comprehensive examination (in lieu of a thesis) and the passing of examinations in an acceptable foreign language.

The general requirements (of the Graduate Division) for the M.A. and Ph.D. degrees are stated on pages 66 and 68 of this bulletin.



- 272. Seminar in Cultural Geography.** (3) II.  
Prerequisite: consent of instructor. Mr. Spencer
- 273. Seminar in Selected Regions.** (3) II.  
The topic for 1960-1961 will be *Tropical Africa*. Mr. Boateng
- 275. Advanced Field Problems in Local Geography.** (6) Mr. Logan  
Six weeks, concurrent with the Summer Session.  
Prerequisite: course 101 or the equivalent, and consent of instructor.  
Advanced field study in representative areas of southern California; reconnaissance and detailed field-mapping, systematic and regional analysis of significant physical and cultural features, and the preparation of written research and field reports.
- 280. Geographic Writing—Research Techniques and Reports.** (3) I, II.  
Prerequisite: consent of instructor. Mr. Gaines
- 290. Research in Geography.** (1-6) I, II. The Staff  
Prerequisite: consent of instructor.  
Investigation subsequent to, and growing out of, any of the above seminars.

## GEOLOGY

(Department Office, 3611 Geology Building)

- Daniel I. Axelrod, Ph.D., *Professor of Geology.*  
 † John C. Crowell, Ph.D., *Professor of Geology.*  
 Cordell Durrell, Ph.D., *Professor of Geology.*  
 Willis P. Popenoe, Ph.D., *Professor of Geology.*  
 William C. Putnam, Ph.D., *Professor of Geology.*  
 William W. Rubey, D.Sc., *Professor of Geology and Geophysics.*  
 George Tunell, Ph.D., *Professor of Geology.*  
 Kenneth D. Watson, Ph.D., *Professor of Geology (Chairman of Department).*  
 George W. Wetherill, Ph.D., *Professor of Geophysics and Geology.*  
 U. S. Grant, Ph.D., *Professor of Geology, Emeritus.*  
 William John Miller, Ph.D., Sc.D., *Professor of Geology, Emeritus.*  
 Joseph Murdoch, Ph.D., *Professor of Geology, Emeritus.*  
 Donald Carlisle, Ph.D., *Associate Professor of Geology.*  
 Clemens A. Nelson, Ph.D., *Associate Professor of Geology.*  
 Gerhard Oertel, Dr. rer. nat., *Associate Professor of Geology.*  
 John M. Christie, Ph.D., *Assistant Professor of Geology.*  
 Charles E. Corbató, Ph.D., *Assistant Professor of Geology.*  
 W. Gary Ernst, Ph.D., *Assistant Professor of Geology.*  
 Clarence A. Hall, Jr., Ph.D., *Assistant Professor of Geology.*  
 N. Gary Lane, Ph.D., *Assistant Professor of Geology.*  
 John L. Rosenfeld, Ph.D., *Assistant Professor of Geology.*  
 Ronald L. Shreve, Ph.D., *Assistant Professor of Geology and Geophysics.*  
<sup>2</sup> Edward L. Winterer, Ph.D., *Assistant Professor of Geology.*  
 Alexander Stoyanow, Ph.D., *Research Associate in Geology.*  
<sup>1</sup> Ted L. Bear, A.B., *Lecturer in Petroleum Geology.*  
<sup>1</sup> Helen Tappan Loeblich, Ph.D., *Lecturer in Geology.*



- David T. Griggs, *Professor of Geophysics.*  
 George C. Kennedy, Ph.D., *Professor of Geochemistry.*  
 † Leon Knopoff, Ph.D., *Professor of Geophysics.*  
<sup>2</sup> Gordon J. F. MacDonald, Ph.D., *Professor of Geophysics.*  
<sup>2</sup> Louis B. Slichter, Ph.D., *Professor of Geophysics and Director of the Institute of Geophysics.*

† Absent on leave, 1960-1961.

<sup>1</sup> In residence fall semester only, 1960-1961.

<sup>2</sup> In residence spring semester only, 1960-1961.

*Letters and Science List.*—All undergraduate courses in geology, mineralogy, and paleontology are included in the Letters and Science List of Courses. For regulations governing this list see page 2.

### GEOLOGY

Students may elect the (1) General Geology program or an emphasis in any one of four fields: (2) Physical Geology, (3) Mineralogy and Petrology or Mineral Deposits, (4) Paleontology and Stratigraphy, (5) Theoretical Geology. By petition students may submit alternative programs for approval by a committee of the geology faculty. A student completing only the General Geology program who wishes to continue to an advanced degree will be required to complete in graduate standing courses in his field of emphasis which he did not take as an undergraduate.

*Preparation for the Major.*—Courses 2, 2L, 3; Mineralogy 6A–6B, and Chemistry 1A–1B are required for all students. In addition, the following courses are required for particular programs:

(1) General Geology. Physics 1A or 2A, and 1B or 1C or 1D or 2B; Mathematics D or 1, 3A; Engineering 1A; English 106S; any one of Zoology 1A, Life Science 1A, Mathematics 3B, or Chemistry 5A.

(2) Physical Geology. Physics 1A or 2A, 1B, 1C, 1D; Chemistry 5A; Mathematics D or 1, 3A, 3B, 4A, 4B, or 5A, 5B, 6A, 6B; Engineering 1A; English 106S.

(3) Mineralogy and Petrology or Mineral Deposits. Physics 1A or 2A, 1C; Chemistry 5A; Mathematics D or 1, 3A, 3B, 4A, 4B, or 5A, 5B, 6A, 6B; Engineering 1A; English 106S.

(4) Paleontology and Stratigraphy. Physics 1A or 2A, and 1B or 1C or 1D or 2B; Mathematics D or 1, 3A; Engineering 1A; English 106S; Statistics 1; Zoology 1A, 1B.

(5) Theoretical Geology. Physics 1A, 1B, 1C, 1D; Chemistry 5A; Mathematics 5A, 5B, 6A, 6B.

Students intending to major in geology should confer with a departmental adviser as early as possible. Suggested programs leading to attainment of the A.B. degree in eight semesters plus the summer field course are available in the departmental office. These programs assume that the entering student will have taken trigonometry and three years of one foreign language in high school.

*The Major.*—Courses 102A, 102B, 103, 116, 118A, 118B; Paleontology 110 are required for all students. In addition the following courses are required for particular programs:

(1) General Geology. Courses 107, 119, 158; Paleontology 111, 114, or 137. (Recommended: courses 110 or 111, 117; Mineralogy 108, 109 or 110.)

(2) Physical Geology. Course 119; Mineralogy 108, 109 or 110. (Recommended: courses 107, 117, 158; Physics 105.)

(3) Mineralogy and Petrology or Mineral Deposits. Courses 110, 119; Mineralogy 108, 109; Chemistry 110A; Chemistry 110B or Geophysics 122. (Recommended: Chemistry 110B, 111; Geology 107.)

(4) Paleontology and Stratigraphy. Courses 119, 158; Paleontology 111, and 114 or 136 or 137 or Geology 111; Zoology 112, 159. (Recommended: course 107; Mineralogy 108, 110.)

(5) Theoretical Geology. Mineralogy 108; Mathematics 110C, 122A; Chemistry 110A–110B; Chemistry 111 or Physics 105 (Recommended: Physics 107, 107C; Mineralogy 109; Mathematics 122B.)

At the end of the senior year each student must take a comprehensive final examination.

In addition to the five programs stated above, candidates for the bachelor's degree may submit alternative programs for approval by a committee of the geology faculty.

*Requirements for the M.A. Degree.*—The department follows Plan I (Thesis Plan), as described on page 67. A candidate for the M.A. degree in geology may elect one of four fields of emphasis in geology and must have to his credit, in addition to the general University requirements, the minimum lower and upper division requirements or their equivalents, for the departmental major in the field of emphasis chosen. He must also complete the following course requirements for the M.A. degree in the field chosen.

(1) Physical Geology. Course 107 and 117 or 158; Chemistry 110A, 110B; Physics 105 or Paleontology 111 or 114.

(2) Mineralogy and Petrology or Mineral Deposits. Courses 107, 158, and Mineralogy 101 or 110 or 181; Chemistry 110B, 111. (Recommended: course 117; Geophysics 122.)

(3) Paleontology and Stratigraphy. Course 107; Paleontology 114, 136, 137; Zoology 130A; Mineralogy 108, 110.

(4) Theoretical Geology. Courses 107 or 158, 119; Mineralogy 108, 109 or 110; Physics 105, 107, 107C; Chemistry 111; Mathematics 122B.

In addition to these programs, candidates for the Master of Arts degree may submit alternative programs for approval by a committee of the geology faculty.

*Requirements for the Ph.D. Degree.*—Prospective candidates for the Ph.D. degree in geology must either (1) elect one of the four fields of emphasis in geology and will be held responsible for material in courses required for the master's degree in their respective fields of emphasis; or (2) submit alternative programs for the Ph.D. degree for approval by a committee of the geology faculty.

### GEOPHYSICS

For the interdepartmental curriculum in geophysics, see page 10.

### GEOLOGY

#### LOWER DIVISION COURSES

**2. General Geology—Physical.** (3) I, II. The Staff

Not open to students who have taken Geology 5.

An elementary course in the principles of physical geology.

**2L. Laboratory, General Geology—Physical.** (1) I, II. The Staff

Laboratory, three hours. Prerequisite: Geology 2 must be taken concurrently except by consent of instructor.

Laboratory exercises in topographic and geologic map study, mineral and rock identification.

**3. General Geology—Historical.** (4) II. Mr. Corbató

Lecture, three hours; laboratory, three hours. Prerequisite: course 2 or 5. The geologic history of the earth and its inhabitants.

#### UPPER DIVISION COURSES

**101. Principles of Geology.** (3) I. Mr. Putnam

Prerequisite: junior standing. Not open to students who have taken Geology 2, 3, or 5.

A survey of the principles of physical and historical geology.

- 102A. Geologic Problems. (2) I.** The Staff  
Laboratory, three hours; field, seven days per semester. Prerequisite: courses 2 and 2L or 5, 103 (may be taken concurrently); Engineering 1A (may be taken concurrently).  
Application of descriptive geometry and trigonometry to geologic problems; interpretation of geologic maps and aerial photographs. Preparation of topographic and simple geologic maps; measurement and description of stratigraphic sections.
- 102B. Field Geology. (2) II.** The Staff  
Lecture, one hour; laboratory: field Tuesday or Saturday all day. Prerequisites: Geology 102A; English 106S (should be taken concurrently). Principles and methods of geologic mapping.
- 103. Petrology. (3) I.** Mr. Durrell  
Lecture, two hours; laboratory, four hours. Prerequisite: Mineralogy 6A-6B or 6; Chemistry 1B (may be taken concurrently).  
Origins and characteristics of rocks. Laboratory determination with the hand lens.
- 107. Geology of North America. (2) II.** Mr. Nelson  
Prerequisite: course 3.  
A regional study of North American geology.
- 110. Economic Geology. (3) II.** Mr. Tunell  
Lecture, two hours; laboratory, three hours. Prerequisite: course 103.  
Origin and occurrence of the important metallic and nonmetallic mineral deposits.
- 111. Petroleum Geology. (3) I.** Mr. Bear  
Prerequisite: courses 102A, 116.  
Geology applied to the exploration and production of petroleum, techniques of surface and subsurface geology; petroleum engineering problems of concern to geologists.
- 116. Structural Geology. (3) II.** Mr. Christie  
Lecture, two hours; laboratory, three hours. Prerequisite: courses 102A and 103. A knowledge of descriptive geometry (e.g., Engineering 2) is desirable.  
Fracture, folding, and flow of rocks. Solution of structural problems.
- 117. Geomorphology. (3) I.** Mr. Putnam  
Prerequisite: course 2, or 5, or 101.  
Principles of geomorphology.
- 118A. Intermediate Field Geology. (4)** The Staff  
Eight weeks, commencing with Summer Session. Prerequisite: courses 102B or the equivalent and 116. Course 118B must be taken concurrently.  
Preparation of a geologic field map and structure sections of a selected region.
- 118B. Geologic Report Writing. (2)** The Staff  
Eight weeks commencing with Summer Session. Course 118A must be taken concurrently.  
Preparation of a geologic report concerning the geology of the region mapped in course 118A.
- 119. Advanced Field Geology. (2) I.** The Staff  
Field, one day. Prerequisites: courses 118A-118B or the equivalent.  
Problems in field geology with some choice of emphasis available to the student.

- 150. Advanced Physical Geology. (3) I.** Mr. Shreve  
Prerequisite: courses 102B, Physics 1B or 2A, Mathematics 4A or 6A; or consent of instructor.  
Study of selected geological phenomena with emphasis on physical principles and processes.
- 158. Foundations of Stratigraphy. (2) II.** Mr. Lane  
Prerequisite: course 102B.  
A survey of geologic, paleontologic, biologic, and climatic principles applicable to stratigraphy, and their bearing on paleogeography.
- 199. Special Studies in Geology. (1 to 5) I, II.** The Staff (Mr. Watson in charge)  
Prerequisite: senior standing and consent of the department chairman.

## GRADUATE COURSES

- 236. Physical Geology of California. (3) II.** Mr. Durrell
- 250. Seminar in Dynamical Geology. (3) II.** Mr. Shreve  
Prerequisite: consent of the instructor; calculus required.
- 251. Seminar in Chemical Petrology. (3) II.** Mr. Tunell  
Prerequisite: Mineralogy 109.
- 252. Seminar in Geomorphology. (3) II.** Mr. Putnam  
Prerequisite: course 117 or the equivalent.
- \*254A-254B. Seminar and Laboratory in Igneous Petrology. (2-5; 2-5) Yr.** Mr. Durrell, Mr. Rosenfeld, Mr. Watson  
Prerequisite: Mineralogy 109. Recommended: course 251. Offered in alternate years.
- 255A-255B. Seminar and Laboratory in Metamorphic Petrology. (2-5; 2-5) Yr.** Mr. Durrell, Mr. Rosenfeld, Mr. Watson  
Prerequisite: Mineralogy 109. Offered in alternate years.
- 256. Seminar and Laboratory in Structural Petrology of Deformed Rocks. (3-5) II.** Mr. Christie  
Prerequisite: course 116, Mineralogy 108, or consent of the instructor.  
Offered in alternate years.  
Study of microscopic structures and the orientation of minerals in deformed rocks, using the microscope and universal stage. Laboratory compulsory.
- 257. Seminar and Laboratory in Sedimentary Petrology. (2-5) I.** Mr. Winterer  
Prerequisite: Mineralogy 110 or equivalent.  
Advanced study of problems concerning sedimentary rocks and sedimentation processes.
- 258. Seminar in Stratigraphy. (3) II.** Mr. Winterer  
Prerequisite: course 158.
- 259. Field Investigations in Geology. (2) II.** The Staff  
Prerequisite: graduate standing and consent of the instructor.  
Preparatory seminars on a selected field problem, followed by a field trip to the region during spring recess, with a report required.
- 280. Seminar in Structural Geology. (3) I.** Mr. Crowell, Mr. Oertel  
Prerequisite: course 116 or equivalent.  
Seminar in fundamentals of structural geology with emphasis on sedimentary terranes.

\* Not to be given, 1960-1961.

- 261. Structural Analysis of Deformed Rocks.** (3) II. Mr. Christie  
Prerequisite: course 116 or equivalent. Course 260 strongly recommended.  
Geometrical study and interpretation of structures in terranes with complex or multiple deformations, with special attention to structures on a megascopic scale. Supervised field or laboratory studies optional.
- 262. Seminar in Advanced Problems in Geology.** (3) II.  
Prerequisite: consent of the instructor. Mr. Axelrod, Mr. Rubey  
Study of selected geological problems of broad scope.
- 263A-263B. Seminar in Economic Geology.** (3-3) Yr. Mr. Carlisle  
Occasional field trips during the course. Prerequisite: course 110. The second semester of this course may be taken without the first.
- 299. Research in Geology.** (1 to 6) I, II. The Staff (Mr. Nelson in charge)

## MINERALOGY

## LOWER DIVISION COURSES

- 6A. Introductory Mineralogy.** (3) I. Mr. Tunell  
Lecture, one hour; laboratory, six hours. Prerequisite: elementary chemistry, trigonometry; Geology 2 and 2L (may be taken concurrently).  
Properties, relationships, origin of minerals; form and structure of crystals; determination of common minerals by physical and chemical tests.
- 6B. Intermediate Mineralogy.** (2) II. Mr. Tunell  
Laboratory, six hours. Prerequisite: Mineralogy 6A.  
Continuation of Mineralogy 6A.

## UPPER DIVISION COURSES

- 101. Paragenesis of Minerals.** (2) I. Mr. Ernst  
Prerequisite: course 6A-6B.  
Principles governing heterogeneous equilibria, with selected application to mineral stability relations in igneous, metamorphic, and sedimentary rocks.
- 108. Optical Mineralogy and Petrography.** (4) I. Mr. Rosenfeld  
Lecture, two hours; laboratory, six hours. Prerequisite: course 6A-6B or 6; Geology 103 (may be taken concurrently).  
Optical properties of minerals; determination of minerals and rocks with the petrographic microscope; immersion methods.
- 109. Petrology and Petrography of Igneous and Metamorphic Rocks.** (2) II. Mr. Rosenfeld, Mr. Watson  
Laboratory, six hours. Prerequisite: course 108 (formerly numbered 109A).  
Characteristics and origin of igneous and metamorphic rocks; determination with the petrographic microscope.
- 110. Petrology and Petrography of Sedimentary Rocks.** (2) II. Mr. Winterer  
Laboratory, six hours. Prerequisite: course 108 (formerly numbered 109A).  
Characteristics and origin of sedimentary rocks; physical and mineralogical analysis of sediments; determination of minerals by immersion methods.
- \*181. Mineralography.** (2) II.  
Laboratory, six hours. Prerequisite: course 108 (formerly numbered 109A).  
Determination of opaque minerals in polished sections; recognition of common ore minerals; paragenetic relationships.

\* Not to be given, 1960-1961.

## GRADUATE COURSES

- \*274. **Seminar in Structural Crystallography.** (2-5) I. Mr. Tunell  
Seminar, two hours; laboratory, optional. Prerequisite: consent of the instructor.  
Advanced crystallography and the atomic structure of crystals.
- \*282. **Problems in Goniometry.** (2 to 4) II. \_\_\_\_\_
299. **Research in Mineralogy.** (1 to 6) I, II. Mr. Ernst, Mr. Tunell

## PALEONTOLOGY

## UPPER DIVISION COURSES

101. **Principles of Paleontology.** (3) II. Mr. Hall  
Prerequisite: junior standing or consent of the instructor.  
A survey of the principles governing the evolution and distribution of fossils.
110. **General Paleontology.** (3) II. Mr. Lane  
Lecture, two hours; laboratory, three hours. Prerequisite: Geology 3, 2 and 2L or 5.  
Methods and principles of paleontology for geology majors including evolution, classification, and distribution of organisms. The geologic history of plants, vertebrates, and invertebrates.
111. **Systematic Invertebrate Paleontology.** (3) I. Mr. Popenoe  
Lecture, one hour; laboratory, six hours. Prerequisite: Geology 3.  
The study of invertebrate fossils.
114. **Micropaleontology.** (3) I. Mrs. Loeblich  
Lecture, one hour; laboratory, six hours. Prerequisite: course 111 and Geology 102B.  
Study of the microfossils important in stratigraphic work.
120. **Paleobotany.** (3) II. Mr. Axelrod  
Lecture, two hours; laboratory, three hours. Prerequisite: Geology 3, Botany 2. Offered in alternate years.  
Vegetation of the earth during geologic time.
136. **Paleontology and Stratigraphy of the Paleozoic and Mesozoic.** (3) I. Mr. Popenoe  
Lecture, one hour; laboratory, six hours. Prerequisite: course 111.
137. **Paleontology and Stratigraphy of the Cenozoic.** (3) II. Mr. Hall  
Lecture, one hour; laboratory, six hours. Prerequisite: course 111.

## GRADUATE COURSES

258. **Seminar in Paleontology.** (3) I. Mr. Popenoe  
Prerequisite: course 111.  
Review of current and classic paleontologic works, with emphasis on principles of paleontology.

\* Not to be given, 1960-1961.

**\*290. Research in Biogeography. (1-4) I, II.**

Mr. Axelrod

Prerequisite: graduate standing in biological science; consent of the instructor.

Application of geological and paleontological data to a solution of present-day biogeographical problems.

**299. Research in Paleontology. (1 to 6) I, II.**

The Staff

**GEOPHYSICS****UPPER DIVISION COURSE****122. Geophysical Prospecting. (3) II.**

Mr. Slichter

Prerequisite: consent of the instructor.

The principles of geophysical prospecting for ores, petroleum, and other economic minerals.

**GRADUATE COURSES**

See page 376 for related offerings under Physics.

**249. Experimental Petrology. (3) I.**

Mr. Kennedy

**250. Seminar in Geophysics. (3) I.**

Mr. Slichter

Seismology, geophysical prospecting, electromagnetic prospecting. Selected topics in earth physics. The content will vary from year to year.

**253. Seminar in Geochemistry. (3) I.**

Mr. Kennedy

Consideration of phase equilibria with particular attention to the origin of igneous and metamorphic rocks.

**260. Experimental Geology. (3 to 6) II.**

Mr. Griggs

Seminar, two hours; laboratory optional. Prerequisite: consent of the instructor.

The mechanics of rock deformation. Dimensional analysis and model theory applied to geological problems.

**290. Research in Geophysics. (1-6) I, II.**

The Staff

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 (Mr. Slichter); theoretical and experimental studies relative to seismology and geophysics (Mr. Knop-off); tectonophysics and properties of matter at high pressure (Mr. Griggs); atmospheric electrical phenomena (Mr. Holzer); meteorological problems (Mr. Palmer).

**GERMANIC LANGUAGES**

(Department Office, 310 Royce Hall)

Gustave Otto Arlt, Ph.D., *Professor of German.*Alfred Karl Dolch, Ph.D., *Professor of German.*†Wayland D. Hand, Ph.D., *Professor of German and Folklore.*Victor A. Oswald, Jr., Ph.D., *Professor of German (Chairman of the Department).*Erik Wahlgren, Ph.D., *Professor of Scandinavian Languages.*Frank H. Reinsch, Ph.D., *Professor of German, Emeritus.*Carl William Hagge, Ph.D., *Associate Professor of German.*Robert R. Heitner, Ph.D., *Associate Professor of German.*Vern W. Robinson, Ph.D., *Associate Professor of German.*

\* Not to be given, 1960-1961.

† Absent on leave, 1960-1961.



Eli Sobel, Ph.D., *Associate Professor of German.*  
 William J. Mulloy, Ph.D., *Associate Professor of German, Emeritus.*  
 Franz H. Bäuml, Ph.D., *Assistant Professor of German.*  
 Charles W. Hoffman, Ph.D., *Assistant Professor of German.*  
 Lee B. Jennings, Ph.D., *Assistant Professor of German.*  
 †Terence Harrison Wilbur, Ph.D., *Assistant Professor of German.*  
 Kenneth G. Chapman, Ph.D., *Assistant Professor of Scandinavian Languages.*  
 William F. Roertgen, Ph.D., *Lecturer in German.*  
 Edith A. Schulz, M.A., *Lecturer in German.*  
 Stephanie Lombardi, Ph.D., *Associate in German.*



William Melnitz, Ph.D., *Professor of Theater Arts.*  
 Gerta Hüttl Worth, Ph.D., *Assistant Professor of Germanic and Slavic Languages.*

*Letters and Science List.*—All undergraduate courses in German and Scandinavian languages except German 370 are included in the Letters and Science List of Courses. For regulations governing this list, see page 2.

*Preparation for the Major.*—Required: course 1, 2, 3, (3PS), 4, 6, and 42A–42B, or their equivalents. Recommended: History 1A–1B; English 1A–1B, 46A–46B; Philosophy 20A–20B.

*The Major in German.*—At least 24 units in upper division courses, including 106A, 106B, 107, 118A, 118B, and one course from each of the following groups: (1) 105, 108, 119; (2) 109A, 109B; (3) 104A, 104B, 110, 111; (4) 114A, 114B. Students looking forward to the secondary credential should take also 106C–106D. Students desiring a purely literary or philological major, not looking toward secondary teaching, should consult the departmental adviser regarding permissible substitutions of courses.

#### *Requirements for Admission to Graduate Courses*

A candidate for admission to graduate courses in Germanic languages and literatures must meet, in addition to the general University requirements, the minimum requirements for an undergraduate major in this department. If the candidate is deficient in this prerequisite he must fulfill it by undergraduate courses taken as a graduate student.

#### *Requirements for the Master's Degree*

For the general requirements, see page 66. The Department of Germanic Languages favors the Comprehensive Examination Plan. For specific departmental requirements, see the ANNOUNCEMENT OF THE GRADUATE DIVISION, SOUTHERN SECTION.

#### *Requirements for the Ph.D. Degree*

For the general requirements, see page 68. For specific departmental requirements, see the ANNOUNCEMENT OF THE GRADUATE DIVISION, SOUTHERN SECTION.

### GERMAN

#### 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 be permitted a more advanced program; or such students may be transferred to a more advanced course on recommendation of the instructor.

1. **Elementary German.** (4) I, II. Miss Schulz and Mrs. Lombardi in charge  
 This course corresponds to the first two years of high school German.

† Absent on leave, 1960–1961.

- 1G. Elementary German for Graduate Students.** (No credit) I, II.  
Four hours a week. Miss Schulz in charge
- 2. Elementary German.** (4) I, II. Miss Schulz and Mrs. Lombardi in charge  
Prerequisite: course 1 or two years of high school German.
- †3. Intermediate German.** (4) I, II. Mr. Wilbur in charge  
Prerequisite: course 2 or three years of high school German.  
Readings in literary German.
- †3PS. Intermediate German.** (4) I, II. Mr. Roertgen in charge  
Prerequisite: course 2 or three years of high school German.  
Readings in the physical sciences.
- 4. Intermediate German.** (4) I, II. Mr. Wilbur in charge  
Prerequisite: any one of courses 3, 3PS, or four years of high school German.  
Advanced readings in literary German.
- 6. Review of Grammar.** (2) I, II. Mr. Roertgen in charge  
Prerequisite: course 2 or three years of high school German.  
Required for the major in German.
- 8A-8B. German Conversation.** (1-1) Beginning each semester.  
Mr. Roertgen in charge  
The class meets two hours weekly. Open to students who have completed course 2 or its equivalent. Course 8A is normally prerequisite to 8B.
- 42A-42B. German Civilization.** (2-2) Yr. Mr. Sobel  
Lectures and reports. Conducted in English. No knowledge of German required.  
A general survey of the development of German civilization in its more important cultural manifestations. Required for the major in German.

## UPPER DIVISION COURSES

The prerequisite for all upper division courses except 121A and 121B is course 4 or the equivalent.

- \*102. German Folklore.** (3) II. Mr. Hand  
A survey of the various genres of German folklore. Lectures and reading of selected texts.  
Offered only in alternate years.
- 104A-104B. Readings in the Drama of the Nineteenth Century.** (3-3) Yr.  
Selected readings from nineteenth-century authors. Mr. Robinson
- 105. Lessing's Life and Works.** (3) I. Mr. Heitner  
Lectures and readings of selected texts.

## PROFESSIONAL COURSE IN METHOD

- 106A-106B. Grammar, Composition, and Conversation.** (2-2) Yr.  
106A. Emphasis on composition. Mr. Roertgen  
106B. Emphasis on conversation. Prerequisite: course 8A or 8B.
- 106C-106D. Grammar, Composition, and Conversation.** (2-2) Yr.  
Prerequisite: course 106A-106B. Mr. Roertgen

\* Not to be given, 1960-1961.

† The two courses numbered 3 and 3PS, may be taken for credit. It is recommended that German 3 be taken before the specialized course 3PS.

- \*107. **Phonetics of the German Language.** (2) I. Mr. Wilbur  
Lecture, two hours; laboratory, one hour.  
Study of the articulatory basis of the sounds of German and practice in standard pronunciation.
108. **Schiller's Life and Works.** (3) II. Mr. Heitner  
Lectures and reading of selected texts.
- 109A. **Introduction to Goethe: The Young Goethe.** (3) I. Mr. Hagge  
Intensive study of a selection of Goethe's lyrics to 1786 and of *Göts*, *Werther*, *Urfaust*, and *Egmont*. Lectures on the literary background of the Storm and Stress Movement.
- 109B. **Introduction to Goethe: The Classical Goethe.** (3) II. Mr. Hagge  
Intensive study of a selection of Goethe's lyrics from 1786 to 1832 and of *Iphigenie*, *Tasso*, *Hermann und Dorothea*, and *Novelle*. Lectures on the literary background of the Classical Movement.
110. **The German Lyric.** (3) II. Mr. Oswald  
Prerequisite: 6 units of upper division German or consent of the instructor.  
A survey from 1750 to 1880.
111. **German Narrative Prose.** (3) I. Mr. Jennings  
Prerequisite: 6 units of upper division German or consent of the instructor.  
A survey from 1750 to 1880, with special reference to the *Novelle*.
- 114A. **German Literature from 1875 to the Present.** (3) I. Mr. Oswald  
Prerequisite: 6 units of upper division German or consent of the instructor.  
Prose and poetry.
- 114B. **German Literature from 1875 to the Present.** (3) II. Mr. Hoffmann  
Prerequisite: 6 units of upper division German or consent of the instructor.  
Dramatic literature.
- \*117. **History of the German Language.** (3) II. Mr. Wilbur  
Prerequisite: course 106A-106B, 107, or consent of the instructor.
- 118A. **History of German Literature.** (3) I. Mr. Sobel  
Prerequisite: 6 units of upper division German or consent of the instructor.  
The Middle Ages to 1624.
- 118B. **History of German Literature.** (3) II. Mr. Arlt  
Prerequisite: 6 units of upper division German or consent of the instructor.  
Lectures in German. From 1624 to 1850.
119. **Middle High German.** (3) I. Mr. Bäuml  
Outline of grammar; selections from Middle High German poetry.
- 121A. **German Literature in Translation.** (2) I. Mr. Heitner  
Prerequisite: junior standing. Not accepted as part of the major in German.  
Readings and lectures on Lessing, Schiller, and Goethe.
- 121B. **German Literature in Translation.** (2) II. Mr. Sobel  
Prerequisite: junior standing. Not accepted as part of the major in German.  
Readings and lectures on selected modern authors.
132. **Goethe's *Faust*.** (3) II. Mr. Hagge  
Prerequisite: course 109A and 6 additional units of upper division German, or consent of the instructor.  
Intensive study of the text of Goethe's *Faust*, Parts I and II, together with more general consideration of other treatments of the Faust theme in European literature.

\* Not to be given, 1960-1961.

199. **Special Studies.** (1-5) I, II. The Staff  
Prerequisite: senior standing and consent of the instructor.

## GRADUATE COURSES

201. **Bibliography and Methods of Literary History.** (2) I. Mr. Arlt  
Required for the M.A. and Ph.D. degrees.
- \*208. **The Sixteenth and Seventeenth Centuries.** (3) I. Mr. Sobel
210. **The Age of Goethe.** (3) I. Mr. Hagge
212. **Nineteenth-Century Narrative and Poetry.** (3) II. Mr. Jennings
213. **The Enlightenment and Pre-Romanticism.** (3) II. Mr. Heitner
- \*225. **Nineteenth-Century Drama.** (3) I. Mr. Robinson
- \*226. **Naturalism.** (3) I. Mr. Hoffmann
- \*228. **German Literature after 1890.** (3) II. Mr. Oswald
229. **Expressionism.** (2) II. Mr. Melnitz
- \*230. **Survey of Germanic Philology.** (3) I. Mr. Wilbur
- \*231. **Gothic.** (3) I. Mr. Dolch
232. **Old High German.** (3) I. Mr. Dolch
- \*233. **Old Saxon.** (3) II. Mr. Dolch
239. **Readings in Middle High German Literature.** (3) II. Mr. Bäuml  
Prerequisite: course 119 or the equivalent.  
Required for the M.A. degree.
- \*240. **Folklore of the Germanic Peoples.** (3) I. Mr. Hand  
Prerequisite: course 102, or Folklore 101.
251. **Seminar on the Age of Goethe.** (3) II. Mr. Hagge
- \*253. **Seminar in Nineteenth-Century Literature.** (3) I. Mr. Jennings
- \*254. **Seminar in the Enlightenment and Pre-Romanticism.** (3) I. Mr. Heitner
256. **Seminar in Literature after 1875.** (3) I, II. Mr. Oswald, Mr. Hoffmann
- \*257. **Seminar in Sixteenth- and Seventeenth-Century Literature.** (3) II. Mr. Arlt  
Prerequisite: course 208.
259. **Seminar in Germanic Linguistics.** (1 to 3) II. Mr. Dolch  
Prerequisite: course 230 and one dialect or the equivalent.
- 297A-297B. **Individual Studies for Graduate Students.** (1-6; 1-6) I, II. The Staff
299. **Research on Doctoral Dissertation.** (1-6) I, II. The Staff

## PROFESSIONAL COURSE IN METHOD

370. **The Teaching of German.** (3) I. Mrs. Lombardi  
Prerequisite: graduate standing or consent of instructor. Required of all candidates for the general secondary credential in German.

\* Not to be given, 1960-1961.

## SCANDINAVIAN LANGUAGES

## LOWER DIVISION COURSES

1. **Elementary Swedish.** (4) I. Mr. Wahlgren
2. **Intermediate Swedish.** (4) II. Mr. Wahlgren  
Prerequisite: course 1 or the equivalent.
11. **Elementary Norwegian.** (4) I. Mr. Chapman
12. **Intermediate Norwegian.** (4) II. Mr. Chapman  
Prerequisite: course 11 or the equivalent.
15. **Second-Year Scandinavian.** (4) I. Mr. Wahlgren, Mr. Chapman  
Prerequisite: Swedish 2 or Norwegian 12, or equivalent, or a second semester college course in Danish.  
Readings in Swedish, Norwegian, and Danish.
16. **Second-Year Scandinavian.** (4) II. Mr. Wahlgren, Mr. Chapman  
Prerequisite: course 15, or three semesters of any modern Scandinavian language.  
Advanced readings in Swedish, Norwegian, and Danish.

## UPPER DIVISION COURSES

- 141A. **Scandinavian Literature in English Translation.** (2) I. Mr. Wahlgren  
No prerequisite; open to all upper division students.  
From earliest times to 1500. Selections from the sagas, Eddic and Scaldic verse, and the ballads.
- 141B. **Scandinavian Literature in English Translation.** (2) II. Mr. Wahlgren  
No prerequisite; open to all upper division students.  
From 1500 to the present.
199. **Special Studies in Scandinavian.** (1-5) I, II. Mr. Wahlgren, Mr. Chapman

## GRADUATE COURSES

243. **Old Icelandic.** (3) I. Mr. Wahlgren
244. **Old Norse-Icelandic Prose and Poetry.** (2) II. Mr. Wahlgren
- 297A-297B. **Individual Studies for Graduate Students.** (1-6; 1-6) I, II. The Staff
299. **Research on Doctoral Dissertation.** (1-6) I, II. The Staff

## GREEK

For courses in Greek, see under Department of Classics.

## HEBREW

For courses in Hebrew, see under Department of Near Eastern Languages.

## HISTORY

(Department Office, 264 Haines Hall)

- Eugene N. Anderson, Ph.D., *Professor of History.*  
 Truesdell S. Brown, Ph.D., *Professor of History (Chairman of the Department).*  
 John W. Caughey, Ph.D., *Professor of History.*  
 Brainerd Dyer, Ph.D., *Professor of History.*  
 John S. Galbraith, Ph.D., *Professor of History.*  
 Gustave E. von Grunebaum, Ph.D., *Professor of History.*  
 Yu-Shan Han, Ph.D., *Professor of History.*  
 Clinton N. Howard, Ph.D., *Professor of History.*  
 Jere C. King, Ph.D., *Professor of History.*  
 †George E. Mowry, Ph.D., *Professor of History.*  
 Theodore Saloutos, Ph.D., *Professor of History.*  
 Lynn T. White, Ph.D., *Professor of History.*  
 David K. Bjork, Ph.D., *Professor of History, Emeritus.*  
 Frank J. Klingberg, Ph.D., *Professor of History, Emeritus.*  
 Waldemar Westergaard, Ph.D., *Professor of History, Emeritus.*  
 Robert N. Burr, Ph.D., *Associate Professor of History.*  
 Mark H. Curtis, Ph.D., *Associate Professor of History.*  
 Raymond H. Fisher, Ph.D., *Associate Professor of History.*  
 Marie Hall, Ph.D., *Associate Professor of History.*  
 William R. Hitchcock, Ph.D., *Associate Professor of History.*  
 Harold M. Hyman, Ph.D., *Associate Professor of History.*  
 Andrew Lossky, Ph.D., *Associate Professor of History.*  
 Donald B. Meyer, Ph.D., *Associate Professor of History.*  
 \*Bradford Perkins, Ph.D., *Associate Professor of History.*  
 Charles Page Smith, Ph.D., *Associate Professor of History.*  
 †Eugen J. Weber, M.A., *Associate Professor of History.*  
 Robert A. Wilson, Ph.D., *Associate Professor of History.*  
 Mortimer H. Chambers, Jr., Ph.D., *Assistant Professor of History.*  
 Speros Vryonias, Ph.D., *Assistant Professor of History.*  
 Robert W. Winter, Ph.D., *Assistant Professor of History.*  
 Stanley Wolpert, Ph.D., *Assistant Professor of History.*  
 Lucy M. Gaines, M.A., *Assistant Professor of History, Emeritus.*  
 Keith B. Berwick, Ph.D., *Instructor in History.*  
 Albert Hoxie, M.A., *Lecturer in History.*

*Letters and Science List.*—All undergraduate courses in history are included in the Letters and Science List of Courses. For regulations governing this list, see page 2.

*Preparation for the Major.*—Required: (1) course 1A-1B, to be taken in the freshman year, and (2) course 5A-5B or 6A-6B or 7A-7B or 8A-8B, to be taken in the sophomore year, or equivalent preparation for students transferring from other departments or other institutions. History majors whose lower division program does not include courses 6A-6B or 7A-7B must take 6 units of United States history in upper division (in addition to the (b) requirement).

Recommended: French, German, Latin, Spanish, Italian, or a Scandinavian language. For upper division work in history, a reading knowledge of one of these is usually essential. For language requirements for graduate work, see ANNOUNCEMENT OF THE GRADUATE DIVISION, SOUTHERN SECTION.

† Absent on leave, 1960-1961.

\* In residence spring semester only, 1960-1961.

*The Major*

- (1) A minimum of 24 units of upper division work in history, including
- History 111A-111B or History 121A-121B or 6 units chosen from courses numbered 141 to 149 or 6 units chosen from courses numbered 151 to 159.
  - History 162A-162B or 6 units chosen from courses numbered 171 to 188 or History 191A-191B.
  - Course 197 or 198.
  - Course 199 in a field for which preparation has been made. Course 199 may be taken before or after 197 or 198.
- (2) Six units of approved upper division courses in an allied field. Allied fields include anthropology, art history, economics, geography, philosophy, political science, sociology, and a national literature of the field of the student's emphasis, e.g., English literature in combination with an English history emphasis. Approval of the courses selected must be obtained from a Department of History adviser in writing.

*Honors in History.*—Inquiries regarding honors may be directed to the chairman of the department.

*Graduate Work in History.*—See the ANNOUNCEMENT OF THE GRADUATE DIVISION, SOUTHERN SECTION, and the ANNOUNCEMENT OF THE SCHOOL OF EDUCATION, LOS ANGELES.

## LOWER DIVISION COURSES

## 1A-1B. Introduction to Western Civilization. (3-3) Yr.

Mr. Hitchcock, Mr. Weber

Lecture, two hours; discussion section, two hours.

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.

## 5A-5B. History of England and Greater Britain. (3-3) Yr. Mr. Howard

Lecture, two hours; quiz section, one hour.

The political, economic, and cultural development of the British Isles and the Empire from the earliest times to the present.

## †6A-6B. History of American Civilization. (4-4) Yr. Mr. Meyer, Mr. Smith

Lecture, three hours; quiz, one hour.

A survey of American civilization and culture with emphasis upon the central ideas found embedded in the fine arts, science, philosophy, religion, and law. Guest lecturers from outside the department will be scheduled.

## †7A-7B. Political and Social History of the United States. (3-3) Yr.

Beginning either semester. Mr. Dyer, Mr. Mowry, Mr. Saloutos, Mr. Perkins

Lecture, two hours; quiz section, one hour.

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.

## 8A-8B. History of the Americas. (3-3) Yr.

Mr. Burr

Lecture, two hours; quiz section, one hour.

A study of the development of the Western Hemisphere from the discovery to the present. Attention in the first semester to exploration and settlement,

† Credit will not be given for both 6A and 7A or for both 6B and 7B.

colonial growth, imperial rivalries, and the achievement of independence. In the second semester, emphasis upon the evolution of the American nations and people in the nineteenth and twentieth centuries.

#### UPPER DIVISION COURSES

The prerequisite for course 101 is upper division standing. The prerequisite for all other upper division courses is upper division standing and course 1A-1B, or 5A-5B, or 6A-6B, or 7A-7B, or 8A-8B, or other preparation satisfactory to the instructor.

#### 101. Main Currents in American History. (2) I, II.

Mr. Meyer, Mr. Winter, Mr. Berwick

A one-semester survey of United States history, with emphasis upon the growth and development of a distinctive American culture. Not open to students who have credit for course 7A, 7B, or 6A, 6B, or 8B. Not to be counted toward the major.

#### 111A-111B. History of the Ancient Mediterranean World. (3-3) Yr.

Mr. Brown, Mr. Chambers

A survey of the history of the ancient Mediterranean world from earliest times to the reign of Constantine. The work of the first semester ends with the death of Alexander.

#### 112A-112B. History of Ancient Greece. (3-3) Yr.

Mr. Brown

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.

#### 113A-113B. History of Rome. (3-3) Yr.

Mr. Chambers

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.

#### 117A-117B. History of Ancient Egypt. (3-3) Yr.

Miss Lichtheim

117A. From early dynastic times to the end of the New Kingdom (ca. 3000 B.C. to 1000 B.C.). The rise of Pharaonic Egypt from tribal beginnings to leading power in the ancient Near East; its peaks of achievement in the Old, Middle, and New Kingdoms.

117B. From the end of the New Kingdom to the Arab conquest (1000 B.C. to 640 A.D.). Break-up of the homogeneous Pharaonic civilization; foreign invasions and occupations (Ethiopian, Assyrian, and Persian); Alexander the Great and the Hellenization of Egypt; the Graeco-Roman period bilingual culture; the rise of the Coptic church; Egypt under Byzantine rule.

#### 121A. The Early Middle Ages. (3) I.

Mr. White

A survey of religious, intellectual, artistic, social, and economic changes in Europe from the decay of the Roman Empire until about 1050.

#### 121B. The Later Middle Ages. (3) II.

Mr. White

A continuation of 121A, from 1050 to about 1450, with the added consideration of the new scientific movements.

<sup>1</sup> Not to be given fall semester, 1960.



**123A-123B. Byzantine History. (3-3) Yr.**

Mr. Vryonis

This course stresses the political, socioeconomic, 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.

**124. The History of Technology to 1650. (3).**

Mr. White

A general survey of the history of technology with some consideration of its changing social, economic, and cultural relationships.

**125A-125B. History of Science. (3-3) Yr.**

Mrs. Hall

Scientists and scientific thought in relationship to societies from Aristotle to the present.

**126. History of Cosmological Thought. (3) I.**

Mrs. Hall

Discussion, based on a reading of the sources, of selected scientific cosmological ideas from Aristotle to the present.

**127. Science and Thought in the Nineteenth Century. (3) II.**

Mrs. Hall

The impact, influence, and conflict of scientific discoveries upon the ideas of the nineteenth century.

**128. English Science in the Seventeenth Century: Newton and Some of His Contemporaries. (3) II.**

Mr. Hall

The course will trace the great development of English science in the age of Newton from its origins in the Elizabethan period. Main emphasis on organization, ideas and methods of science as revealed by study of original sources of age of Newton.

**130. History of South Africa. (3) II.**

Mr. Galbraith

Changing patterns of South African society from the arrival of the Dutch to the present.

**134A-134B. Near and Middle East from 600 A.D. (3-3) Yr.**

Mr. von Grunebaum

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.

**135. Introduction to Islamic Culture. (2) I.**

Mr. von Grunebaum

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.

**136. Islamic Institutions and Political Ideas. (2) II.**

Mr. von Grunebaum

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.

**137. Near East in the Nineteenth and Twentieth Centuries. (3) I.**

Mr. von Grunebaum

The decay of the Islamic empires and the expansion of Europe, the Eastern Question, westernization and the rise of national states in the Near East.

**138A-138B. Jewish History. (3-3) Yr.**

Mr. Greenfield

Jewish history from Biblical times to our period.

- 139. History of the Turks to 1687.** (3) I, II. Mr. Vryonis  
A survey of the society and government of the Turks from earliest times down to 1687.
- 140A-140B. History of Modern Europe, 1500-1914.** (3-3) Yr. Mr. Anderson  
A general survey of European history. 1500-1914.
- 141A-141B. Europe in Transition, 1450-1610.** (3-3) Yr. Mr. Hitchcock  
141A. The Renaissance.  
141B. The Reformation.
- 141C. Europe in the Seventeenth Century, 1610-1715.** (3) I. Mr. Lossky  
European culture, institutions, and politics in the seventeenth century.
- 141D. Europe in the Eighteenth Century.** (3) II. Mr. Lossky  
European culture, institutions, and politics from the death of Louis XIV to 1789.
- \*141E. Europe, 1789-1815: The French Revolution and the Napoleonic Empire.** (3) I. Mr. Weber  
The First Republic and the First Empire: their origins, rise, decline, and fall; their effects in France and Europe.
- 141F. Europe, 1815-1870.** (3) I. Mr. King  
The history of Europe from the decline of Napoleon to the end of the Franco-Prussian War; a survey covering international relations and internal conditions of the major European countries, with special stress on the rise of nationalism and liberalism.
- 141G. Europe, 1870-1914.** (3) II. Mr. King  
The history of Europe from end of the Franco-Prussian war to eve of First World War. A survey covering internal conditions of major European countries, nationalism, neo-imperialism, the rise of socialism, spread of industrial revolution, and diplomatic background of First World War.
- 141H. Europe Since 1914.** (3) II. Mr. King  
Political, economic, and military developments since the outbreak of the First World War.
- \*142A-142B. European Diplomacy and Imperialism.** (3-3) Yr. Mr. Hitchcock  
A study of European international rivalries primarily in the nineteenth and twentieth centuries.
- 142C. Social History of Europe in the Nineteenth Century.** (3) I. Mr. Anderson  
Impact of the rise of industrialism upon the social structure and ideals of Europe; the conflict between the new social forces and those of the Old Regime; emphasis upon the nineteenth century.
- 142D. Social History of Europe in the Twentieth Century.** (3) II. Mr. Anderson  
Impact of war, revolution and the continued expansion of industrialism and of knowledge upon the structure, relations and ideals of the social groups.
- \*142E-142F. Cultural and Intellectual History of Europe in Nineteenth and Twentieth Centuries.** (3-3) Yr. Mr. Weber  
Climates of taste and climates of opinion. The art, thought, and manners of the time in an historical context.

\* Not to be given, 1960-1961.

**143A. France from 1500 to 1789. (3) I.** Mr. Lossky  
 The *ancien régime* in France from the end of the fifteenth century to its dissolution in the eighteenth century: its institutions, society, and culture.

**143D. France Since the Founding of the Third Republic. (3) I.** Mr. King  
 (Former number, 149C.)

An intensive study of modern France, emphasizing the nation's search for political and economic stability and for military security in the twentieth century. Recommended preparation: course 1A-1B.

**144A. Germany, 1496 to 1806. (3) I.** Mr. Hitchcock, Mr. Anderson

The Holy Roman Empire from the Renaissance to the French revolutionary era. Rise of the German territorial states, especially Prussia. Institutional and cultural developments. Background and origins of modern German nationalism.

**144B. Germany Since 1806. (3) II.** Mr. Anderson

A political, economic, social and cultural analysis of the period of national unification, the Bismarckian Reich, the reign of William II, and the wars and revolutions of the twentieth century.

**145. The Netherlands in European Affairs, 1555-1830. (3) II.** Mr. Lossky

Emphasis will be on the republican institutions of the Dutch and on the leading role of the Dutch in international affairs, maritime ventures, and the cultural and economic life of Europe, especially in the seventeenth century.

**146A-146B. History of Russia. (3-3) Yr.** Mr. Fisher

146A. History of Russia to 1801. Political, economic, and social developments and the foreign relations of Russia in the Kievan, Muscovite, and imperial periods.

146B. History of Russia, 1801-1917. The agrarian problem, the great reforms, the radical movement, the revolution of 1905; Russia in international politics, especially the Near Eastern question.

**146C. The Soviet Union. (3) II.** Mr. Fisher

Internal developments and foreign affairs of the Soviet Union from the revolutions of 1917 to the present.

**\*148. History of Spain and Portugal. (3) I.** \_\_\_\_\_

(Former number, 161.)

Emphasizes the history of Spain since Ferdinand and Isabel; discusses ancient and medieval days, and Portugal, to the degree necessary for comprehension of the history of the Peninsula since the fifteenth century.

**150. Modern British Biography. (3) II.** Mr. Howard

A study of the lives of leaders of Britain, the development of biographical technique and the place of biography in the writing of history.

**151A-151B. History of the British People in Modern Times. (3-3) Yr.** Mr. Howard

A study of the main currents in the thought, culture, and social progress of the British people from Henry VIII to the death of Victoria.

**152. Constitutional History of England. (3) II.** Mr. Howard

Prerequisite: course 5A-5B or consent of the instructor.

A study of the institutions, social and political forces, and ideas which contributed to the development of the British constitution, especially during the formative period before the Glorious Revolution.

\* Not to be given, 1960-1961.

- 153. Renaissance England. (3) I.** Mr. Curtis  
A study of the intellectual forces and the social, economic, and political conditions in England in the age of the Renaissance. The Reformation, the Elizabethan era, and the Puritan revolution will receive attention.
- 154. Great Britain in the Seventeenth Century. (3) II.** Mr. Howard, Mr. Curtis  
A study of the intellectual forces and the social, economic, and political conditions in England during the seventeenth century.
- 155. Great Britain in the Eighteenth Century (1688-1783). (3) I.** Mr. Howard  
The structure of the British government, society, and economic life under the Hanoverians.
- 156. Great Britain in the Nineteenth Century. (3) I.** \_\_\_\_\_  
British culture, institutions, and politics in the Great Century from the French Revolution to the death of Victoria.
- 157. Great Britain in the Twentieth Century. (3) II.** \_\_\_\_\_  
The changing British scene in war and peace from the accession of Edward VII to the present.
- 158A-158B. The British Empire Since 1783. (3-3) Yr.** Mr. Galbraith  
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. The work of the first semester covers to 1900.
- 159. History of Canada. (3) I.** Mr. Galbraith  
A survey of the growth of Canada into a modern state from its beginnings under the French and British colonial empires.
- 160. History of the Caribbean. (3) I.** \_\_\_\_\_
- 162A-162B. Hispanic America from the Discovery to the Present. (3-3) Yr.** Mr. Burr
- 166. History of Mexico. (3) I.** Mr. Burr  
The development of the viceroyalty of New Spain and the Mexican nation, with emphasis upon the problems of the period since Díaz.
- 169. History of Inter-American Relations. (3) I.** Mr. Burr  
Emphasizes the historical development of a distinctive system of international relations among the nations of the Western Hemisphere, from 1808 to the present.
- 171A. The United States: Colonial Period. (3) I.** Mr. Smith  
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.
- 171B. The United States: The New Nation. (3) II.** Mr. Smith, Mr. Berwick  
Political and social history of the American nation from 1750 to 1801, with emphasis upon the rise of the New West; revolution, confederation, and union; the fathers of the Constitution.
- 172. The United States: Jeffersonianism and Jacksonianism. (3) II.** Mr. Perkins, Mr. Berwick  
Political and social history of the United States from 1801 to 1850, with emphasis on the Jeffersonian and Jacksonian movements, western settlement and territorial expansion, economic developments, and the roots of inter-sectional conflict.

**143A. France from 1500 to 1789. (3) I.** Mr. Lossky  
The *ancien régime* in France from the end of the fifteenth century to its dissolution in the eighteenth century: its institutions, society, and culture.

**143D. France Since the Founding of the Third Republic. (3) I.** Mr. King  
(Former number, 149C.)

An intensive study of modern France, emphasizing the nation's search for political and economic stability and for military security in the twentieth century. Recommended preparation: course 1A-1B.

**144A. Germany, 1496 to 1806. (3) I.** Mr. Hitchcock, Mr. Anderson  
The Holy Roman Empire from the Renaissance to the French revolutionary era. Rise of the German territorial states, especially Prussia. Institutional and cultural developments. Background and origins of modern German nationalism.

**144B. Germany Since 1806. (3) II.** Mr. Anderson  
A political, economic, social and cultural analysis of the period of national unification, the Bismarckian Reich, the reign of William II, and the wars and revolutions of the twentieth century.

**145. The Netherlands in European Affairs, 1555-1830. (3) II.** Mr. Lossky  
Emphasis will be on the republican institutions of the Dutch and on the leading role of the Dutch in international affairs, maritime ventures, and the cultural and economic life of Europe, especially in the seventeenth century.

**146A-146B. History of Russia. (3-3) Yr.** Mr. Fisher

**146A. History of Russia to 1801.** Political, economic, and social developments and the foreign relations of Russia in the Kievan, Muscovite, and imperial periods.

**146B. History of Russia, 1801-1917.** The agrarian problem, the great reforms, the radical movement, the revolution of 1905; Russia in international politics, especially the Near Eastern question.

**146C. The Soviet Union. (3) II.** Mr. Fisher  
Internal developments and foreign affairs of the Soviet Union from the revolutions of 1917 to the present.

**\*148. History of Spain and Portugal. (3) I.** \_\_\_\_\_  
(Former number, 161.)

Emphasizes the history of Spain since Ferdinand and Isabel; discusses ancient and medieval days, and Portugal, to the degree necessary for comprehension of the history of the Peninsula since the fifteenth century.

**150. Modern British Biography. (3) II.** Mr. Howard  
A study of the lives of leaders of Britain, the development of biographical technique and the place of biography in the writing of history.

**151A-151B. History of the British People in Modern Times. (3-3) Yr.** Mr. Howard  
A study of the main currents in the thought, culture, and social progress of the British people from Henry VIII to the death of Victoria.

**152. Constitutional History of England. (3) II.** Mr. Howard  
Prerequisite: course 5A-5B or consent of the instructor.  
A study of the institutions, social and political forces, and ideas which contributed to the development of the British constitution, especially during the formative period before the Glorious Revolution.

\* Not to be given, 1960-1961.

- 153. Renaissance England. (3) I.** Mr. Curtis  
A study of the intellectual forces and the social, economic, and political conditions in England in the age of the Renaissance. The Reformation, the Elizabethan era, and the Puritan revolution will receive attention.
- 154. Great Britain in the Seventeenth Century. (3) II.** Mr. Howard, Mr. Curtis  
A study of the intellectual forces and the social, economic, and political conditions in England during the seventeenth century.
- 155. Great Britain in the Eighteenth Century (1688-1783). (3) I.** Mr. Howard  
The structure of the British government, society, and economic life under the Hanoverians.
- 156. Great Britain in the Nineteenth Century. (3) I.** \_\_\_\_\_  
British culture, institutions, and politics in the Great Century from the French Revolution to the death of Victoria.
- 157. Great Britain in the Twentieth Century. (3) II.** \_\_\_\_\_  
The changing British scene in war and peace from the accession of Edward VII to the present.
- 158A-158B. The British Empire Since 1783. (3-3) Yr.** Mr. Galbraith  
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. The work of the first semester covers to 1900.
- 159. History of Canada. (3) I.** Mr. Galbraith  
A survey of the growth of Canada into a modern state from its beginnings under the French and British colonial empires.
- 160. History of the Caribbean. (3) I.** \_\_\_\_\_
- 162A-162B. Hispanic America from the Discovery to the Present. (3-3) Yr.** Mr. Burr
- 166. History of Mexico. (3) I.** Mr. Burr  
The development of the viceroyalty of New Spain and the Mexican nation, with emphasis upon the problems of the period since Díaz.
- 169. History of Inter-American Relations. (3) I.** Mr. Burr  
Emphasizes the historical development of a distinctive system of international relations among the nations of the Western Hemisphere, from 1808 to the present.
- 171A. The United States: Colonial Period. (3) I.** Mr. Smith  
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.
- 171B. The United States: The New Nation. (3) II.** Mr. Smith, Mr. Berwick  
Political and social history of the American nation from 1750 to 1801, with emphasis upon the rise of the New West; revolution, confederation, and union; the fathers of the Constitution.
- 172. The United States: Jeffersonianism and Jacksonianism. (3) II.** Mr. Perkins, Mr. Berwick  
Political and social history of the United States from 1801 to 1850, with emphasis on the Jeffersonian and Jacksonian movements, western settlement and territorial expansion, economic developments, and the roots of inter-sectional conflict.

**173A. The United States: Civil War and Reconstruction. (3) I. Mr. Dyer**

The topics studied will include: the rise of sectionalism, the anti-slavery crusade; the formation of the Confederate States; the war years; political and social reconstruction.

**173H. The United States, 1875-1900. (3) II. Mr. Hyman**

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. (3-3) Yr. Mr. Mowry**

The political, economic, intellectual, and cultural aspects of American democracy in the twentieth century.

**175. History of American Capitalism Since the Civil War. (3) I. Mr. Saloutos**

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.

**176. American Reform Movements and Reformers. (3) II. Mr. Saloutos**

A study of educational, monetary, labor, and agrarian reforms advocated in the nineteenth and twentieth centuries.

**177. Intellectual History of the United States. (3) I. Mr. Meyer**

The principal systems of ideas about man and God, nature and society, which have been at work in American history. Emphasis on the sources of these ideas, their connections with one another, and their expression in great documents of American thought.

**178A-178B. American Diplomatic History. (3-3) Yr. Mr. Perkins**

\*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 twentieth-century world.

**179. Constitutional History of the United States. (3) I and II. Mr. Dyer**

Prerequisite: 6 units of United States history or government, or consent of the instructor.

A study of the Federal Constitution from the historical point of view, with emphasis upon the constitutional convention and the constitutional controversies of the nineteenth century.

**180. Social History of the United States Since 1800 (3) II. Mr. Meyer**

An historical study of the character and values of the American people as affected by regions, classes, and economic change; with particular attention to the cultural roles of women, businessmen, Negroes, and ethnic groups.

**181. The American West. (3) I. Mr. Caughey**

Recommended preparation: course 8A-8B.

A study of the West as frontier and as region, in transit from the Atlantic seaboard to the Pacific, and from the seventeenth century to the present.

**188. History of California. (3) II. Mr. Caughey**

Recommended preparation: course 8A-8B or 39.

The economic, social, intellectual, and political development of California from the earliest times to the present.

\* Not to be given fall semester, 1960.

- 191A. History of the Far East. (3) I.** Mr. Han, Mr. Wilson, Mr. Wolpert  
China and Japan from the earliest times to the beginning of Westernization.
- 191B. History of the Far East. (3) II.** Mr. Han, Mr. Wilson  
Transformation of the Far East in modern times under the impact of Western civilization.
- 192A-192B. The Twentieth-Century Far East. (2-2) Yr.** Mr. Han  
A study of the social, economic, and political development of the Far Eastern countries since 1898, with special attention to the changes in ideas and institutions after a century of Western impact.
- 193. Diplomatic History of the Far East. (3) II.** Mr. Wilson  
The role of 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.
- 194A-194B. History of Modern China. (3-3) Yr.** Mr. Han  
Final consolidation of the Tungus peoples in Manchuria and their rule over China; social, economic, political, and literary achievements; movements for modernization toward the end of the nineteenth century; the founding of the Republic.
- 195A-195B. History of Modern Japan. (2-2) Yr.** Mr. Wilson  
The political, economic, and cultural development of Japan since the establishment of the Tokugawa Shogunate in 1603.
- 196A. Early History of India. (3) I.** Mr. Wolpert  
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.
- 196B. Recent History of India and Pakistan. (3) II.** Mr. Wolpert  
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.
- 197. Aids to Historical Research. (3) I.** Mr. White  
Study of the auxiliary sciences. A senior course.
- 198. History and Historians. (3) I, II.** The Staff  
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. A senior course.
- 199. Special Studies in History. (3) I, II.** The Staff  
An introduction to historical method, followed by individual investigation of selected topics.  
Required of all history majors. To be taken in the senior year in a field for which specific preparation has been made in the junior year. Assignment to sections is made only by the departmental coordinator for registration in this course. Sections 1, 2, 9, 10, and 12 are rarely given more than once each year.
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|--|-------------------------|
| Section 1. Ancient History.              | Mr. Brown, Mr. Chambers |
| Section 2. Medieval History.             | Mr. White               |
| Section 3. European History.             | Mr. Hitchcock           |
| Section 4. European History.             | Mr. King                |
| Section 5. English History.              | Mr. Howard, Mr. Curtis  |
| Section 6. American Colonial History.    | Mr. Berwick, Mr. Smith  |
| Section 7. United States History.        | Mr. Perkins             |
| Section 8. Recent United States History. | Mr. Meyer               |



Section 9. Hispanic-American History.

Section 10. Pacific Coast History.

Section 11. The British Empire.

Section 12. The Far East.

Mr. Burr

Mr. Caughey

Mr. Galbraith, Mr. Wolpert

Mr. Han, Mr. Wilson

#### GRADUATE COURSES

202. **Advanced Historiography.** (3) I, II.

The Staff

A. Ancient and Medieval.

B. Modern European.

C. British.

D. American.

E. Latin American.

F. The Near East.

215A-215B. **Westernization in the Arabic Speaking World.** (2-2) Yr.

Prerequisite: History 134A-134B or equivalent. Mr. von Grunebaum

Impact of the West on the Arabic speaking world including North Africa since 1800 A.D. and the reactions of the various sections of the Arab world, especially in their religious, social, and cultural aspects.

251A-251B. **Seminar in Ancient History.** (3-3) Yr.

Mr. Brown

254A-254B. **Seminar in Medieval History.** (3-3) Yr.

Mr. White

255A-255B. **Seminar in the History of Science.** (3-3) Yr.

Mrs. Hall

Studies in the history of science.

256A-256B. **Seminar in Early Modern European History.** (3-3) Yr.

Mr. Lossky

Studies in European political and cultural history of the seventeenth and eighteenth centuries.

257A-257B. **Seminar in Late Modern European History.** (3-3) Yr.

Mr. King

Studies in continental European history since the earlier nineteenth century.

258A-258B. **Seminar in Modern European History.** (3-3) Yr.

Mr. Anderson

Studies in European political and cultural history of the nineteenth and twentieth centuries.

259A-259B. **Seminar in Slavic History.** (3-3) Yr.

Mr. Fisher

Prerequisite: the student should have a reading knowledge of at least one European language.

Studies in the history of Russia and other Slavic countries.

260A-260B. **Seminar in English History.** (3-3) Yr.

Mr. Howard

Studies in the later Stuart and early eighteenth century periods.

261A-261B. **Seminar in British Empire History.** (3-3) Yr.

Mr. Galbraith

Studies in nineteenth- and twentieth-century imperial history.

262A-262B. **Seminar in English History.** (3-3) Yr.

Mr. Curtis

Studies in Tudor and early Stuart England.

265A-265B. **Seminar in Hispanic-American History.** (3-3) Yr.

Mr. Burr

Studies in the colonial and early national periods.

268A-268B. **Seminar in Near Eastern History.** (3-3) Yr. Mr. von Grunebaum

Studies in the history of the Near East.

- 269A-269B. Seminar in United States History. (3-3) Yr. Mr. Smith  
Studies in the colonial period.
- 270A-270B. Seminar in United States History. (3-3) Yr. Mr. Mowry  
Studies in the recent United States and the recent American West.
- 271A-271B. Seminar in United States History. (3-3) Yr. Mr. Saloutos  
Studies in recent United States history.
- 272A-272B. Seminar in United States History. (3-3) Yr. Mr. Dyer  
Studies in political and social problems of the middle nineteenth century.
- 274A-274B. Seminar in American History. (3-3) Yr. Mr. Caughey  
Studies of the American West.
- 279A-279B. Seminar in Far Eastern History. (3-3) Yr. Mr. Han
290. Research in History. (1 to 6) I, II. The Staff  
Open only to students who have passed the qualifying examination for the doctor's degree.
298. Directed Studies. (1-3) I, II. The Staff

## HOME ECONOMICS

(Department Office, 1209 Home Economics Building)

- Gladys A. Emerson, Ph.D., *Professor of Home Economics and Nutrition (Chairman of the Department)*.
- Dorothy Leahy, Ed.D., *Professor of Home Economics.*
- Helen B. Thompson, Ph.D., *Professor of Home Economics, Emeritus.*
- Roslyn B. Alfin-Slater, Ph.D., *Associate Professor of Nutrition.*
- Frances Obst, Ed.D., *Associate Professor of Home Economics.*
- Greta Gray, Ph.D., *Associate Professor of Home Economics, Emeritus.*
- Marguerite G. Mallon, Ph.D., *Associate Professor of Home Economics, Emeritus.*
- Edward L. Rada, Ph.D., *Associate Professor of Family and Consumer Economics.*
- Marian Swendseid, Ph.D., *Associate Professor of Nutrition and Physiological Chemistry.*
- Ada Marie Campbell, Ph.D., *Assistant Professor of Home Economics.*
- Olive Hall, Ph.D., *Assistant Professor of Home Economics.*
- Clarice H. Lindsey, M.S., *Assistant Professor of Home Economics.*
- Cora Miller, Ph.D., *Assistant Professor of Foods.*
- Margaret Chang, B.S., *Associate in Home Economics.*
- Edith M. Carlisle, Ph.D., *Acting Assistant Professor of Home Economics.*
- Stefania Przeworska Holt, *Lecturer in Home Economics.*
- Florence C. McGucken, M.S., *Lecturer in Home Economics.*
- , *Assistant Professor of Home Economics.*
- Theodora Corey, M.A., *Associate in Home Economics.*
- Donovan Hester, M.S., *Associate in Home Economics.*
- Myrtle Loehr, M.S., *Associate in Home Economics.*
- Kay Mercer, B.S., *Associate in Home Economics.*
- Florence A. Paull, M.S., *Associate in Home Economics.*
- Eleanora Petersen, M.S., *Associate in Home Economics.*
- Mary Rogers, M.S., *Associate in Home Economics.*

Students who select a major in the Department of Home Economics must satisfy the general requirements of the College of Letters and Science for the bachelor's degree, *except as noted below*. Students registering according

to the following schedule and continuing to the bachelor's degree may obtain the degree by satisfying the requirements of the College of Applied Arts:

*Continuing students* registering in the fall semester, 1960 with 15 or more units in the College of Applied Arts.

*New students* registering during the academic year 1960-1961 with 30 or more acceptable units of advanced standing; 1961-1962, 55 or more units; 1962-1963, 85 or more units.

*Reëntering students*, formerly in the College of Applied Arts, registering during the academic year 1960-1961 with 30 or more units; 1961-1962, 55 or more units; 1962-1963, 85 or more units.

*Letters and Science List.*—Courses 113, 114, 134, 138, 143, 144, 154, and 170 are included in the Letters and Science List of Courses. For regulations governing this list, see page 2.

All students intending to major in home economics must submit the results of diagnostic tests given by the University. Students may contact the office of the Dean of Students or Department of Home Economics for schedule as to when the tests will be given.

The Department of Home Economics offers the following specializations:

**1. General Home Economics.** This major is for students who wish home economics as a background for everyday living and homemaking, nursery school work, and business. (Students desiring to work toward the general elementary teaching credential may select this major.)

*Preparation for the Major.*—Courses 9, 11, 12, 14, 15, 16; Art 6A; Chemistry 2A; Psychology 1A-1B.

*The Major.*—Courses 102, 134, 135, 138, 143, 144, 145, 146, 154, 155 or 157, 161, 172; Psychology 112; and additional upper division home economics courses to total 36 units.

**2. Home Economics Teacher Education.**

*Preparation for the Major.*—Courses 9, 11, 12, 14, 15, 16; Art 6A; either Chemistry 2A and 10 or 1A-1B and 8; English 1A-1B, or Speech 1, 2, or English 1A and Speech 1; Psychology 1A-1B; Zoology 15.

*The Major.*—Courses 102, 113 (4 units), 134, 135, 138, 144, 145, 146, 155 or 157, 172, 181, 370; Psychology 112; and additional upper division home economics courses to total 36 units.

**3. Food and Nutrition.** This major is for students preparing for dietetic internships, institutional management, and promotional work in foods.

*Preparation for the Major.*—Courses 9, 11, 12, 14, 15, 16; Bacteriology 1; Business Administration 1A; either Chemistry 2A and 10 or 1A-1B and 8; Economics 1A-1B; English 1A-1B or Speech 1, 2; Psychology 1A-1B; Zoology 15.

*The Major.*—Courses 100, 101, 102, 105, 113 (4 units), 114, 116, 121, 122, and electives selected from 145, 146, 370, Business Administration 150, 160 or Agricultural Economics 130 to total 36 units.

**4. Food Technology.** This major is for students preparing to be food technicians in food industries and for graduate work or research positions in foods.

*Preparation for the Major.*—Courses 9, 11, 12, 14, 15, 16; Bacteriology 1; either Chemistry 2A and 10, or 1A-1B and 8; Economics 1A-1B; Physics 2A, or 10 and 21; Psychology 1A-1B; Zoology 15. Recommended: Mathematics D.

*The Major.*—Courses 100, 101, 102, 105, 113 (4 units), 114, 116, 145, 146; Bacteriology 106; Education 147; at least 2 units selected from other upper division home economics courses, and electives selected from Botany 103, Chemistry 5A\*, 107, 108A–B, 136, Education 114, Public Health 162, Statistics 131A to total 36 units.

### 5. Clothing, Textiles, and Related Arts.

*Preparation for the Major.*—Courses 9, 11, 12, 14, 15, 16; Art 6A–6B, 7A–7B; either Chemistry 2A and 10 or 1A–1B and 8; Economics 1A–1B.

*The Major.*—Courses 144, 155 or 157, 161, 162, 163, 170, 172, 175, 176A, 177A; Art 160, 163A; and additional courses chosen from Home Economics 134, 135, 138, 143, 145, 146, 171A, 181, 199 to total 36 units.

For courses required in the curriculum in apparel merchandising and in the curriculum in apparel design, see page 44.

### LOWER DIVISION COURSES

#### 9. Introduction to Home Economics. (2) I, II.

Miss Hall

Lecture, two hours; field trips, two hours.

A study of the history and scope of home economics and the professional opportunities in this field.

#### 11. Introduction to Nutrition and Foods. (3) I, II. Miss Miller, Miss Chang

Lecture, one hour; laboratory, six hours.

A study of the basic principles of nutrition and their relationship to the selection, preparation, and service of meals.

#### 12. Introduction to Family Living. (2) I, II.

Mrs. Petersen

A study of the activities of the family and the functions of the homemaker in modern society. Emphasis on understanding the contribution of family members to successful family living.

#### 14. Management in Daily Living. (2) I, II.

Miss Hester

A study of the management of time, energy, and material resources and their contribution to personal and family living.

#### 15. Selection of House Furnishings. (3) I, II.

Miss Obst

Lecture, two hours; laboratory, four hours. Prerequisite: Art 6A recommended.

A study of floor plans, furniture selection and arrangement, suitable materials for floor coverings, wall decorations, curtains, draperies, and upholstery, table linens, china, glass, and silver.

#### 16. Introduction to Clothing and Textiles. (3) I, II.

Miss Corey, Mrs. Loehr, Mrs. Paull

Lecture, one hour; laboratory, six hours.

A study of the fundamental principles of clothing construction including a study of textiles in relation to their selection and use.

### UPPER DIVISION COURSES

#### Food and Nutrition

#### 100. Food Economics. (2) I.

Mrs. McGucken

Lecture, one hour; laboratory, three hours. Prerequisite: course 11. Recommended: Economics 1A, 1B.

The production and distribution of food; grades and standards; legal controls; the cost to consumers and the relations to nutritive values.

\* Upper division major credit for Chemistry 5A allowed only if course is taken in upper division.

**101. Food Analysis. (3) I.** Miss Swendseid  
Lecture, one hour; laboratory, six hours. Prerequisite or concurrent: course 113.

The application of quantitative methods to the study of foods.

**102. Advanced Foods. (3) I, II.** Miss Campbell  
Lecture, one hour; laboratory, six hours. Prerequisite: course 11, Chemistry 2A.

The application of science in the study of fundamental principles and practices of food preparation.

**105. Experimental Cookery. (3) II.** Miss Miller  
Lecture, one hour; laboratory, six hours. Prerequisite: course 102, Chemistry 8 or 10.

Qualitative and quantitative methods in food preparation under controlled conditions.

**111. Principles of Nutrition. (2) I, II.**

A survey of the principles of nutrition and their application in normal conditions of growth and development. Food habits in relation to nutritive requirements and health. (Not open to majors who have had Home Economics 11.)

**\*112. Nutrition in Family Health Service. (2) II.** Mrs. McGucken  
Lecture, one hour; laboratory, two hours; additional field work. Prerequisite: 111 or equivalent and consent of the instructor.

A study of food service for family groups at moderate and low income levels, considering persons of various ages within the family group. Also special consideration to be given to special dietary problems, food purchasing, protective food legislation, and the adaptation of foreign food habits to good nutrition. (This course is designed particularly for public health nurses and nutritionists in social agencies.)

**113. Advanced Nutrition. (3 or 4) I, II.** Miss Swendseid  
Lecture, three hours; laboratory, three hours. Prerequisite: Chemistry 8 or 10, Zoology 15. (The lectures may be taken separately with credit value of 3 units.)

A chemical study of carbohydrates, fats, proteins, minerals, and vitamins in relation to human nutrition. Qualitative laboratory studies upon the components of food. Computation of normal diets for infants, children, and adults.

**114. Metabolism Methods. (4) II.** Mrs. Carlisle  
Lecture, two hours; laboratory, six hours. Prerequisite: course 101 or the equivalent.

Observations of the influence of special diets upon various phases of metabolism; practice in the methods of determining blood constituents, basal metabolic rate, and nitrogen and mineral excretions.

**116. Diet in Disease. (2) I, II.** Mrs. Carlisle  
Lecture, one hour; laboratory, three hours. Prerequisite: courses 102, 113 (4 units).

Modification of the normal diet for specific diseases: dietary calculations.

**117. Evaluation of Nutritional Adequacy and Status. (2) I, II.** Mrs. Alfin-Slater  
Lecture, two hours. Prerequisite: courses 101, 113.

A critical study of the methods used to assess the nutritional adequacy of various foods and the nutritional status of the individual who consumes the food.

\* Not to be given, 1960-1961.

- 118. Microbiology Assay.** (3) I, II. Mrs. Alfin-Slater  
Lecture, one hour; laboratory, six hours. Prerequisite: Bacteriology 1; Chemistry 1A-1B, 8, 9.

The use of microbiological techniques to assay vitamin and amino acid content of various foods and other natural products.

### **Institutional Management**

- 121. Quantity Food Study.** (4) I, II. Mrs. McGucken, Miss Mercer  
Lecture, two hours; laboratory, six hours. Prerequisite: course 102. Recommended: Economics 1A-1B.

A study of economic principles and problems involved in the purchase and preparation of foods in quantity.

- 122. Institutional Organization and Management.** (4) I, II.

Mrs. McGucken, Miss Mercer  
Lecture three hours; laboratory, four hours. Prerequisite: course 102. Recommended: Economics 1A-1B.

A study of organization and administration as applied to institutional households such as residence halls, hotels, hospitals, school cafeterias, etc.

### **Family Relations**

- 134. Child Care and Guidance.** (3) I, II. Mrs. Petersen  
Prerequisite: Psychology 112.

Application of the principles of growth and development to the care and guidance of young children in the home.

- 135. Laboratory in Child Study.** (2) I, II. Mrs. Rogers

Prerequisite: course 134 and Psychology 112, or consent of the instructor.  
Further study of the growth and development of children, with emphasis on the preschool period. Observation and participation in the nursery school with discussion of nursery school theory and practice.

- 138. Family Relationships.** (3) I, II. Mrs. Petersen

Recommended: course 12.  
A study of the modern family and its relationships. Emphasis on personal adjustment of the individual, problems concerning marriage relations, parenthood, and family administration.

### **Family Economics and Home Management**

- \*140. Family Meal Service.** (2) II. \_\_\_\_\_  
Lecture, one hour; laboratory, six hours. Prerequisite: courses 102, 11 or 113; Chemistry 2A.

Organization and management of family food service at different economic levels. Emphasis is placed on standard products, meal service, efficient kitchen planning, use and care of kitchen and dining equipment.

- 143. The Economic Problems of Families.** (2) I, II. Mr. Rada

Prerequisite: course 14 or consent of the instructor. Recommended: Economics 1A-1B.

Distribution of families as to size, composition, domicile, income, and expenditures. Economic and social developments which have influenced the activities of the members of the household and brought about changes in the family's economic problems and standards of living.

\* Not to be given, 1960-1961.

**144. Management of Individual and Family Finances. (3) I, II.** Mr. Rada  
Prerequisite: course 14 or consent of the instructor. Recommended: Economics 1A-1B.

Management of family income in relation to family expenditures, savings, consumer credit, personal investment, home ownership, insurance, social security and annuities, and income and estate taxes.

**145. Home Management Problems. (3) I, II.** Miss Hester  
Lecture, two hours; laboratory and demonstration, two hours. Prerequisite: course 14 or consent of the instructor.

A study of the management of the various resources available to the family with a view to promoting family well-being and satisfaction.

**146. Home Management Laboratory. (2) I, II.** Miss Hester  
Laboratory: six hours. Prerequisite: course 11; prerequisite or concurrent: course 145.

Experience in group living for five weeks in the home management house with the guidance of an instructor.

**154. Housing. (3) I.** Mr. Rada  
Recommended: Economics 1A-1B.

The contemporary housing situation, essentials of healthful housing, improvement in housing, components of a family's housing costs, and municipal, state, and federal activities. Three field trips to be arranged.

### **Clothing, Textiles, and Related Arts**

**155. House Planning and Furnishings. (2) II.** Miss Obst  
Lecture, one hour; laboratory, three hours. Prerequisite: course 15, Art 6A.

Planning the home with reference to livability, selection of furnishings and equipment, arrangements for minimizing work, and adaptation to the needs of families of varying interests and incomes.

**157. Home Furnishings Workshop. (2) I, II.** Mrs. Loehr  
Laboratory: six hours. Prerequisite: course 15.

Experiences in adapting furnishings budget to homes at different income levels. Application of principles of design through individual projects in refinishing, remodeling, and the making of simple furnishings, e.g., draperies, curtains, slip covers, and lampshades.

**160. Fundamentals of Textiles. (2) I, II.** Mrs. Lindsey  
Lecture, two hours.

The study of textile fabrics, fibers, and the processes used in their manufacture as a basis for selection and use. Not open to those who have taken course 16.

**161. Decorative Textiles. (2) I, II.** Miss Obst  
Prerequisite: course 16 or 160.

Studies in the appreciation of the construction and historical background of woven, printed, and embroidered textiles; handmade laces; the damasks, brocades, and prints of China, Persia, and India; French tapestries; oriental rugs; French and English prints, and early American textiles.

**162. Textiles. (2) I.** Mrs. Lindsey  
Laboratory: six hours. Prerequisite: course 16 or 160.

A study of the sources and properties of textile fibers, and fabric characteristics as related to selection, use, care.

**163. Advanced Textiles. (3) II.**

Lecture, two hours; laboratory, three hours. Prerequisite: courses 16, 162; Chemistry 2A and 10, or 1A-1B and 8.

An intensive study of textile materials with special emphasis on the nature of the raw material and quantitative methods in textile analysis.

**170. History and Development of the Clothing Industry. (3) I, II.**

Mrs. Paull

A study of the growth, location, influences of technological advances, designers, legislation, organizations, publications, fashions, and problems of production, promotion, and distribution of ready-to-wear upon the clothing and textile industry.

**171A-171B. History and Design of Headwear. (2-2) Yr.**

Mrs. Holt

Lecture, one hour; laboratory, three hours. Prerequisite: course 16.  
The development and design of head covering as part of apparel design. Study of construction of the modern hat.

**172. Advanced Clothing. (3) I, II.**

Miss Corey, Mrs. Lindsey, Mrs. Paull

Lecture, one hour; laboratory, six hours. Prerequisite: course 16.  
Problems of clothing construction, including the adaptation of commercial patterns and the selection, care, and use of equipment.

**175. Tailoring Problems. (3) I, II.**

Mrs. Lindsey

Lecture, two hours; laboratory, four hours. Prerequisite: course 172.  
The design, fashion, construction, and economic factors involved in selecting and in making tailored garments.

**176A-176B. Advanced Dress Design. (3-3) Yr.**

Miss Corey

Lecture, two hours; laboratory, four hours. Prerequisite: course 172.  
Creation of original designs through French draping and flat pattern. Selection and manipulation of fabrics.

**177A-177B. Pattern Analysis. (3-3) Yr.**

Miss Corey

Lecture, two hours; laboratory, four hours. Prerequisite: course 176A.  
A study of pattern drafting and grading in relation to the problem of design, with consideration of personal and industrial needs. Standardization of size and relationship to problems of production and consumption.

**Home Economics Teacher Education****181. Problems in Home Economics. (2) I, II.**

Miss Leahy

Prerequisite: course 370.  
A study of special problems in the teaching of homemaking selected in accordance with the needs of the student. Emphasis is placed on the contribution of homemaking to school and community life.

**Special Study Course for All Majors****199. Special Studies in Home Economics. (1-3) I, II.**

The Staff

Prerequisite: senior standing and consent of the instructor.

**GRADUATE COURSES****227. Physical Analysis of Textiles. (3) I.**

Lecture, one hour; laboratory, six hours. Prerequisite: courses 16, 162, 163, or the equivalent.

Investigations into the physical and microscopic characteristics of fibers, yarns, and fabric structure in relation to fabric performance.

\* Not to be given, 1960-1961.



**228. Chemical Analysis of Textiles. (3) II.**

Lecture, one hour; laboratory, six hours. Prerequisite: courses 16, 162, 163, or the equivalent.

Chemical analysis and research related to the natural and synthetic textile fibers and finishes used for clothing and furnishings. Investigations made of the chemical changes occurring during the use, maintenance, and storage of fabrics.

**229. Methods of Research in Home Economics. (2) I, II.** Miss Hall

A study of the methods of research applicable to the various areas of home economics. Individual guidance in research in a selected problem. Assistance in the statistical treatment of data.

**250. Seminar in Family Life. (2) I.**

A critical discussion of research literature concerning the problems of modern family living.

**251. Seminar in Nutrition. (2) I.**

Recent advances in the science of nutrition and in the dietetic treatment of disease. Miss Swendseid

**252. Recent Advances in Nutritional Diagnosis. (2) II.**

Mrs. Emerson, Mrs. Alfin-Slater

Lecture, two hours. Prerequisite: course 113, Chemistry 108A-108B.

Nutrition in the maintenance of health and treatment of disease.

**253. Seminar in Recent Advances in the Biochemistry and Nutrition of Lipids. (2) I.** Mrs. Alfin-Slater

Prerequisite: course 113; Chemistry 108A-108B.

**255. Food Technology Seminar. (2) II.**

Miss Campbell

Review of recent and current developments in food study and cookery.

**262. Personal and Family Economics Seminar. (2) II.**

Mr. Bada

Standard of living: what it is; how measured; comparisons by income and social groups, regions, and countries; relation to personal and family economic decisions.

**263. Seminar in Textiles and Clothing. (1) II.**

Readings and discussion of recent developments in textiles and clothing.

**271. Seminar in Home Economics Education. (2) I, II.**

Miss Hall

Review of recent and current developments in the teaching of home economics.

**272. Seminar in the Supervision of Home Economics. (2) II.**

Miss Leahy

Prerequisite: teaching experience.

Individual investigation of the nature and function of supervision of home economics at all school levels.

**273. Seminar in the Organization and Administration of Home Economics. (2) I.** Miss Leahy

A review of the literature, and intensive individual study of problems concerned with the organization and administration of home economics at all school levels.

**282A-282B. Selected Problems. (2-4; 2-4) Yr.**

The Staff

Laboratory or field investigation in a specialized area of home economics.

## PROFESSIONAL COURSE IN METHOD

- 370. Principles of Home Economics Teaching. (3) I, II.** Miss Leahy  
 Prerequisite: 12 units of upper division course work in home economics.  
 A survey and evaluation of methods and materials used in teaching home-making in the secondary school.

## HORTICULTURAL SCIENCE

(Department Office, 190 Physics-Biology Building)

- Jacob B. Biale, Ph.D., *Professor of Horticultural Science.*  
 Sidney H. Cameron, Ph.D., *Professor of Horticultural Science. (Chairman of the Department).*  
 Charles A. Schroeder, Ph.D., *Professor of Subtropical Horticulture.*  
 William H. Chandler, Ph.D., *Professor of Horticulture, Emeritus.*  
 Robert W. Hodgson, M.S., *Professor of Subtropical Horticulture, Emeritus.*  
 George G. Laties, Ph.D., *Associate Professor of Horticultural Science.*  
 Arthur Wallace, Ph.D., *Associate Professor of Horticultural Science.*  
 ———, *Assistant Professor of Horticultural Science.*  
 Leland M. Shannon, Ph.D., *Assistant Professor of Horticultural Science.*

*Preparation for the Major.*—Required courses, or their equivalent: Chemistry 1A, 1B, 8; Botany 1, 107. Recommended courses, or their equivalent: Irrigation and Soil Science 101; Entomology 134.

*The Major.*—Twelve units of upper division courses in the major, which should normally include Horticultural Science 100 and 110.

## UPPER DIVISION COURSES

- 101. Citriculture. (4) II.** Mr. Hodgson, Mr. Shannon  
 Lecture, three hours; laboratory, three hours; four or five Saturday field trips. Prerequisite: course 2 or the equivalent.  
 The characteristics of the citrus fruits and their responses to environmental influences and cultural practices; the economics of the citrus fruit industry.
- 102. Subtropical Fruits Other Than Citrus. (4) I.** Mr. Schroeder  
 Lecture, three hours; laboratory, three hours; four or five Saturday field trips. Prerequisite: course 2 or the equivalent.  
 A survey of the knowledge concerning the requirements and responses of the subtropical fruit plants other than *Citrus*; the economics of their industries. The fruits considered include the walnut, pecan, almond, fig, olive, avocado, date, oriental persimmon, and certain others grown in California.
- 110. Plant Propagation. (3) II.** Mr. Ryan  
 Lecture, one hour; laboratory, six hours. Prerequisite: Botany 1 or the equivalent. Recommended: Botany 6 and 107 (may be taken concurrently).  
 Principles and practices in plant propagation.
- 111. Plant Metabolism. (2) I.** Mr. Biale, Mr. Laties  
 Lecture-discussion, two hours. Prerequisite: Chemistry 8 or the equivalent.  
 Biochemical approach to major plant processes; metabolic pathways; formation and utilization of energy; composition and enzymatic reactions of cellular constituents.
- 113. Fruit Physiology and Storage Problems. (2) I.** Mr. Biale  
 Fruit morphogenesis; physiological, chemical and enzymatic changes during development and maturation; respiratory and fermentative processes; senescence as a general biological phenomenon.

**142. Physiology of Fruit Trees. (3) I.** Mr. Wallace  
Lecture, two hours; laboratory-demonstration, three hours. Prerequisite:  
consent of the instructor.

A discussion, demonstration, and laboratory study of tree growth, flowering, fruiting, nutrition, water relations, rootstock-scion relations, translocation, metabolism, and responses to environment and management practices.

**199. Special Studies. (2-4) I, II.** The Staff  
Prerequisite: senior standing and consent of the instructor.

#### GRADUATE COURSES

**240. Horticultural Experimentation. (3) II.** Mr. Cameron, Mr. Shannon  
Lecture and discussion, three hours. Prerequisite: graduate standing and  
consent of the instructor.

A critical review and analysis of horticultural research in selected fields.

**255A-255B. Seminar in Horticultural Science. (2-2) Yr.** The Staff

**281A-281B. Research in Subtropical Horticulture. (2-6; 2-6) Yr.** The Staff

## HORTICULTURE

For courses in horticulture, see under Floriculture and Ornamental Horticulture, page 220, and Horticultural Science, page 267.

## HUMANITIES

\* Pier-Maria Pasinetti, Ph.D., *Professor of Italian.*

Bonnie Thoman Culotta, M.A., *Assistant in the Humanities.*

*Letters and Science List.*—Course 1A-1B is included in the Letters and Science List of Courses. For regulations governing this list, see page 2.

**1A-1B. World Literature. (3-3) Yr.** Mr. Pasinetti

A course in world literature for the general student. Recommended as a course to satisfy requirement (G) (1) in the College of Letters and Science.

#### RELATED COURSE IN ANOTHER DEPARTMENT

**Integrated Arts 1A-1B. Man's Creative Experience in the Arts. (3-3)**

## INFECTIOUS DISEASES

(Department Office, 33-241 Medical Center)

Ruth A. Boak, M.D., *Professor of Infectious Diseases and Pediatrics.*

Charles M. Carpenter, M.D., *Professor of Infectious Diseases (Chairman of the Department).*

John F. Kessel, Ph.D., *Professor of Infectious Diseases (Parasitology and Tropic Diseases).*

† A. F. Rasmussen, Jr., M.D., *Professor of Infectious Diseases (Virology).*

David L. McVickar, M.D., *Associate Professor of Infectious Diseases (Mycology).*

Henry E. Weimer, Ph.D., *Associate Professor of Infectious Diseases (Immunochemistry).*

William H. Hildemann, Ph.D., *Assistant Professor of Infectious Diseases (Virology).*

Dexter H. Howard, Ph.D., *Assistant Professor of Infectious Diseases (Mycology).*

† Absent on leave, 1960-1961.

\* In residence spring semester only, 1960-1961.

- James N. Miller, Ph.D., *Assistant Professor of Infectious Diseases (Bacteriology)*.  
 Margret I. Sellers, Ph.D., *Assistant Professor of Infectious Diseases (Virology)*.  
 Jerrold A. Turner, M.D., *Assistant Professor of Infectious Diseases (Parasitology and Tropic Diseases)*.  
 Marietta Voge, Ph.D., *Assistant Professor of Infectious Diseases (Parasitology and Tropic Diseases)*.

GRADUATE COURSES

*Admission to Graduate Status*

For admission to graduate status, a student must meet the requirements of the Graduate Division, and must hold an approved bachelor's degree with a major in a field related to infectious diseases.

*Requirements for the Master's Degree.*

1. The general Graduate Division requirements (pages 66-68).
2. Chemistry 108A and 108B, Infectious Diseases 201.
3. A thesis (Plan I).

*Requirements for the Doctor's Degree.*

1. The general Graduate Division requirements (pages 68-70).
2. Infectious Diseases 201, Microscopic Anatomy 101 (Histology), Pathology 231.

**201. Infectious Diseases. (10) I.** Mr. Carpenter and the Staff

Lectures and laboratory. Identification of the infectious agents of man usually presented in medical bacteriology, mycology, parasitology and tropic diseases, and virology, but with special emphasis on host-parasite relationships including immunity, epidemiology, prevention, and laboratory diagnosis.

**208. Infectious Diseases (Medical Virology). (4) II.** Mr. Rasmussen

A study of viruses and rickettsiae causing human disease. It includes an introduction to methodology; virus-host cell relationships in representative experimental infections in animals, embryonated eggs and tissue cultures; pathogenesis, principles of immunity applicable to the control of disease in man.

**209. Infectious Diseases (Principles of Immunochemistry). (4) I.** Mr. Weimer

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.

**251A-251B. Seminar in Infections Diseases. (1-5) Yr.**

Mr. Carpenter and the Staff  
 Consideration of the history of infectious diseases, their host-parasite relationships, etiology, pathogenesis, epidemiology, diagnosis, and immunity.

**252. Seminar in Medical Virology. (1) II.** Miss Sellers

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.

**253. Seminar in Medical Parasitology. (1) II.** Mr. Kessel, Mrs. Voge

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 review of selected subjects, and to discuss the contributions of various workers from the standpoints of experimental methods, results, their interpretation and their evaluation.

**254. Seminar in Immunogenetics. (1) II.** Mr. Hildemann

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.

**291A-291B. Research in Infectious Diseases. (2-5) Yr.**

Mr. Carpenter and the Staff

A limited number of qualified graduate students may be admitted with the approval of the staff of the Department of Infectious Diseases.

## RELATED COURSES IN OTHER DEPARTMENTS

<b>Anatomy 101. Microscopic Anatomy. (5) I.</b>	Mr. Pease, Mr. Green
<b>Bacteriology 103. Advanced Bacteriology. (5) I.</b>	Mr. Pickett
<b>Bacteriology 105. Serology. (4) II.</b>	Mrs. Ball
<b>Bacteriology 106. Metabolism of Bacteria. (2) I.</b>	Mr. Jann
<b>Bacteriology 106C. Metabolism of Bacteria Laboratory. (2) I.</b>	Mr. Jann
<b>Bacteriology 107. Public Health Bacteriology. (4) I.</b>	Mrs. Ball
<b>Bacteriology 108. Hematology. (2) II.</b>	Mr. Fishkin
<b>Bacteriology 120. Bacterial Genetics. (2) II.</b>	Mr. Romig
<b>Bacteriology 120C. Bacterial Genetics Laboratory. (2) II.</b>	Mr. Romig
<b>Bacteriology 130. Immunochemistry. (4) II.</b>	Mr. Nelson
<b>Bacteriology 199. Special Studies in Bacteriology. (2-5) I, II.</b>	The Staff
<b>Botany 126. Medical Mycology. (4) II.</b>	Mr. Plunkett
<b>Chemistry 107. Amino Acids and Proteins. (3) I.</b>	Mr. Dunn
<b>Chemistry 108A-108B. General Biochemistry. (3-3) Yr.</b>	Mr. Atkinson, Mr. West
<b>Chemistry 137. Chemistry of Bacterial Nutrition. (2) II.</b>	Mr. Dunn
<b>Chemistry 261. Seminar in Biochemistry. (1) I, II.</b>	Mr. Dunn in charge
<b>Entomology 126. Medical Entomology. (4) II.</b>	Mr. Belkin
<b>Microbiology 251A-251B. Seminar in Microbiology. (1-1) Yr.</b>	Mrs. Ball, Mr. Ball, Mr. Plunkett
<b>Pathology 231. Pathological Anatomy and Physiology. (10) I.</b>	The Staff
<b>Physiology 101. Mammalian Physiology. (8) II.</b>	Mr. Field and Staff
<b>Zoology 107. Microanatomy. (4) I.</b>	Mr. Beeder
<b>Zoology 110. Protozoology. (4) II.</b>	Mr. Ball
<b>Zoology 111. Parasitology. (2) I.</b>	Mr. Ball
<b>Zoology 111C. Parasitology Laboratory. (2) I.</b>	Mr. Ball

## INTEGRATED ARTS

Karl E. With, Ph.D., *Professor of Art.*

*Letters and Science List.*—Course 1A-1B is included in the Letters and Science List of Courses. For regulations governing this list, see page 2.

**1A-1B. Man's Creative Experience in the Arts.** (3-3) Yr. Mr. With

The most significant aspects of the arts through the ages, from primitive art to modern mass communication, literature excluded. A nontechnical presentation for the general student.

## IRRIGATION AND SOIL SCIENCE

(Department Office, 97 Physics-Biology Building)

David Appleman, Ph.D., *Professor of Plant Nutrition.*

Martin R. Huberty, Engr., *Professor of Irrigation.*

Arthur F. Pillsbury, Engr., *Professor of Irrigation (Chairman of the Department).*

Owen R. Lunt, Ph.D., *Associate Professor of Soil Science.*

John Letey, Jr., Ph.D., *Assistant Professor of Soil Physics.*

Johann J. Oertli, Ph.D., *Assistant Professor of Soil Science.*

Completion of the curriculum in irrigation science is possible only on the Davis campus and for the soil science curriculum only on the Berkeley and Davis campuses. See the BULLETIN OF THE COLLEGE OF AGRICULTURE and consult the appropriate advisers.

### UPPER DIVISION COURSES

**101. Introduction to Water and Soil.** (4) I. Mr. Lunt, Mr. Pillsbury

Lecture, three hours; laboratory, three hours. Prerequisite: introductory college chemistry and physics.

Introduction to soil and water management, including soil morphology, soil physics, soil chemistry, soil-plant-water relations, irrigation practices and design, and reclamation.

**\*102. Soil Management.** (3) I. Mr. Huberty, Mr. Lunt

Lecture, three hours. Prerequisite: course 101 and Bacteriology 1. Relationships of soil management and conservation practices to the physical, chemical, and microbiological properties of soils.

**108. The Soil as a Natural Resource.** (3) I. Mr. Huberty

Lecture, three hours. Prerequisite: Chemistry 1A or 2A. Designed for students who desire a general knowledge of soils, soil resources and soil conservation. Cannot be used for credit in the soil science major.

**110A. The Soil as a Medium for Plant Growth.** (3) II. Mr. Appleman

Lecture, three hours. Prerequisite: Chemistry 1A-1B and 8, or the equivalent.

Nutritional requirements of plants; studies of the absorption of mineral elements by plants, and related processes; chemical composition of soils; current views of the soil solution and of base exchange; factors determining productivity of soils; soil and plant interrelations.

**199. Special Studies.** (2-4) I, II. The Staff

Prerequisite: senior standing and consent of the instructor.

\* Not to be given, 1960-1961.

## GRADUATE COURSE

280A-280B. Research in Irrigation and Soils. (2-6; 2-6) Yr.

The Staff (Mr. Pillsbury in charge)

## ITALIAN

(Department Office, 342 Royce Hall)

<sup>1</sup> Carlo L. Golino, Ph.D., *Professor of Italian (Chairman of the Department)*.<sup>2</sup> Pier-Maria Pasinetti, Ph.D., *Professor of Italian*.Charles Speroni, Ph.D., *Professor of Italian*.<sup>1</sup> Dante Della Terza, Dottore in Lettere, *Assistant Professor of Italian*.Giuseppe Velli, Dottore in Lettere, *Instruction in Italian*.Clara Regmoni-Macera, Dottore in Lettere, *Associate in Italian*.Franca Schettino, M.A., *Associate in Italian*.Althea Soli, M.A., *Associate in Italian*.Bonnie Thoman Culotta, M.A., *Assistant in the Humanities*.

*Letters and Science List.*—All undergraduate courses in Italian are included in the Letters and Science List of Courses. For regulations governing this list, see page 2.

*Preparation for the Major.*—Italian 1, 2, 3, 4, 102A-102B, or the equivalent to be tested by examination; Latin 1 or two years of high school Latin. Recommended: History 1A-1B; Philosophy 6A-6B, and an additional foreign language.

*The Major.*—Twenty-four units of upper division courses, of which at least 20 must be in Italian. Four units may be taken in French, German, Greek, Latin, Portuguese, or Spanish literature.

As electives the department recommends courses in (1) European history, anthropology, geography, political institutions, and international relations, particularly as they relate to Italy; (2) English literature; (3) French, German, Greek, Latin, Portuguese, and Spanish language and literature.

*Requirements for Admission to Graduate Courses.*—Students who have completed the undergraduate major in Italian, or the equivalent, will be recommended for graduate work in Italian provided they meet the general requirements for admission to regular graduate status.

*Requirements for the Master's Degree.*—For the general requirements see page 66. Two years of high school Latin, or the equivalent, are a departmental prerequisite for the master's degree in Italian. The department follows both plans I and II. For specific departmental requirements, see the ANNOUNCEMENT OF THE GRADUATE DIVISION, SOUTHERN SECTION.

*Requirements for the Ph.D. Degree.*—For the general requirements, see page 68. For specific requirements, see the ANNOUNCEMENT OF THE GRADUATE DIVISION, SOUTHERN SECTION, *The Degree of Doctor of Philosophy in Romance Language and Literature*.

## LOWER DIVISION COURSES

1. **Elementary Italian—Beginning.** (4) I, II. Mr. Velli in charge  
This course corresponds to the first two years of high school Italian.
2. **Elementary Italian—Continued.** (4) I, II. Mr. Velli in charge  
Prerequisite: course 1 or two years of high school Italian.
3. **Intermediate Italian.** (4) I, II. Mr. Velli  
Prerequisite: course 2 or three years of high school Italian.
4. **Intermediate Italian—Continued.** (4) I, II. Mrs. Soli  
Prerequisite: course 3 or four years of high school Italian.

<sup>1</sup> In residence fall semester only, 1960-1961.<sup>2</sup> In residence spring semester only, 1960-1961.

**8A-8B-8C. Italian Conversation. (1-1-1) Yr.**

Mrs. Soli

The class meets two hours weekly. Open to students who have completed course 3. Those with grade A or B in course 2 may be admitted.

**UPPER DIVISION COURSES**

Sixteen units of lower division courses in Italian, or the equivalent, are required for admission to any upper division course. All upper division courses, with the exception of 102A-102B, 109A-109B and 152, are conducted mainly in Italian.

**100. Readings in the Italian Theater. (3) II.**

Mr. Golino

The Italian theater from the *Commedia dell'Arte* to the present.

**101A-101B. Composition, Oral and Written. (3-3) Yr.** Mr. Della Terza**\*102A-102B. Italian Culture and Institutions. (2-2) Yr.** Mr. Golino

A study in the growth and development of Italian culture in the various fields. There are no prerequisites for this course. Lectures in English, reading in Italian or English.

**\*103A-103B. Survey of Italian Literature. (3-3) Yr.** Mr. Speroni**\*104A-104B. Introduction to the Study of Italian Literature. (2-2) Yr.**

Mr. Della Terza

**105. Italian Folklore. (3) II.**

Mr. Speroni

A survey of Italian folklore, with emphasis on its cultural background and literary connections.

**\*106. Contemporary Italian Literature. (2) I, II.** Mr. Golino**107. Petrarch and Italian Lyric Poetry. (2) I, II.** Mr. Della Terza**109A-109B. Dante's *Divina Commedia*. (3-3) Yr.** Mr. Speroni

With the consent of the instructor this course may also be taken by students who have a thorough preparation in French, Spanish, or Portuguese.

**130A-130B. Advanced Grammar and Composition. (2-2) Yr.** Mr. Velli

Prerequisite: course 101A-101B.

**\*152. Italian Literature in English Translation. (3) I.** Mr. Pasinetti

Master works of Italian literature from Dante to the present.

**199. Special Studies in Italian. (1-3) I, II.** The Staff

Prerequisite: senior standing and consent of the instructor.

**GRADUATE COURSES****\*200. Bibliography and Methods of Literary Research. (3) I, II.** Mr. Golino**\*201A-201B. Medieval Italian Literature. (2-2) Yr.** Mr. Della Terza**202. The Italian Novella. (2) II.** Mr. Speroni**\*222A-222B. The Renaissance. (3-3) Yr.** Mr. Speroni**225. The Italian Epic: Ariosto and Tasso. (3) I.** Mr. Speroni**\*226. Studies in Seventeenth-Century Italian Literature. (2) I, II.**

Mr. Golino

**228. Studies in Eighteenth-Century Italian Literature. (2-2) Yr.**

Mr. Della Terza, Mr. Pasinetti

\* Not to be given, 1960-1961.



- \*229A-229B. *Italian Romanticism*. (2-2) Yr. Mr. Pasinetti  
 230A-230B. *Modern Italian Literature*. (2-2) Yr. Mr. Golino, Mr. Pasinetti  
 240A-240B. *Italian Philology*. (2-2) Yr. Mr. Velli  
 290. *Research in Italian*. (1-6) I, II. The Staff  
 Prerequisite: consent of the department.

## JAPANESE

For courses in Japanese see under Department of Oriental Languages.

## JOURNALISM

(Department Office, 11 Building 1H)

Joseph A. Brandt, B.Litt. (Oxon.), M.A. (Oxon.), LL.D., *Professor of Journalism*.

Robert E. G. Harris, M.A., *Professor of Journalism*.

Walter Wilcox, Ph.D., *Associate Professor of Journalism*.

William S. Caldwell, Ph.D., *Assistant Professor of Journalism*.

Jack Lyle, Ph.D., *Assistant Professor of Journalism*.

† Robert A. Rutland, Ph.D., *Assistant Professor of Journalism*.

Darsie L. Darsie, *Lecturer in Journalism*.

Ivan Innerst, M.S., *Lecturer in Journalism*.

Lewis Rex Miller, M.A., *Lecturer in Journalism*.

Robert K. Shellaby, A.B., *Lecturer in Journalism*.

Richard W. Smith, *Lecturer in Journalism*.

George F. Wasson, Jr., J.D., *Lecturer in Journalism*.

The Department of Journalism offers a program leading to the Master of Arts degree. While a few undergraduate courses are available, there is no bachelor's degree program in journalism at the University. Graduate students must be admitted by the Graduate Division of the University, with the requirements as outlined in the annual ANNOUNCEMENT OF THE GRADUATE DIVISION, SOUTHERN SECTION. Additionally, all students seeking admission must complete a special application form which is obtainable from the department.

Beginning in 1960-1961 the Department of Journalism will ordinarily require at least three full semesters of work before granting the master's degree. In the first academic semester, it is proposed that the student who has had less than two years' practical experience in journalism will enroll in a prescribed program outlined below. This core program will acquaint students with the important professional tools and procedures of the profession. The program then broadens to include several seminars that deal with specific areas of journalistic importance.

A foreign language examination, or its equivalent, will also be required of all master's degree candidates entering in September, 1960, and thereafter.

Working journalists who desire a program of study leading to the master's degree should acquaint themselves with the "study-list limits" given in the ANNOUNCEMENT OF THE GRADUATE DIVISION, SOUTHERN SECTION. Ordinarily, full-time students carry a 12-unit work load, while persons working a forty-hour week are permitted a maximum load of 4 units. In extraordinary cases, a 6-unit load will be approved for students who have outside work. As with other information in the graduate announcement, a thorough understanding of program limits is a matter of student responsibility.

\* Not to be given, 1960-1961.

† Absent on leave, 1960-1961.

The offering of a three-semester program in journalism is a departure from the past practice at the University. The change has been implemented in order to further strengthen the concept of a journalist as a person with extraordinary perception and an inquisitive mind. The change-over has necessitated the requirement of Journalism 400-401, a basic technique course required of all nonprofessionals which will carry no credit toward the degree. This course is directed toward the creation of a professional atmosphere in reporting situations and will demand a good deal of time from the student. Graduate study on the other hand, is not measured in either units or degrees but in the knowledge gained and the ability to use that knowledge. Therefore, the lengthened program should be thought of in terms of the greater opportunity for fitness in a profession that has enormously extended its activities in the past generation. Similarly, the required language skill is a recognition of the need for educated men and women with some knowledge of foreign language and culture in the preparation of our mass media.

Suggested program for Master of Arts degree in journalism:

<i>First semester:</i>		<i>Second semester:</i>	
	<i>Units</i>		<i>Units</i>
Journalism 102 .....	2	Journalism 268 .....	3
Journalism 204 .....	2	Journalism 401 .....	3*
Journalism 400 .....	3*	Journalism 208 .....	3
Journalism 260 .....	3	Journalism 253 .....	2
Elective .....	2	Elective .....	2
	—		—
	degree units 9		degree units 10
 <i>Third semester:</i>			
			<i>Units</i>
Journalism 241 .....			2
Journalism 274 .....			2
Journalism 218 .....			2
Journalism 297 .....		1-4	
Elective .....			2
			—
			degree units 9-12

The required courses for *all* master's degree candidates are Journalism 102, 204, 260, 268, and 274. Students will be encouraged to take at least 6 units of electives in related fields of study in other departments.

The three-semester program calls for more than the 24-unit minimum described in the ANNOUNCEMENT OF THE GRADUATE DIVISION, SOUTHERN SECTION under Plan II as necessary for the master's degree. A written comprehensive examination will be required at the end of the second year before the candidate is certified for the degree. Additionally, students working under the thesis (Plan I) program will find that the 20 units required for the degree may include 8 units of work in an outside field. With either Plan I or Plan II, students will be required to complete a 12-unit program in 200 courses in Journalism. Questions regarding the program should be addressed to the chairman of the department.

*Letters and Science List.*—All undergraduate courses in Journalism are included in the Letters and Science List of Courses. For regulations governing this list, see page 2.

#### LOWER DIVISION COURSE

#### 2. Introduction to Journalism. (3) I, II.

Lectures, workshops, and field trips.

Introduction to journalism for those interested in learning the skills of

\* Not applicable toward master's degree.

newspaper work. History of the newspaper in America and England, the role of the newspaper in contemporary society, libel, typography, and make-up.

#### UPPER DIVISION COURSES

**101. History of American Journalism.** (3) I. Mr. Harris

Study of the main forces in the development of American newspapers, including the concept of a free press and editorial responsibility. The principal forces in American history are incorporated.

**102. Law of Libel in Communications.** (2) I, II. Mr. Wasson

The development of libel law in the United States, its relation to freedom of the press, and its responsibilities. Detailed studies of the right of privacy, copyright, etc.

**111. Sources and Methods in Public Relations.** (2) II. Mr. Caldwell

A course relating industrial and institutional public relations to the field of mass communications through journalistic techniques and background. Newspaper practices and germane journalistic topics will be integrated into the course.

**152. Magazine Writing and Editing or Practices.** (3) I, II. Mr. Innerst

Writing for magazines, specialized publications, and newspaper feature sections. Magazine publishing practices as they affect the professional writer.

**181. Reporting of Public Affairs.** (3) I, II. Mr. Brandt, Mr. Harris

Prerequisite: consent of the instructor.

A study of the various approaches to the reporting of governmental functions, particularly at the city and county level.

**190. The Press and World Affairs.** (3) I. Mr. Caldwell

A study of the sources of foreign news, analysis of the foreign press, and the relation of international journalism to the American press.

**195. Critical Reviewing for the Press.** (3) I, II.

Writing of reviews for the press in the field of art, books, radio-television, theater, dance, and motion pictures, followed by discussion of reviews submitted; special lectures by newspaper and periodical reviewers in the popular arts areas covered.

**196. Analysis of International Persuasion Techniques.** (3) I, II. Mr. Miller

Prerequisite: senior or graduate standing and consent of instructor.

A study of efforts at international persuasion by governments and private agencies; analysis of media and channels employed; comparisons of methods used to achieve specific objectives, and their effectiveness.

**197. Problems of Freedom of Information.** (3) II. Mr. Miller, Mr. Harris

An analysis of obstacles to freedom of the press, radio, television, motion pictures, and other communication media at home and abroad; inquiry into means and methods available for protecting and promoting this freedom.

#### GRADUATE COURSES

**204. Ethics and Practices in Communications.** (2) I. The Staff

A seminar devoted to a study of ethical practices in news media and to civic, social, and professional problems encountered by newsmen in the performance of their duties.

**208. Planning and Design of Special Informational Publications.** (3) II.

A study of the methods and devices employed in researching, writing, and

preparing informational materials intended to serve special purposes, such as brochures, house organs, public reports, promotional literature, news letters, trade journals, employee periodicals, and so forth, from copy through layout, composition, printing stages.

**218. Radio and Television News Communication.** (2) I, II. Mr. Wilcox

A discussion and writing course devoted to the preparation of news for radio and television.

**241. The Editorial and the Editorial Page.** (2) II. Mr. Brandt

Prerequisite: courses 260, 268, 252, and 400, or consent of instructor for properly qualified persons.

Functions and purposes of the editorial; selections of subjects and research in editorial writing; writing editorial columns; planning editorial pages and "opposite" editorial pages; letters to editors; editorial page layouts; function, preparation and writing magazine editorial page.

**252. Seminar in Editing the Newspaper.** (1) I. Mr. Wilcox

A seminar integrated with News Communication, dealing with copy editing, headline writing, and make-up.

**\*253. Seminar in the Literature and History of Journalism.** (2) II. ———

Studies of historical and literary trends in British and American journalism.

**260. Seminar in Issues in the News.** (3) I, II. Mr. Brandt, Mr. Miller

Seminar in recurring issues with which the communications profession has to deal. Problems involving civil rights, minorities, relations of government to business, social security, nationalism versus internationalism, United States security, and current relations with foreign powers. Required for master's degree.

**268. Seminar in the Reporter and Society.** (3) I, II.

Mr. Harris, Mr. Miller, Mr. Caldwell

A seminar devoted to study, research and special investigation into typical civic and social problems encountered by the working newspaperman and drawing upon readings from famous journalists past and present who have reported upon social problems.

**274. Seminar in Theories of Mass Communications.** (2) I. Mr. Lyle

A seminar devoted to examination of various concepts of mass communications processes, in terms of the message, the channel, the context, and the response. Required of all candidates for the master's degree.

**275. Seminar in Research Methods in Journalism.** (2) II. Mr. Lyle

Materials and techniques of journalistic research. Study of bibliographical method, historical and sociological investigation, quantitative and qualitative analysis.

**297. Individual Studies for Graduate Students.** (1-4) I, II. The Staff

Open to students not taking news communications.

Supervised research projects in the broad field of mass communications.

PROFESSIONAL COURSES

**400. News Communication.** (0) I.

Mr. Wilcox, Mr. Darsie, Mr. Shellaby, Mr. Smith

The actual gathering of live news (on news beats), the writing and editing of copy, make-up and student participation in the production, in the publishing laboratory, of the departmental publications.

\* Not to be given, 1960-1961.

**401. News Communication and Production. (0) II.**

Mr. Wilcox, Mr. Darsie, Mr. Shellaby, Mr. Smith

Emphasis is upon the investigative story, specialized features and magazine articles, combining current internship experience with various communication media.

**LATIN**

For courses in Latin, see under Department of Classics.

**LATIN-AMERICAN STUDIES**

The following courses pertaining to Latin-American Studies are offered by the departments listed below. For details concerning the Curriculum in Latin-American Studies, see page 14.

*Anthropology and Sociology.* Anthropology 105. American Indians North of Mexico. (3)

Anthropology 107. Indians of South America. (3)

Anthropology 140. Ancient Civilizations of Middle America. (3)

Anthropology 141. Indians of Modern Mexico. (3)

Anthropology 142. Ancient Civilizations of Andean South America. (3)

Anthropology 265A-265B. Cultures of Latin America. (2-2)

Sociology 150. Latin-American Societies. (3)

*Art* 119A. Art of the Americas. (2)

272, Section 7. Problems in Art History (Latin-American Art). (2)

*Geography* 122A. The Geography of Middle America. (3)

122B. The Geography of South America. (3)

199. Special Studies in Geography. (1-5)

257. Seminar in the Geography of Latin America. (3)

*History* 8A-8B. History of the Americas. (3-3)

148. History of Spain and Portugal. (3)

160. History of the Caribbean. (3)

162A-162B. Hispanic America from the Discovery to the Present. (3-3)

166. History of Mexico. (3)

169. History of Inter-American Relations. (3)

199, Section 9. Special Studies in History (Hispanic-American History), (3)

265A-265B. Seminar in Hispanic-American History. (3-3)

*Political Science* 126. Latin-American International Relations. (3)

150A-150B. The Governments of Latin America. (3-3)

199. Special Studies in Political Science. (1-5)

250A. Seminars in Regional and Area Political Studies—Latin-American Studies. (3)

*Spanish and Portuguese.* Spanish 44. Latin-American Civilization. (3)

Spanish 104A-104B. Introduction to Spanish-American Literature. From the Beginnings to the Present. (3-3)

Spanish 108. The Folk Song in Spain and Spanish America. (1)

Spanish 120. Literary Criticism in Spain and Spanish America. (3)

- \*Spanish 130. Main Literary Currents in Spanish America. (3)  
 Spanish 132. The Spanish-American Novel. (3)  
 Spanish 134. The Spanish-American Short Story. (2)  
 Spanish 136. The Spanish-American Essay. (2)  
 Spanish 150B. Spanish American Literature in English Translation. (2)  
 Spanish 199. Special Studies in Spanish. (1-3)  
 Spanish 220. The Spanish Chroniclers of the Americas. (2)  
 Spanish 240. Studies in the Contemporary Novelists of Spanish America. (2)  
 Spanish 241. Studies in the Spanish-American Short Story. (2)  
 Spanish 242. Studies in the Contemporary Poets of Spanish America. (2)  
 \*Spanish 243A-243B. The Modernista Movement in Spanish America. (2-2)  
 Spanish 245. The Contemporary Mexican Novel. (2)  
 Spanish 246. Argentine Literature. (2)  
 \*Spanish 247. The Gaucho Epic. (2)  
 \*Spanish 248. Studies in Major Figures of Spanish-American Literature. (2)  
 \*Spanish 249. Mexican Literature. (2)  
 Portuguese 199. Special Studies in Portuguese. (1-3)  
 Portuguese 123. Survey of Brazilian Literature. (3)  
 Spanish 290A-290B. Special Study and Research. (2-6; 2-6)

## LAW

- Richard C. Maxwell, B.S.L., LL.B., *Dean of the School of Law and Professor of Law (Chairman of the Department)*.  
 John A. Bauman, B.S.L., LL.B., LL.M., J.S.D., *Professor of Law*.  
 James H. Chadbourne, A.B., J.D., *Connell Professor of Law*.  
 L. Dale Coffman, A.B., J.D., LL.M., S.J.D., *Professor of Law*.  
 Edgar A. Jones, Jr., A.B., LL.B., *Professor of Law*.  
 †Harold Marsh, Jr., A.B., LL.B., LL.M., Jur.Sc.D., *Professor of Law*.  
 Addison Mueller, A.B., LL.B., *Professor of Law*.  
 †Paul O. Proehl, A.B., M.A., J.D., *Visiting Professor of Law*.  
 ‡Ralph S. Rice, B.S., LL.B., LL.M., *Professor of Law*.  
 Murray L. Schwartz, B.S., LL.B., *Assistant Dean of the School of Law and Professor of Law*.  
 James D. Sumner, Jr., A.B., LL.B., LL.M., J.S.D., *Professor of Law*.  
 Arvo Van Alstyne, A.B., LL.B., *Professor of Law*.  
 Harold E. Verrall, A.B., M.A., LL.B., J.S.D., *Professor of Law*.  
 William D. Warren, A.B., J.D., J.S.D., *Professor of Law*.  
 Kenneth H. York, A.B., LL.B., *Professor of Law*.  
 Rollin M. Perkins, A.B., J.D., S.J.D., *Connell Professor of Law, Emeritus*.  
 Norman Abrams, A.B., J.D., *Acting Associate Professor of Law*.  
 William Cohen, A.B., LL.B., *Associate Professor of Law*.  
 Robert L. Jordan, A.B., LL.B., *Acting Associate Professor of Law*.  
 Edwin F. Franke, A.B., LL.B., *Lecturer in Charge of Legal Aid Instruction*.  
 William C. Mathes, A.B., LL.B., *Lecturer on Trial Practice and Judge of the Practice Court*.  
 Herbert Morris, A.B., LL.B., D.Phil (Oxon.), *Lecturer in Law and Assistant Professor of Philosophy*.  
 Joseph T. Vodnoy, LL.B., *Associate in Law*.  
 Louis Piacenza, *Law Librarian*.

\* Not to be given, 1960-1961.

† Sabbatical leave in residence, 1960-1961.

‡ In residence fall semester only.

## LIBRARY SERVICE

(Department Office, 322 Library)

Lawrence Clark Powell, Ph.D., Litt.D., *Dean of the School of Library Service and Professor of Library Service (Chairman of the Department).*

Seymour Lubetzky, M.A., *Professor of Library Service.*

Andrew H. Horn, Ph.D., *Associate Professor of Library Service.*

Barbara Gray Boyd, M.P.A., *Lecturer in Library Service.*

Tatiana P. Keatinge, M.L.S., *Lecturer in Library Service.*

Frances Clarke Sayers, *Lecturer in Library Service and Lecturer in English.*

### GRADUATE COURSES

#### 200. Method and Theory of Bibliography. (2) I, II.

Introduction to the history, theory and methods of bibliographical research. Analytical or critical bibliography and enumerative or systematic bibliography. Lectures, discussions, and a written report on a bibliographical problem.

#### 201. Introduction to Cataloging and Classification. (4) I, II.

Lectures and discussions, four hours; laboratory, four hours.

Survey of the history, theory, methods, and principles of organizing library collections for use; library classification systems; principles of subject cataloging; rules for the description and entry of general materials in library catalogs; functions and arrangement of library catalogs.

#### 202. Bibliography and Reference Materials. (3) I.

Basic reference materials including national and trade bibliography. Lectures, discussions, and reports on assigned problems.

#### 203. Introduction to Librarianship. (3) I, II.

Introductory survey of the evolution of libraries and basic information about the principal fields of library service, with emphasis on major trends and problems. Introduction to administrative theory and practice as applied to libraries. Readings and written reports.

#### 204. Selection and Acquisition of Library Materials. (2) I.

Theories, principles, and practice of selecting books and other library materials. Techniques of acquisition by public, school, academic and special libraries. Lectures, discussions, reports.

#### 205. Special Problems in the Selection of Materials and Evaluation of Collections. (2) II.

Problems in selecting recordings, films, maps, and other library materials in special format; special problems in selecting material in particular subject fields; methods of evaluating library collections and the effectiveness of the selection process.

#### 206. School Libraries. (2) I, II.

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.

#### 207. Municipal, County and Regional Libraries. (2) I, II.

Government, organization, administration, and problems of municipal, county, and regional public libraries. Library books, special materials and service programs in relation to varying community patterns. Lectures, readings, reports, field trips.

**208. College, University and Research Libraries. (2) II.**

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.

**209. Library Work with Children. (2) I, II.**

General survey of children's books and reading preferences. Historical backgrounds and development: types of children's literature; levels of interest; criticism and evaluation; illustration; trends; book selection; story telling; organization and administration of a children's room in a public library.

**211. Development of the Book. (2) II.**

Materials and techniques of book production. Early records and the manuscript period. Development of paper, type, and binding. Letterpress, offset, rotogravure, and other printing methods.

**212. Reference and Government Publications. (4) II.**

Prerequisite: course 202.

A continuation of course 202. Sources of information in subject fields. Emphasis is placed on types of information in international, foreign, national, state, and municipal documents. Problems in information service.

**214. Special Problems in Cataloging and Classification. (2) II.**

Prerequisite: course 201.

Materials requiring special description and analysis—films, recordings, music, monographs in series, maps, etc.; Library of Congress classification and subject cataloging systems; arrangement of large catalogs—dictionary, divided, and classified; the cataloging department; current problems; literature of cataloging and classification.

**215. Reading and Reading Interests. (2) II.**

Prerequisite: course 204.

Reading interests, habits, and needs of different types and groups of readers. The nature of reading, problems of reading, selection of reading by children, young people, college students, and public library patrons. The role of the library in adult education.

**217. Bibliography of Science, Engineering and Technology. (2) II.**

Prerequisite: consent of the instructor.

Scientific and technical literature with emphasis on reference and bibliographical aids. Periodical and serial literature in the physical sciences, and its use and control through abstracts and indexes.

**218. Bibliography of the Life Sciences. (2) II.**

Prerequisite: consent of the instructor.

Literature of the life sciences, pure and applied, with emphasis on reference and bibliographical aids. Periodical and serial literature; abstracts and indexes; notable books in the history of biological sciences.

**219. Bibliography of the Social Sciences. (2) II.**

Prerequisite: consent of the instructor.

Literature of the social sciences, including monumental source collections, periodicals, bibliographies, catalogs, indexes, abstracts, etc. Libraries notable for holdings in the social sciences.

**220. Bibliography of the Humanities and Fine Arts. (2) II.**

Prerequisite: consent of the instructor.

Literature of the humanities and fine arts, with special emphasis on reference materials, bibliographies, indexes, and so forth. Notable special collections on the humanities and fine arts.



**250. Theory and Practice of Interlibrary Cooperation. (2) II.**

Prerequisite: consent of the instructor.

Special readings, reports, and discussions on the reasons for interlibrary cooperation, the extent to which it is practiced, and the problems involved.

**251. Libraries of the Southwest. (2) II.**

Prerequisite: consent of the instructor.

Special readings, reports, and discussions on the history, resources, and problems of libraries in the southwestern United States and northwestern Mexico. Literature of the Southwest.

**252. Special Collections and Documentation. (2) II.**

Prerequisite: consent of the instructor.

Special collections and special libraries. Methods of handling nonbook materials. Notable collections of maps, manuscripts, pamphlets, music, photocopies, etc. Materials of scientific and professional libraries. Current trends in information storage and retrieval; implications to general library work.

## LIFE SCIENCES

For courses in Life Sciences, see under Department of Zoology.

## LINGUISTICS AND PHILOLOGY

James Richard Andrews, Ph.D., *Assistant Professor of Spanish.*

Samuel G. Armistead, Ph.D., *Assistant Professor of Spanish.*

Franz H. Bäuml, Ph.D., *Assistant Professor of German.*

William Bright, Ph.D., *Assistant Professor of Anthropology.*

William E. Bull, Ph.D., *Professor of Spanish.*

Kenneth G. Chapman, Ph.D., *Assistant Professor of Scandinavian Languages.*

Kenneth K. S. Ch'en, Ph.D., *Professor of Oriental Languages.*

Michael J. D'Asaro, Ph.D., *Assistant Professor of Speech.*

Alfred Karl Dolch, Ph.D., *Professor of German.*

Jonas C. Greenfield, Ph.D., *Assistant Professor of Hebrew.*

Donald Erwin Hargis, Ph.D., *Associate Professor of Speech.*

Harry Hoijer, Ph.D., *Professor of Anthropology.*

Wolf Leslau, Docteur ès Lettres, *Professor of Hebrew and Semitic Linguistics.*

William Matthews, Ph.D., *Professor of English.*

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

Paul Pimsleur, Ph.D., *Assistant Professor of French.*

Clifford Holmes Prator, Ph.D., *Professor of English.*

Jaán Puhvel, Ph.D., *Assistant Professor of Classics and Indo-European Linguistics.*

Stanley L. Robe, Ph.D., *Associate Professor of Spanish.*

Joseph H. Silverman, Ph.D., *Assistant Professor of Spanish.*

Robert Paul Stockwell, Ph.D., *Associate Professor of English.*

Kiril Taranovski, Ph.D., *Professor of Slavic Languages.*

Giuseppe Velli, Dottore in Lettere, *Instructor in Italian.*

Erik Wahlgren, Ph.D., *Professor of Scandinavian Languages.*

Terence Harrison Wilbur, Ph.D., *Assistant Professor of German.*

Harry F. Williams, Ph.D., *Associate Professor of French.*

Dean S. Worth, Ph.D., *Assistant Professor of Slavic Languages.*

Marion Albert Zeitlin, Ph.D., *Professor of Spanish and Portuguese.*

*Letters and Science List.*—All undergraduate courses in Linguistics and Philology are included in the Letters and Science List of Courses. For regulations governing this list, see page 2.

*Requirements for the Master's Degree*

General requirements (as throughout the Graduate Division). See pages 66-68.

Admission to the Program. Students who have been admitted to graduate status in any of the participating departments (Anthropology-Sociology, English, or any department of foreign language) will be admitted to the Linguistics Program.

*Plan and Language Requirements.* Candidates for the Master of Arts degree in linguistics will be required to take a comprehensive examination in accordance with Plan II. The usual reading examination in French or German will be required unless, by petition to the Committee on the Linguistics Program, the candidate received permission to substitute another language.

Program. First semester: Linguistics 201, 202, 203, 204. Second semester: Linguistics 172, 250, and two courses in the 210-series (one of 210-213, the other from 214-218).†

## UPPER DIVISION COURSES

**170. Introduction to Linguistics. (3) I.** Mr. Hoijer, Mr. Bright

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.

**172. Linguistics in Relation to Other Disciplines. (3) II.**

Mr. Bull, Mr. Pimsleur, Mr. Prator, Mr. Stockwell, Mr. Wilbur

Prerequisite: course 170 or the equivalent.

**\*180. Introduction to Indo-European Linguistics. (3) I.** Mr. Puhvel

Recommended preparation: course 170.

A survey of the Indo-European languages from ancient to modern times; their relationships and their chief characteristics.

## GRADUATE COURSES

**201. Theory and Methods of Descriptive Linguistics. (3) I.**

Prerequisite: course 170 or consent of instructor. Mr. Hoijer, Mr. Bright

Theory and methods in phonetics, phonemics, morphemics, syntax, lexicography. Comparison of different theories and methods in each area. Close reading of technical books and articles in the field.

**202. Theory and Methods of Historical Linguistics. (3) I.**

Mr. Hoijer, Mr. Bright

Theory and methods of comparative linguistics, historical reconstruction, sound change, semantic change, internal and external borrowing, dialectology as mechanism of change. In general, examples selected from non-Indo-European languages.

**203. Phonetics and Phonemics. (3) I.**

Mr. Stockwell

Prerequisite or corequisite: course 201 or consent of instructor.

A problems course in which students work out phonetic and phonemic solutions of a wide variety of language data, and survey the kinds of phonological systems that exist among languages of the world.

**204. Morphology and Syntax. (3) I.**

Mr. Hoijer, Mr. Bright

Prerequisite or corequisite: course 201 or consent of instructor.

A problems course in which students work out morphemic and syntactic solutions of a wide variety of language data, and survey the kinds of grammatical systems that exist among languages of the world.

\* Not to be given, 1960-1961.

† In 1960-1961 only 210, 214, and 218 are offered.

- 210. Comparative Grammar of the Indo-European Languages. (3) II.** Mr. Puhvel  
 Prerequisite: course 180, or Sanskrit 190, or consent of instructor.  
 Comparative study of phonology, morphology, and syntax, with an analysis of selected texts.
- 214. Typology of American Indian Languages. (3) II.** Mr. Hoijer, Mr. Bright  
 Prerequisite: course 170 or 201, or consent of instructor.  
 Studies of selected American Indian languages, with emphasis on the diversity of linguistic structure in the Americas.
- 218. Typology of South Asian Languages. (3) II.** Mr. Bright  
 Prerequisite: course 170 or 201, or consent of the instructor.  
 Descriptive and historical survey of the languages of India, Pakistan, and Ceylon; detailed study of a selected language.
- 250. Field Methods. (3) II.** Mr. Hoijer, Mr. Bright  
 Prerequisite: course 201 or consent of instructor.  
 A language unknown to members of the class to be analyzed from data elicited from an informant. The seminar papers will be relatively full descriptive sketches of the language of the informant.

## RELATED COURSES IN OTHER DEPARTMENTS

## LOWER DIVISION COURSES

- Greek 40. The Greek Element in English. (2) II.** Mrs. Mohr
- Latin 40. The Latin Element in English. (2) I.** Mrs. Mohr

## UPPER DIVISION COURSES

- Anthropology 110. Language and Culture. (3) II.** Mr. Hoijer
- English 110. Introduction to the English Language. (3) I.** Mr. Matthews, Mr. Stockwell
- English 111. The English Language in America. (3) II.** Mr. Matthews, Mr. Stockwell
- French 107. Phonetics. (3) I, II.** Mr. Pimsleur
- German 107. Phonetics of the German Language. (2) I.** Mr. Wilbur
- German 117. History of the German Language. (3) II.** Mr. Wilbur
- German 119. Middle High German. (3) I.** Mr. Bäuml
- Hebrew 145A-145B. Survey of Hebrew Grammar. (2-2) Yr.** Mr. Leslau
- Sanskrit 190. The Elements of Sanskrit. (3) I.** Mr. Puhvel
- Sanskrit 191. Advanced Sanskrit. (3) II.** Mr. Puhvel
- Semitics 101A-101B. Elementary Amharic. (2-2) Yr.** Mr. Leslau
- Spanish 119. Readings in Spanish Literature of the Middle Ages. (2) I.** Mr. Andrews
- Spanish 148. Phonetics. (1) I, II** Mr. Robe
- Spanish 149. Introduction to the History of the Spanish Language. (1) I.** Mr. Armistead, Mr. Silverman

Speech 103. Phonetics. (3) II.	Mr. Hargis
Speech 103K. Phonetics for Foreign Students. (3) I.	Mr. Prator
Speech 122. Scientific Bases of Speech. (3) I.	Mr. D'Asaro

## GRADUATE COURSES

English 211. Old English. (3) I.	Mr. Matthews, Mr. Stockwell
English 212. Middle English. (3) II.	Mr. Matthews, Mr. Stockwell
English 213. The Development of Modern English. (3) I.	Mr. Matthews, Mr. Stockwell
English 250A*-250B. English Linguistics. Seminar. (3-3) Yr.	Mr. Matthews, Mr. Stockwell
English 260A, 260B, 260C. Studies in Old and Middle English. Seminar (3-3-3)	Mr. Matthews
French 201. History of the French Language. (3) I, II.	Mr. Williams
French 202. Old French. (3) I, II.	Mr. Williams
French 205. Contemporary French Linguistics. (3) II.	Mr. Pimsleur
German 230. Survey of Germanic Philology. (3) I.	Mr. Wilbur
German 231. Gothic. (3) I.	Mr. Dolch
German 232. Old High German. (3) II.	Mr. Dolch
German 233. Old Saxon. (3) I.	Mr. Dolch
German 239. Readings in Middle High German Literature. (3) II.	Mr. Bäuml
German 259. Seminar in Germanic Linguistics. (1-3) II.	Mr. Dolch
Italian 240A-240B. Italian Philology. (2-2) Yr.	Mr. Velli
Latin 220. Vulgar Latin. (3) I.	Mr. Puhvel
Oriental Languages 164A-164B. Tibetan. (2-2) Yr.	Mr. Ch'en
Scandinavian 243. Old Icelandic. (3) I.	Mr. Wahlgren
Scandinavian 244. Old Norse-Icelandic Prose and Poetry. (2) II.	Mr. Wahlgren
Semitics 211A-211B. Ethiopic. (2-2) Yr.	Mr. Leslau
Semitics 220A-220B. Comparative Ethiopic. (2-2) Yr.	Mr. Leslau
Semitics 231. Ancient Aramaic. (2) II.	Mr. Greenfield
Semitics 235. Ugaritic. (2) I.	Mr. Greenfield
Semitics 280A-280B. Seminar in Comparative Semitics. (2-2) Yr.	Mr. Leslau
Semitics 290A-290B. Comparative Morphology of the Semitic Languages. (2-2) Yr.	Mr. Leslau

\* Not to be given, 1960-1961.

Slavic 220. Old Church Slavic. (3) I.	Mr. Worth
Slavic 222. Comparative Slavic Linguistics. (3) II.	Mr. Taranovski
Slavic 225A, 225B, 225C. Structure of Modern Russian. (2-2-2)	Mr. Taranovski, Mr. Worth
Slavic 227. Eastern Slavic Languages. (3) I.	Mr. Taranovski
Slavic 229. History of the Russian Language. (3) I.	Mr. Taranovski, Mr. Worth
Slavic 270. Seminar in Structural Analysis. (3) II.	Mr. Worth
Slavic 271. Seminar in Historical Linguistics. (3) I.	Mr. Taranovski
Spanish 255. Contemporary Spanish Linguistics. (2) II.	Mr. Bull
Spanish 256. Spanish Historical Grammar. (3) II.	Mr. Zeitlin
Speech 240B. Cerebral Palsy and Aphasia. (3) II.	Mr. D'Asaro

## MATHEMATICS

(Department Office, 6115 Mathematical Sciences Building)

- Richard Arens, Ph.D., *Professor of Mathematics.*  
 Edwin F. Beckenbach, Ph.D., *Professor of Mathematics.*  
 Clifford Bell, Ph.D., *Professor of Mathematics.*  
 Earl A. Coddington, Ph.D., *Professor of Mathematics.*  
 Paul H. Daus, Ph.D., *Professor of Mathematics.*  
 †John W. Green, Ph.D., *Professor of Mathematics.*  
 Magnus R. Hestenes, Ph.D., *Professor of Mathematics (Acting Director of Numerical Analysis Research).*  
 †Paul G. Hoel, Ph.D., *Professor of Mathematics.*  
 Alfred Horn, Ph.D., *Professor of Mathematics.*  
 S. T. Hu, Ph.D., *Professor of Mathematics.*  
 T. S. Motzkin, Ph.D., *Professor of Mathematics.*  
 Raymond M. Redheffer, Ph.D., *Professor of Mathematics.*  
 Leo Sario, Ph.D., *Professor of Mathematics.*  
 I. S. Sokolnikoff, Ph.D., *Professor of Mathematics.*  
 Ernst G. Straus, Ph.D., *Professor of Mathematics.*  
 Angus E. Taylor, Ph.D., *Professor of Mathematics (Chairman of the Department).*  
 †Charles B. Tompkins, Ph.D., *Professor of Mathematics.*  
 Frederick A. Valentine, Ph.D., *Professor of Mathematics (Vice-Chairman of the Department).*  
 \_\_\_\_\_, Ph.D., *Professor of Mathematics.*  
 \_\_\_\_\_, Ph.D., *Professor of Mathematics.*  
 G. E. F. Sherwood, Ph.D., *Professor of Mathematics, Emeritus.*  
 †C. C. Chang, Ph.D., *Associate Professor of Mathematics.*  
 Peter Henrici, Ph.D., *Associate Professor of Mathematics.*  
 Paul B. Johnson, Ph.D., *Associate Professor of Mathematics.*  
 \_\_\_\_\_, *Associate Professor of Mathematics.*  
 Barrett O'Neill, Ph.D., *Associate Professor of Mathematics.*  
 Lowell J. Paige, Ph.D., *Associate Professor of Mathematics.*  
 William T. Puckett, Ph.D., *Associate Professor of Mathematics.*  
 †Robert H. Sorgenfrey, Ph.D., *Associate Professor of Mathematics.*

† Absent on leave, 1960-1961.

<sup>1</sup> In residence fall semester only, 1960-1961.

- Robert Steinberg, Ph.D., *Associate Professor of Mathematics.*  
 J. Dean Swift, Ph.D., *Associate Professor of Mathematics.*  
 Glenn James, Ph.D., *Associate Professor of Mathematics, Emeritus.*  
 Robert J. Blattner, Ph.D., *Assistant Professor of Mathematics.*  
 Leo Breiman, Ph.D., *Assistant Professor of Mathematics.*  
 Philip C. Curtis, Jr., Ph.D., *Assistant Professor of Mathematics.*  
 Basil Gordon, Ph.D., *Assistant Professor of Mathematics.*  
 Tilla Klotz, Ph.D., *Visiting Assistant Professor of Mathematics.*  
 Frank A. Raymond, Ph.D., *Assistant Professor of Mathematics.*  
 Kenneth Rogers, Ph.D., *Assistant Professor of Mathematics.*  
 Hubertus Weinitschke, Ph.D., *Assistant Professor of Mathematics.*  
 ———, *Assistant Professor of Mathematics.*  
 Guy H. Hunt, C.E., *Assistant Professor of Applied Mathematics, Emeritus.*  
 Euphemia R. Worthington, Ph.D., *Assistant Professor of Mathematics, Emeritus.*
- L. J. Adams, M.A., *Lecturer in Mathematics.*  
 Robert Herrera, M.A., *Lecturer in Mathematics.*



- Richard E. Bellman, Ph.D., *Research Associate.*  
 Theodore E. Harris, Ph.D., *Research Associate.*  
 Frederick H. Hollander, M.A., *Associate Research Mathematician.*  
 Frank J. Massey, Ph.D., *Associate Professor of Biostatistics.*  
 Michel A. Melkanoff, Ph.D., *Assistant Research Physicist.*

*Letters and Science List.*—All undergraduate courses in mathematics and statistics except Mathematics 38, 41, and 370 are included in the Letters and Science List of Courses. For regulations governing this list, see page 2.

*Preparation for the Major.*—Required: courses C (or the equivalent), 1, 3A, 3B, 4A, 4B (no additional credit will be allowed for courses in the 5A, 5B, 6A, 6B sequence), with an average grade of C or higher, except that students who have completed two years of high school algebra and also trigonometry may be excused, upon examination, from course 1. Recommended: physics, astronomy, and a reading knowledge of French and German.

*The Major.*—Courses 108, 119A, and one of 100, 112A, 112B, together with enough additional upper division units, approved by the upper division adviser, to total 24 units; not all three of 101A, 101B, 114 may be taken for credit. A student who has credit for a course containing more than one but less than 3 units of differential equations, may, to satisfy the 119A requirement, present credit for a reading course (199) containing material supplementing his previous work. At most, 3 of the 24 units required for graduation may be taken in related courses in other departments, provided approval has been obtained in advance from a departmental adviser. Candidates for a teaching credential must include Mathematics 370 in the required 24 units. The student must maintain an average grade of at least C in upper division courses in mathematics.

Students who are preparing to teach mathematics in high school are advised to elect courses 101A and 101B. All other mathematics majors are strongly advised to elect courses 111A and 122A–122B.

*Teaching Minor.*—Mathematics 370 and not less than 20 units in the Department of Mathematics, including two 3-unit courses in the 100 sequence.† The recommended minor for non-science majors working for the general secondary credential is Statistics 1, Mathematics C, 32A, 37, 38, 101A, 101B, and the required Mathematics 370.

*Business Administration.*—Students preparing for this School ordinarily are required to take Mathematics 32A–32B during their sophomore year.

† Mathematics 4B may apply toward the teaching minor in lieu of an upper division course in the 100 series.

This requirement may be satisfied by the Mathematics 1, 3A, 3B sequence (or its equivalent), which should be begun during the freshman year.

*Engineering.*—Lower division students in this College are required to take courses 5A, 5B, 6A, 6B. No additional credit will be allowed for courses in the 3A, 3B, 4A, 4B sequence.

*Qualifying Examinations.*—Examinations covering trigonometry and two years of high school algebra are given each semester at 9 a.m. on the Wednesday of registration week to allow qualified students to modify their programs as described under courses 1, 3A, 5A, 32A and 32B below. Prior arrangement to take such an examination must be made with the department secretary in Room 6115, Mathematical Sciences Building.

A student entering from high school who believes that he has had the equivalent of a course offered by the Department of Mathematics (e.g., analytic geometry and calculus) may demonstrate his proficiency in this course by examination. If, in the opinion of the department, his level of achievement is sufficiently high, he will be permitted to enter the next course in the sequence. No University credit is earned by passing such an examination. Arrangements for such an examination must be made with the department secretary in Room 6115, Mathematical Sciences Building, on or before the Monday of registration week.

#### LOWER DIVISION COURSES†

##### C. Trigonometry. (2) I, II.

Mr. Horn in charge

Prerequisite: plane geometry and one and one-half years of high school algebra or course D. Students with one year of high school algebra may enroll in course C concurrently with course D. Students taking course C who have had trigonometry in high school will be limited to 1 unit of credit.

Plane trigonometry, with special emphasis on trigonometric analysis.

##### D. Intermediate Algebra. (3) I, II.

Mr. Steinberg in charge

Prerequisite: at least one year of high school algebra. Not open for credit to students who have received credit for two years of high school algebra, or trigonometry and one and one-half years of high school algebra, or any one of the following: courses 1, 3A, 32A, or 32B. Students who need extra review and drill will be required to attend the class four times a week.

Simultaneous linear and quadratic equations, binomial theorem, progressions and logarithms.

##### 1. College Algebra. (2) I, II.

Mr. Chang in charge

Prerequisite: trigonometry and one and one-half years of high school algebra or two years of high school algebra and course C concurrently. A student who has had trigonometry may enroll in courses 1 and 3A concurrently, but he will not be permitted to drop course 1 and continue with course 3A. A student may enroll in course 3A without taking course 1 by passing a qualifying examination (see above). Not open for credit to students who have received credit for course D, 3A, 32A, or 32B.

The topics in course D and determinants, inequalities, complex numbers, theory of equations, permutations, combinations and probability.

##### 3A. Analytic Geometry and Calculus, First Course. (3) I, II.

Mr. Redheffer in charge

Prerequisite: trigonometry and one of the following: course D, course 1, course 1 concurrently, or the passing of a qualifying examination (see above).

Elements of analytic geometry, differentiation of algebraic and trigonometric functions, inverse of differentiation.

† Students who have credit for courses in the 3A, 3B, 4A, 4B sequence will not be allowed additional credit for courses in the 5A, 5B, 6A, 6B sequence; and vice versa.

†3B. **First Course in Calculus.** (3) I. Mr. Arens in charge  
 Prerequisite: course 3A.  
 Differentiation of algebraic and transcendental functions with applications.

3B. **Analytic Geometry and Calculus, Second Course.** (3) I, II.  
 Prerequisite: course 3A.  
 Continuation of 3A. Further topics in analytic geometry, exponential and logarithmic functions, the definite integral, techniques of integration.

3H. **First Honors Course in Calculus.** (3) I, II. Mr. Rogers in charge  
 Prerequisite: course 3A with high attainment and consent of the department.

Similar to course 3B but has less emphasis on drill and more emphasis on ideas. The purpose is to permit exceptionally able students to progress at a pace commensurate with their abilities, but without extra demands on their time.

4A. **Second Course in Calculus.** (3) I, II. Mr. Sario in charge  
 Prerequisite: course 3B.  
 Integration with applications; infinite series.

4G. **Second Honors Course in Calculus.** (3) II. Mr. Rogers in charge  
 Prerequisite: course 3H or 3B with high attainment and consent of the department.

Continuation of course 3H. Theory and technique of differential and integral calculus with applications; convergence of sequences and infinite series.

4B. **Third Course in Calculus.** (3) I, II. Mr. Blattner in charge  
 Prerequisite: course 4A. Upper division credit will be allowed to students who are not majors in mathematics, engineering, or meteorology, who take the course while in upper division.

Infinite series, continued; solid analytic geometry; partial differentiation; multiple integration with applications.

5A. **Analytic Geometry and Calculus.** (5) I, II. Mr. Curtis in charge  
 Prerequisite: satisfactory passing of the lower division engineering qualifying examination in mathematics or of the qualifying examination described on page 288.

A unified course in analytic geometry and differential calculus, and an introduction to integration of algebraic functions.

5B. **Analytic Geometry and Calculus.** (3) I, II. Mr. O'Neill in charge  
 Prerequisite: course 5A.

A unified course in analytic geometry and differential calculus, and an introduction to integration of transcendental functions.

6A. **Differential and Integral Calculus.** (3) I, II. Mr. Straus in charge  
 Prerequisite: course 5B.

Techniques and applications of integration; infinite series and expansion of functions.

6B. **Differential and Integral Calculus.** (3) I, II. Mr. Beckenbach in charge  
 Prerequisite: course 6A. Upper division credit will be allowed to students who are not majors in mathematics, engineering, or meteorology, who take the course while in upper division.

† The fall semester, 1960, will be the last semester this course will be given. Beginning in the spring semester, 1961, and thereafter, the course will be given as listed in the next entry.



Solid analytic geometry, partial differentiation and multiple integration, with applications; ordinary differential equations through simple applications involving damped oscillations.

**32A. Introductory Mathematical Analysis for Business. (3) I, II.**

Mr. Daus in charge

Prerequisite: sophomore standing. Not open for credit to students who have received credit for course D, or 1. A student may enroll in course 32B without taking course 32A by passing a qualifying examination (see page 288).

Algebra, including quadratics, logarithms, progressions, and the binomial theorem; graphical representation; simple and compound interest; ordinary annuities. Students who need extra review and drill will be required to attend the class four times a week.

**32B. Introductory Mathematical Analysis for Business. (3) I, II.**

Lecture, two hours; problem laboratory, one hour. Mr. Brciman in charge

Prerequisite: course 32A or the equivalent or the passing of a qualifying examination (see page 288).

Elementary differential and integral calculus and curve fitting, with applications to business and economics.

**37. Mathematics for Social and Life Sciences. (3) I, II.** Mr. Weinitschke

Prerequisite: course C, and one of D, 32A, 1, or the equivalent.

This course gives in brief form an introduction to analytic geometry and calculus, and other mathematical material particularly designed for students of the social and life sciences.

**38. Fundamentals of Arithmetic. (3) I, II.**

Mr. Bell in charge

Prerequisite: sophomore standing.

Designed primarily for prospective teachers of arithmetic. The study of the fundamental operations on integers and fractions is stressed, together with suitable visual aids. Although efficiency in arithmetical skills is required, the emphasis is on the understanding of arithmetical procedures.

**41. Introduction to Coding for Automatic Digital Computers. (1) I, II.**

Mr. Melkanoff in charge

Not open for credit to those having credit for either course 139 or 140.

Prerequisite: one year of college mathematics.

Binary arithmetic; standard machine operations; coding commands, iterations of most frequent use; applications to computers on campus.

UPPER DIVISION COURSES

**100. College Geometry. (3) I.**

Mr. Johnson

Prerequisite: course 4A.

Selected topics in geometry, with particular emphasis on recent developments.

**101A. Fundamental Concepts of Mathematics. Algebra. (3) I, II.** Mr. Bell

Prerequisite: course 37 or the equivalent.

A course designed especially for teachers and prospective teachers of secondary mathematics. Selected topics in algebra; number system; logical concepts; elementary functions; determinants and matrices.

**101B. Fundamental Concepts of Mathematics. Geometry. (3) I, II.**

Mr. Johnson

Prerequisite: course 37 or the equivalent (course 101A not a prerequisite).

A course designed especially for teachers and prospective teachers of sec-

ondary mathematics. Selected topics in elementary geometry; deductive geometry; axiomatic approach; various axiomatic systems for Euclidean geometry; non-Euclidean geometry; projective, metric, and affine geometry.

**108. Linear Algebra.** (3) I, II.

Mr. Blattner in charge

Prerequisite: course 4A.

Vector spaces; linear transformations and matrices; matrix algebra; determinants and solutions of systems of equations.

**110A-110B. Advanced Engineering Mathematics.** (2-2) I, II.

A year course. See course 110AB for description.

**110AB. Advanced Engineering Mathematics.** (4) I, II. Mr. Henrici in charge

Prerequisite: course 4B. Not open to students who have taken course 6B or any course containing 1 unit of work in differential equations; such students should take course 110C. Students in the engineering curriculum are required to take course 110AB or 110C, depending upon the prerequisite. Students who have credit for 119A will be limited to 2 units of credit.

Ordinary differential equations and orthogonal functions, partial differential equations, line integrals, Green's theorems, vector analysis, solution of equations.

**110C. Advanced Engineering Mathematics.** (3) I, II.

Mr. Sokolnikoff in charge

Prerequisite: course 6B, or an equivalent course containing at least 1 unit of differential equations. Students who have credit for course 119A will be limited to 2 units of credit.

This course covers all the material in Mathematics 110AB with the exception of one unit of differential equations.

**110D. Advanced Engineering Mathematics.** (3) II.

Mr. Sokolnikoff

Prerequisite: course 110AB or 110C.

Complex variable, probability, curve fitting.

**111A. Introduction to Higher Algebra.** (3) I, II.

Mr. Rogers

Prerequisite: course 108.

Integral domains, fields, polynomial domains, factorization theory, groups, vector spaces and linear transformations, rational and Jordan canonical forms, quadratic and hermitian forms.

**111B. Introduction to Higher Algebra.** (3) II.

Mr. Paige

Prerequisite: course 111A.

Rings and ideals, linear algebras, field extensions, algebraic numbers, Galois theory.

**112A. Introduction to Higher Geometry.** (3) I, II.

Mr. Straus

Prerequisite: course 108.

Homogeneous point and line coordinates, cross ratio, one- and two-dimensional projective geometry, point and line conics.

**112B. Introduction to Metric Differential Geometry.** (3) I, II.

Mrs. Klotz

Prerequisite: course 119A or consent of the instructor.

Classical differential geometry of curves and surfaces; special problems.

**114. Mathematical Ideas.** (3) II.

Mr. Redheffer

Prerequisite: upper division standing.

The mathematical method; sets, equivalence, cardinals; numbers, integers, rationals, complex numbers; geometry, Euclid's axioms, axiomatic method; analytic geometry, dimension, functions, curves; idea of a limit; topology, convex sets, convex functions.

**115A. Theory of Numbers. (3) I.**

Mr. Steinberg

Prerequisite: course 4A or consent of the instructor.

Divisibility, congruences, diophantine analysis.

✓ **115B. Theory of Numbers. (3) II.**

Mr. Steinberg

Prerequisite: course 115A.

Selected topics in the theory of primes, algebraic number theory, and diophantine equations.

✓ **119A. Differential Equations. (3) I, II.**

Mr. Coddington

Not open for full credit to students having credit for another course containing differential equations (for example, 110A-110B).

Prerequisite: course 4B. Not open to students who have credit for course 110AB or 110C.

Linear equations with constant coefficients and analytic coefficients. Regular singular points. Method of successive approximations. Systems.

**119B. Differential Equations. (3) II.**

Mr. Coddington

Prerequisite: course 119A, or the equivalent.

Advanced topics in ordinary differential equations, including geometric theory of autonomous systems and boundary value problems. Second order linear partial differential equations with constant coefficients. Separation of variables technique.

**120. Probability.**

See Statistics 120A-120B.

✓ **122A-122B. Advanced Calculus. (3-3) Yr. Beginning either semester.**

Prerequisite: course 110C or 119A.

Mr. Green

Fundamentals of calculus from a more advanced point of view. The real number system; continuous functions. General theory and application of partial differentiation. Implicit function theorems. Vector fields. Line and surface integrals. Point set theory. Theory of integration. Infinite series. Uniform convergence. Improper integrals.

**124. Vector Analysis and Potential Theory. (3) I, II.**

Mr. Paige

Prerequisite: course 4B. Recommended: one year of college physics.

Vector algebra, fields, calculus. Stokes' and Green's theorems. Application to potential theory. Harmonic functions.

**125. Analytic Mechanics. (3) II.**

Mr. Valentine

Prerequisite: course 119A or 110C, and one of 122A, 124, Physics 105, or consent of the instructor.

Foundations of Newtonian mechanics; kinematics and dynamics of a rigid body; variational principles and Lagrange's equations.

**127A-127B. Foundations of Mathematics. (3-3) Yr.**

Mr. Horn

Prerequisite: senior standing in mathematics. Juniors with exceptional ability may be admitted with special consent of the instructor.

Course 127A covers the basic logical ideas by means of symbolic logic.

Course 127B covers set theory, theory of relations, the logical background of function theory, the number system, and induction.

\* **128. Fourier Series and Laplace Transforms. (3) I.**

Mr. Green

Prerequisite: course 119A or consent of the instructor.

\* Not to be given, 1960-1961.

**135. Numerical Mathematical Analysis. (3) I, II. Mr. Henrici**

Prerequisite: course 119A or consent of the instructor.

Computation with numbers of fixed precision—accuracy, round off, checking. Choice and use of tables. Applications involving approximations with polynomials—finite differences, interpolation, extrapolation, numerical differentiation and integration. Computation with continued fractions. Numerical approximation to solutions of equations.

**136. Numerical Methods in Algebraic Problems. (3) I, II. Mr. Swift**

Prerequisite: course 108 and some knowledge of coding for automatic digital computers, or consent of the instructor.

Spectral theory of finite matrices. Direct and iterative methods for inverting matrices and solving linear equations and inequalities. Various methods for obtaining characteristic values and vectors of matrices. Numerical solution of systems of nonlinear equations.

**137. Numerical Methods in Differential Equations. (3) II. Mr. Weinitschke**

Prerequisite: courses 119A and 135 and some knowledge of coding for automatic digital computers, or consent of the instructor.

Forward integration; error analysis; Milne, Runge-Kutta, and difference methods; systems of equations; higher order and nonlinear equations; two-point boundary conditions.

**138. Numerical Methods of Approximation. (3) I. Mr. Motzkin**

Prerequisite: course 135 and some knowledge of coding for automatic digital computers, or consent of the instructor.

Polynomial approximation of functions of one or more variables in the senses of least-squares and least deviation. Orthogonal polynomials. Continued fractions and rational approximation. Approximation by other function families. Gaussian quadrature. Emphasis throughout on numerical methods for use with automatic digital computing machinery.

**139. Automatic Digital Computers. (3) I, II. Mr. Hollander**

Prerequisite: course 119A (may be taken concurrently), or consent of the instructor.

Idealized description of electronic components suitable for digital computing; Boolean algebra; organization and logic of large digital computers; coding and other means of applying these components effectively to the solution of extensive problems.

**140. Logic of Applications of Automatic Digital Computers. (3) II. Mr. Swift**

Prerequisite: courses 119A and 139, or consent of the instructor.

The logic of coding automatic digital computers; parts of a code; automatic coding; coding symbolisms and logic; microcoding; iterative routines, approximations, and other techniques for effective exploitation of automatic computers. Examples of codes will be prepared by each student.

**142. Introduction to Linear Programming. (3) I, II. \_\_\_\_\_**

Prerequisite: courses 4B and 108, or the equivalent.

A basic course in the principles of linear programming together with applications to industry, business and other fields. Simplex methods and alternative methods for solving linear inequality systems will be stressed. Use of electronic computers for linear programming work.

† Such knowledge may be obtained by taking either course 41 or course 139 or by suitable experience.

185. **Introduction to Complex Analysis.** (3) I, II. Mr. Coddington  
 Prerequisite: courses 110A-110B, 110C, or 119A.  
 Complex numbers, functions, differentiability, series, extensions of elementary functions, integrals, calculus of residues, conformal maps and mapping functions with applications.
197. **Directed Group Studies for Advanced Students.** (2-4) I, II.  
 Prerequisite: consent of the instructor. Mr. Valentine in charge
- ② 199. **Special Studies in Mathematics.** (1-3) I, II. The Staff  
 Prerequisite: senior standing and consent of the department.

## GRADUATE COURSES

(Open only to students who have regular graduate status.)

- \*205. **Analytic Number Theory.** (3) I. Mr. Rogers  
 Prerequisite: courses 111A, 115A, and 122A, completed or taken concurrently.  
 Domain of real integers, additive and multiplicative theory, integral domains, partitions, special series, prime number theory.
206. **Algebraic Number Theory.** (3) I. Mr. Straus  
 Prerequisite: course 221A and 122B or consent of instructor.  
 Ideals, valued rings, ideal classes, quadratic and cyclotomic fields, applications to Diophantine equations, elements of class field theory, prime ideal theorem, Thue-Siegel-Roth and related theorems.
- 209A-209B. **Real Analysis.** (3-3) Yr. \_\_\_\_\_  
 (Replaces the former 209, 242AB.)  
 Prerequisite: course 122A-122B or the equivalent.  
 Point-set topology in Euclidean space. More general spaces. Continuous functions. Convergence and approximation theorems. Functions of bounded variation. Integrals and measures. Multiple integrals and the Fubini theorem. Absolutely continuous functions. Set functions. Differentiation and integration. The  $L^p$  spaces.
- 210A-210B. **Differential Geometry.** (3-3) Yr. Mr. O'Neill  
 Prerequisite: course 112B or consent of the instructor.  
 Application of techniques of algebra, analysis, topology to study geometric objects. Smooth manifolds, their local properties, their global properties and relations between global and local properties. Fiber bundles and their geometric applications.
- \*212. **Algebraic Geometry.** (3) II. \_\_\_\_\_  
 Prerequisite: courses 111A, 112A.  
 Algebraic preliminaries, projective space, Grassmann coordinates, collineations and correlations.
- \*214. **Topics in the Theory of Convex Sets.** (3) I. Mr. Valentine  
 Prerequisite: either one of the courses 209A, 224A, 226A, or the consent of the instructor.  
 Basic theorems for convex sets in topological linear spaces; separation theorems and support properties; local convexity; families of convex sets and isoperimetric problems; characterizations of convex sets; convex functions; Helly type theorems.
- \*215. **Non-Euclidean Geometry.** (3) II. Mr. Dans  
 Prerequisite: consent of the instructor. Recommended: course 208.

\* Not to be given, 1960-1961.

- \*220A-220B. Advanced Probability.** (3-3) Yr. Mr. Breiman  
Prerequisite: course 209A.  
Review of essential material in measure and integration. Probability distributions, independence and convergence, characteristic functions, the continuity theorem, central limit theorem, laws of large numbers. The Borel zero-one law, Glivenko-Cantelli theorem and other topics.
- 221A-221B. Higher Algebra.** (3-3) Yr. Mr. Swift  
Prerequisite: course 111A.
- \*222. Theory of Groups.** (3) I. Mr. Steinberg  
Prerequisite: course 221A-221B or 111A and consent of the instructor.  
Classical theorems of general group theory, permutation groups, group representations, basic facts on topological and Lie groups.
- 224A-224B. Complex Analysis.** (3-3) Yr. Beginning either semester.  
Mr. Beckenbach, Mr. Redheffer, Mr. Straus  
Prerequisite: course 122A-122B. Students with facility for mathematics may take courses 224A and 224B in their senior year. These courses include the theory in course 185.  
Theory of complex numbers and functions, linear transformations, conformal mappings, Cauchy's theorems and their consequences, residue calculus; Taylor and Laurent series, Mittag-Leffler and Weierstrass theorems, Jensen's formula, subharmonic functions, canonical mappings, analytic continuation, the monodromy theorem, and algebraic functions.
- \*225A-225B. Mechanics of Continua.** (3-3) Yr. Mr. Weinitshke  
Prerequisite: course 122A-122B or consent of the instructor.  
Course 225A deals with the theory of mechanics of deformable media, analysis of stress, analysis of strain, stress-strain relations, energy theorems, fundamental boundary value problems of mechanics of continua.  
Course 225B deals with the variational methods of solution of problems of elasticity, uses of the analytic function theory in two-dimensional problems, theory of plates and shells.
- 226A-226B. Topology.** (3-3) Yr. Mr. Hu  
Prerequisite: course 209A, taken previously or concurrently, or consent of the instructor.  
Properties of topological spaces: separation axioms, compactness, connectedness; metrizability; further topics selected from general and algebraic topology.
- \*227. Infinite Series.** (3) II. Mr. Redheffer  
Prerequisite: course 224A or 209A, 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.
- 228A-228B. Introduction to Functional Analysis.** (3-3) Yr. Mr. Taylor  
Prerequisite: courses 209A, 224A, or consent of instructor.  
Linear spaces, especially with topology or norm. Dual space. The standard theorems on linear operators. Introduction to spectral theory in Hilbert space. Analysis of vector valued functions. Operational calculus. Commutative normed rings. Spectral representation and multiplicity.
- \*233A-233B. Mathematical Logic.** (3-3) Yr. Mr. Chang  
Prerequisite: courses 127A-127B and 221A-221B, or consent of instructor.  
Gödel's incompleteness theorem and related results, recursive functions and

\* Not to be given, 1960-1961.

sets; axiomatic set-theories, problems of axiomatization, independence, and consistency; theory of models, arithmetical classes and their algebraic properties; higher order functional calculi; generalizations of Gödel's completeness theorem; many valued logics.

**\*234A-234B. Riemann Surfaces. (3-3) Yr. Mr. Sario**

Prerequisite: courses 111A, 224A, or consent of the instructor.

Course covers the book "Riemann Surfaces" by L. Ahlfors and L. Sario. Topological spaces, covering surfaces, simplicial homology, singular homology, harmonic and subharmonic functions, Dirichlet's problem, normal operators, conformal mappings, capacities, classification theory, extremal length, method of orthogonal projection, kernel functions, Abel's and Riemann-Roch's theorems.

**235. Lie Groups. (3) I. Mr. Arens**

Prerequisite: course 209A or 226A, 221A, or consent of instructor.

Covering spaces, analytic manifolds, infinitesimal transformations, Lie groups (Chevalley's presentation).

**236. Topological Groups. (3) II. Mr. Blattner**

Prerequisite: courses 224A, 226A, or consent of the instructor.

Invariant integration, group algebras, representation of Abelian and compact groups.

**237A-237B. Calculus of Variations. (3-3) Yr. Mr. Hestenes**

Prerequisite: courses 224A, 209A, or consent of the instructor.

The differential equation of a curve minimizing a definite integral. Other properties of a minimizing curve analogous to those deduced by Legendre, Weierstrass, and Jacobi. Conditions which insure the existence of a minimum, extensions to multiple integrals.

**\*238. Algebras of Operators in Hilbert Space. (3) I. Mr. Blattner**

Prerequisite: courses 228A-228B, 209A, or consent of instructor.

Convergence of operators; weakly closed (Von Neumann) algebras. Density theorems; algebraic and unitary invariants; classification of projections. Dimension function.

**239. Boolean Algebras. (3) II. Mr. Horn**

Prerequisite: course 226A or consent of the instructor.

Axioms and elementary properties, completeness properties, distributivity laws, ideal theory, sub-algebras and quotient algebras, representation theory, applications to topology, Boolean algebras with operators, closure algebras.

**\*240. Topological Linear Algebras. (3) II. Mr. Curtis**

Prerequisite: courses 226A and 228A-228B.

Representation of, and approximation in, certain Banach algebras. Operational calculus for several elements. Extension problems. Analytic function algebras. Inverse limits of Banach algebras.

**\*241. Semigroups of Operators. (3) I.**

Prerequisite: course 228A-228B.

Theory of semigroups of operators, with applications to the Cauchy problem in partial differential equations.

**243A-243B. Ordinary Differential Equations. (3-3) Yr. Mr. Henrici**

Prerequisite: courses 224A, 209A, or consent of instructor.

Existence and uniqueness theorems, linear systems, systems with isolated singularities of the first and second kind, regular and singular boundary value

\* Not to be given, 1960-1961.

problems, perturbation theory, Poincare-Bendixson theory, stability, asymptotic behavior, and spectral theory of symmetric differential operators. Will normally be offered every other year.

**\*244. Partial Differential Operators. (3) II.** Mr. Coddington

Prerequisite: course 228A-228B and consent of instructor.

Linear partial differential operators of all orders, emphasizing functional analysis. Boundary value problems, expansions. Weak, strong, and distribution-solutions.

**246A-246B. Partial Differential Equations. (3-3) Yr.** Mr. Redheffer

Prerequisite: course 224A or 209A or Engineering 181A, or consent of instructor.

The Cauchy-Kowalewski theorem. Characteristics. Formulation and rigorous classical analysis of elliptic, hyperbolic and parabolic equations of second order. Aspects of applications of current interest and augmentation of material to attack these problems.

**247A-247B. Tensor Analysis. (3-3) Yr.** Mr. Sokolnikoff

Prerequisite: course 122A-122B or consent of the instructor.

247A. Vectors in  $n$ -dimensional and infinitely dimensional manifolds. Linear transformations. Algebra and calculus of tensors. Applications to geometry.

247B. Applications to differential geometry of curves and surfaces. First and second differential forms, geodesics in Riemannian manifolds. Equations of Gauss and Codazzi. Applications to various branches of applied mathematics, including the theory of relativity.

**\*251. Computational Aspects of Linear Problems. (3) II.** Mr. Henrici

Prerequisite: courses 111A or 136, and 139, or consent of the instructor.

Analysis of numerical methods for inverting matrices, solving systems of linear equations and inequalities, computing eigenvalues and eigenvectors of finite matrices, solving and evaluating linear games. Special attention to suitability of methods for electronic digital computers.

**\*252. Computational Aspects of Partial Differential Equations. (3) I.**

Mr. Henrici

Prerequisite: courses 122AB, 139, or consent of the instructor.

Finite difference methods: convergence, stability, error analysis, relaxation techniques. Methods based on minimum principles. Solutions in series form. Numerical solution of integral equations. Role of digital computing machines.

**260. Seminars in Mathematics. (3) I, II.** The Staff

Topics in various branches of mathematics and their applications, by means of lectures and informal conferences with members of the staff. Seminars for 1960-1961 will include:

*Fall Semester*

- |   |               |
|---|---------------|
| Sec. 1. Seminar for Master's Essay.           | Mr. Straus    |
| Sec. 2. Seminar in Automorphic Functions.     | Mr. Sario     |
| Sec. 3. Seminar in Foundations of Mathematics | Mr. Horn      |
| Sec. 4. Seminar in Combinatorial Problems.    | Mr. Motzkin   |
| Sec. 5. Seminar in the Theory of Rings.       | Mr. Steinberg |

*Spring Semester*

- |   |             |
|---|-------------|
| Sec. 1. Seminar for Master's Essay.                                 | Mr. Straus  |
| Sec. 2. Seminar in Functions of Several Complex Variables.          | Mr. Sario   |
| Sec. 3. Seminar in Foundations of Mathematics.                      | Mr. Horn    |
| Sec. 4. Seminar in Approximation Theory.                            | Mr. Motzkin |
| Sec. 5. Seminar in Diophantine Approximation and Transcendentality. | Mr. Straus  |

\* Not to be given, 1960-1961.



290. **Research in Mathematics.** (1 to 6) I, II.

The Staff

**PROFESSIONAL COURSE IN METHOD**

370. **The Teaching of Mathematics.** (3) II.

Mr. Johnson

Prerequisite: course 4A or 37 and senior standing.

A critical inquiry into present-day tendencies in the teaching of mathematics.

**STATISTICS**

**LOWER DIVISION COURSE**

1. **Elementary Statistics.** (3) I, II.

Mr. Ferguson in charge

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**

120A-120B. **Probability and Statistics.** (3-3) Yr.

Mr. Breiman

(Replaces former Mathematics 120.)

Prerequisite: senior standing in mathematics, or consent of instructor. Designed for a student who desires to learn probability, and also theoretical statistics. Students with credit in Statistics 131A-131B will not receive credit for Statistics 120B.

First semester: basic laws of probability, discrete and continuous random variables, expectation, distributions, limit theorems. Second semester: basic distributions of statistics, sampling theory, estimation, hypothesis testing.

131A-131B. **Statistics.** (3-3) Yr.

Mr. Ferguson

Prerequisite: course 4B. Students with credit in Statistics 120B will not receive credit for Statistics 131A.

A basic introductory course in the theory and applications of statistical methods. This course is designed for students who wish to learn statistical methods without first taking a course in probability and who are interested in applications.

**GRADUATE COURSES**

\*231. **Multivariate Analysis.** (3) I.

Mr. Hoel

Prerequisite: Statistics 131A-131B; recommended: Mathematics 122A.

Multivariate normal distribution. Analysis of variance. Distribution of product moments. Normal correlation and regression. Chi-square distribution.

232. **Theory of Estimation and Testing Hypotheses** (3) I.

Mr. Ferguson

Prerequisite: Statistics 131A-131B; recommended: Mathematics 122A.

Estimates. Asymptotic efficiency and normality. Neyman-Pearson theory of tests.

233. **Stochastic Processes.** (3) I.

Mr. Breiman

Prerequisite: an upper division course in probability or mathematical statistics, or consent of the instructor.

Elements of Markoff processes, with applications to physics, biology, and engineering. Stationary processes, with applications to electronics and other fields.

240. **Mathematical Theory of Design of Experiments.** (3) II.

Mr. Massey

Prerequisite: Statistics 131A-131B, Mathematics 108, and consent of instructor.

\* Not to be given, 1960-1961.

Advanced statistical theory basic to the construction of experimental designs. Criteria for optimum designs. Methods of application to typical research problems.

260. Seminars. Prerequisite: Statistics 231 or 232.

**Theoretical Statistics.** (3) II. Mr. Ferguson, Mr. Breiman

Topics will be selected from distribution theory, advanced probability, theory of inference, theory of experimental design, multivariate analysis, sequential analysis, nonparametric methods.

**\*Applied Statistics.** (3) II. Mr. Hoel

Topics will be selected from those listed under Theoretical Statistics but the emphasis will be on applications.

### NUMERICAL ANALYSIS RESEARCH

Numerical Analysis Research is a part of the Department of Mathematics of the University of California. It continues work formerly carried out on the campus by the Institute for Numerical Analysis of the National Bureau of Standards, which was replaced by this project on June 30, 1954. The group carries on basic research and training in numerical analysis and the efficient use of electronic digital computers for scientific and related purposes. It operates the SWAC, a fast electronic digital computing machine designed and built by the National Bureau of Standards with the financial support of the United States Air Force. The project provides facilities for large computation, which are available to University departments. With the cooperation of Numerical Analysis Research, the Department of Mathematics offers a series of courses and seminars to provide training in modern numerical analysis.

The research program of Numerical Analysis Research has been underwritten by the Office of Naval Research, United States Navy, and the Office of Ordnance Research, United States Army. The SWAC, library, and other equipment of the project are furnished by the United States Navy.

### METEOROLOGY

(Department Office, 7127 Mathematical Sciences Building)

Jacob Bjerknes, Ph.D., *Professor of Meteorology.*

Jörgen Holmboe, M.Sc., *Professor of Meteorology.*

Joanne Malkus, Ph.D., *Professor of Meteorology.*

Morris Neiburger, Ph.D., *Professor of Meteorology (Chairman of the Department).*

Zdenek Sekera, Ph.D., *Professor of Meteorology.*

W. Lawrence Gates, Sc.D., *Associate Professor of Meteorology.*

Yale Mintz, Ph.D., *Associate Professor of Meteorology.*

Morton G. Wurtele, Ph.D., *Associate Professor of Meteorology.*

James G. Edinger, Ph.D., *Assistant Professor of Meteorology.*

———, *Instructor in Meteorology.*



Robert E. Holzer, Ph.D., *Professor of Geophysics.*

Clarence E. Palmer, D.Sc., *Professor of Geophysics.*

*Letters and Science List.*—All undergraduate courses in this department are included in the Letters and Science List of Courses. For regulations governing this list, see page 2.

*Preparation for the Major.*—Course 4A; Physics 1A, 1B, 1C, 1D, or Physics 1A, 1B, 2B, or Physics 2A, 2B; Mathematics 1, 3A, 3B, 4A, 4B, or Mathematics 5A, 5B, 6A, 6B. Chemistry 1A is strongly recommended. Mathematics 4B may be taken during the junior year.

\* Not to be given, 1960-1961.

*The Major.*—Courses 104, 108, 131A, 131B, and two additional upper division meteorology courses; Mathematics 119A or 110AB or 110C, plus one additional upper division mathematics course; Physics 105 and 112.

#### LOWER DIVISION COURSES

### 3. Descriptive Meteorology. (3) II.

Mr. Palmer

Not open for credit to students who have credit for Geography 3 or Meteorology 4 or 4A.

Elementary survey of the causes and regional distribution of weather and climate.

### 4. General Meteorology. (3) I.

Mr. Edinger

Prerequisite: Mathematics 1 and Physics 1B or 2A.

Composition, structure and circulation of the atmosphere, including elementary theory of storms and other weather disturbances. Theory of meteorological instruments and observations.

### 4A. General Meteorology. (5) I.

Mr. Edinger

Lecture, three hours; laboratory, six hours. Prerequisite: Mathematics 1 and Physics 1B or 2A. Students who have credit for Meteorology 4 will receive 2 units of credit.

Composition, structure and circulation of the atmosphere, including elementary theory of storms and other weather disturbances. Theory of meteorological instruments and observations. Practical exercises in surface and upper air observations, weather codes, and elementary weather map analysis.

#### UPPER DIVISION COURSES

### 101A-101B. Weather Analysis and Forecasting. (5-5) Yr.

Mr. Wurtele

Lecture, two hours; laboratory, demonstration, and quiz, thirteen hours per week. Prerequisite: Courses 4A or 5, 107, 120.

Representation of the three-dimensional fields of the weather; structure of atmospheric pressure and wind systems and the laws of their development and motion; forecasting wind, temperature, clouds, precipitation, fog, icing, turbulence, and severe storms.

### \*103. Oceanography. (2) II.

Mr. Gates

Prerequisite: Mathematics 4B or 6B; Physics 1A, 1B, 1C, 1D or Physics 2A, 2B.

Principles and methods of physical oceanography. Distributions of temperature and salinity; current systems. Thermodynamics and energy exchange between ocean and atmosphere.

### 104. Meteorological Physics. (3) I.

Prerequisites: Mathematics 4B or 6B; Physics 1A, 1B, 1C, 1D or Physics 2A, 2B.

Elementary theory of atmospheric radiation; atmospheric optics; introduction to atmospheric electricity; physics of cloud and precipitation.

### 108. Physical Climatology. (3) I.

Mr. Mintz

Prerequisite: course 4A.

The general circulation of the atmosphere and the normal fields of temperature, cloudiness, and precipitation over the globe.

### \*111. Modern Meteorological Instruments. (3) II.

Mr. Edinger

Lecture, two hours; laboratory, three hours. Prerequisite: course 4A.

A survey of modern instruments, their uses and limitations. Meteorological instrumentation, with emphasis on accuracy and applicability of various techniques; measurement of special meteorological elements; upper-air sounding methods; radar storm detection, sferics; rawins.

\* Not to be given, 1960-1961.

**121. Dynamic Meteorology. (3) I.** Mr. Holmboe

Prerequisite: courses 131A-131B, with a grade of C or better.

Kinematics and dynamics of the field of motion, including the determination of the velocity field from its divergence, vorticity and boundary conditions. Applications to simple barotropic waves.

**130. Introduction to Numerical Weather Prediction. (3) I.** Mr. Gates

Prerequisite: courses 131A-131B.

Formulation and analysis of the problem of numerical weather prediction. Study of simple atmospheric models. Quasi-geostrophic approximation, baroclinic instability, energy conversions. Numerical errors and integration methods.

**131A. Thermodynamics, Hydrostatics and Elementary Dynamics of the Atmosphere. (5) I.** Mr. Wurtele

Lecture, four hours; laboratory, three hours. Prerequisite: course 4A. Prerequisite or concurrent: Mathematics 110A and 110B, or 119A or 110C; Physics 112.

Thermal properties of air and water vapor. Adiabatic processes. Atmospheric soundings and hydrostatic stability. The equations of motion relative to the earth. Geostrophic and gradient flow. Frontogenesis and frontal equilibrium. Variation of wind with height. Vertical motion and convection.

**131B. Dynamics of the Atmosphere. (5) II.** Mrs. Malkus

Lecture, two hours; laboratory, twelve hours. Prerequisite: course 131A.

Differential properties of the velocity field: divergence, vorticity. The equation of continuity; the vorticity equation. Waves in zonal flow; long waves in the westerlies. Frontal waves and cyclones. Baroclinic processes. Energy conversions. Relations of cloud and weather to the field of motion.

**140. Radiation Processes in the Atmosphere. (3) I.** Mr. Sekera

Prerequisite: course 104 or Physics 108B and 110.

Radiative transfer in a planetary atmosphere, with application to the solar, sky, and heat radiation of the earth and atmosphere. Radio wave propagation in the atmosphere; principles and methods of radar meteorology.

**141. Physics of the Upper Atmosphere. (3) II.** Mr. Holzer

Prerequisite: course 104, or Physics 108B or 113.

Direct and indirect methods of the study of upper atmospheric layers. Physical properties of the upper atmosphere; composition, temperature and pressure; ozone layer; aurora and airglow; ionosphere.

**151. Principles of Weather Analysis and Forecasting (5) II.**

Prerequisite: courses 131A-131B.

Mr. Gates

Advanced laboratory exercises in the analysis of the structure of wind and weather systems and the laws of their development and motion.

**199. Special Studies in Meteorology. (1-3) I, II.** Mr. Holmboe

Prerequisite: senior standing and consent of the instructor.

GRADUATE COURSES

**\*201. Advanced Synoptic Meteorology. (3) I.** Mr. Bjerknes

Prerequisite: courses 131A-131B and 108.

**217. Meteorological Hydrodynamics. (3) II.** Mr. Holmboe

Prerequisite: course 121.

**\*230A-B-C-D. Advanced Topics in Numerical Weather Prediction.**

(2-2-2-2) II.

Mr. Gates

Prerequisite: course 130.

\* Not to be given, 1960-1961.

- \*231A-B-C-D. Advanced Topics on the Higher Atmosphere. (2-2-2-2) I. \_\_\_\_\_
- 232A-B-C-D. Advanced Topics in Dynamic Meteorology. (3-3-3-3) I, II. \_\_\_\_\_
- 233A. Advanced Topics in Synoptic Meteorology and Physical Climatology. (2) I. Mr. Bjerknæs
- 233B. Advanced Topics in Synoptic Meteorology and Physical Climatology. (2) II. Mr. Mintz
- 234A-B-C-D. Advanced Topics in Physical Meteorology. (2-2-2-2) I. Mr. Neiburger
260. Seminar in Meteorology. (2) I, II. Mr. Neiburger
261. Seminar in Cloud Physics. (2) II. Mr. Neiburger
262. Seminar in Meteorological Hydrodynamics. (2) I, II. Mr. Holmboe
- \*263. Seminar in Synoptic Meteorology and Climatology. (2) I. \_\_\_\_\_
264. Seminar in Physical Meteorology. (2) II. \_\_\_\_\_
297. Individual Studies for Graduate Students. (1-4) I, II. Mr. Gates
299. Research on Doctoral Dissertation. (1-6) I, II. Mr. Mintz

## RELATED COURSE IN ANOTHER DEPARTMENT

- Geophysics 255. Seminar in Atmospheric Physics. (3) I. Mr. Holzer

## MILITARY SCIENCE AND TACTICS

(Department Office, 127 Men's Gymnasium)

- Paul Burns, B.S., Colonel, Artillery, *Professor of Military Science (Chairman of the Department)*.
- Vernon C. Devan, Major, Infantry, *Associate Professor of Military Science and Tactics*.
- George W. Schilling, Jr., A.B., Lieutenant Colonel, Military Police Corps, *Associate Professor of Military Science and Tactics*.
- Richard V. Atkinson, A.B., Captain, Infantry, *Assistant Professor of Military Science and Tactics*.
- William C. De Lapp, III, A.B., Captain, Military Police Corps, *Assistant Professor of Military Science and Tactics*.
- Ernest B. de Silva, A.B., Captain, Infantry, *Assistant Professor of Military Science and Tactics*.
- Ishmael Pack, B.S., Captain, Infantry, *Assistant Professor of Military Science and Tactics*.

*Letters and Science List.*—All undergraduate courses in this department up to a total of 12 units are included in the Letters and Science List of Courses. Note: This in no way prejudices counting additional military science courses up to the 12 units of non-Letters and Science credit accepted toward the degree. For regulations governing this list, see page 2.

*College of Engineering.*—Lower division: 6 units are acceptable toward the baccalaureate. Upper division: 6 units of nonmajor field electives and the 3 units of optional electives, a total of 9, may be applied toward the baccalaureate.

\* Not to be given, 1960-1961.

**ARMY RESERVE OFFICERS' TRAINING CORPS**

The Army R.O.T.C. course provides college-level 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 course is to provide a general type of training to produce officers who may serve in any arm of service of the Army after further basic training in the appropriate service school. The length of such service is to be a period of six months to two years, contingent upon the requirements of the service and/or the desires of the individual, 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.

The course is divided into two general parts: (1) the two-year Basic Course for all qualified male students who select Army R.O.T.C. for completion of the two-year military training requirements prescribed by the University for graduation 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 Army. Successful completion of the four-year R.O.T.C. branch general curriculum qualifies graduates for a commission in any arm or service of the Army. 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 or 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) provides for deferment from the draft of regularly enrolled students currently pursuing a course in military science and tactics who meet the standards for acceptance and who agree to complete the Advanced Course training upon completion of the Basic Course. The purpose of deferring a student's active military service until completion of the R.O.T.C. course of instruction is to permit him to complete the entire four-year R.O.T.C. program prior to undertaking his active military service obligations. Additional information may be obtained from the department.

**BASIC COURSE (LOWER DIVISION)**

The Basic Course is required by University regulations for all qualified lower division male students. Students claiming exemption from all or part of the Basic Course because of non-citizenship, physical disability, age (over twenty-four years of age at time of initial enrollment in the Basic Course), active service in the Armed Forces, or previous R.O.T.C. training may petition the University for exemption. However, a student petitioning for exemption must enroll in the appropriate R.O.T.C. course pending completion of official action on his petition.

The objective of the two-year Basic Course R.O.T.C. curriculum is to acquaint the student with the fundamental principles of national security through the study of the military history of our country, to introduce the weapons and principles of modern warfare, and to develop the traits of character and leadership necessary to prepare him to discharge 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. First-Year Basic Military Science. (1½-1½) Yr. The Staff**

Two hours of classwork and one hour of leadership laboratory.  
 Organization of the Army and R.O.T.C., American military history, individual weapons and marksmanship, leadership laboratory.

**20A-20B. Second-Year Basic Military Science. (1½-1½) Yr. The Staff**

Prerequisite: course 1A-1B. Two hours of classwork and one hour of leadership laboratory.

Crew-served weapons and gunnery, map and aerial photography reading, role of the Army in national defense, school of the soldier and exercise of command.

**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. Advanced Course students 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 among qualified regularly enrolled students who meet the academic and physical requirements and who have demonstrated positive interest and leadership potential. Students may apply after successful completion of one year of the Basic Course (or who have the credit for the Basic Course from other institutions authorized to present the equivalent instruction) or evidence of satisfactory service in the Armed Forces, and who can qualify for appointment as a second lieutenant prior to reaching twenty-eight years of age. All students accepted for entrance into the Advanced Course must have at least two more academic years remaining in either the graduate or undergraduate course before qualifying for their first baccalaureate degree.

Students accepted for admission to the Advanced Course receive approximately \$535 in pay during the two-year period (exclusive of summer camp) in addition to the use of all necessary equipment and textbooks free of charge. The officer-type uniform provided each student becomes his personal property upon successful completion of the Advanced Course.

Advanced Course students are required to attend a six-week course of training at R.O.T.C. Summer Camp during the summer vacation period following the completion of the first year of the Advanced Course; this Summer Camp is attended by Advanced Course R.O.T.C. students from several universities. The training at camp 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 \$78 per month and travel expenses to and from camp. Academic credit of 3 units for the six weeks of camp is granted by the University.

**103A-103B. First-Year Advanced Military Science. (2-3) Yr. The Staff**

Two hours of class work 103A, three hours of class work 103B, and one hour of leadership laboratory each week.

Leadership, military teaching, principles, branches of the army, small-unit tactics and communications, precamp orientation, leadership laboratory.

Curriculum under revision. Student will be authorized to substitute University-taught subjects for 45 hours in this year of the advanced course. Substitutions will be made on an individual basis with the Department of

Military Science and departments of the University concerned in general areas of science comprehension, general psychology, effective communication, political institutions, and political development.

**104A-104B. Second-Year Advanced Military Science.** (2-3) Yr. The Staff

Prerequisite: Basic Course and course 103A-103B.

Two hours of classwork 104A, three hours of classwork 104B, and one hour of leadership laboratory each week.

Operations, logistics, army administration, military law, the role of the United States in world affairs, service orientation, leadership laboratory.

Curriculum under revision. Student will be authorized to substitute University-taught subjects for 45 hours in this year of the advanced course. Substitutions will be made on an individual basis with the Department of Military Science and departments of the University concerned in general areas of science comprehension, general psychology, effective communication, political institutions, and political development.

## MUSIC

(Department Office, 2449 Music Building)

Lukas Foss, *Professor of Music.*

Boris A. Kremenliev, Ph.D., *Professor of Music.*

<sup>1</sup>Robert U. Nelson, Ph.D., *Professor of Music (Chairman of the Department).*

Laurence A. Petran, Ph.D., F.A.G.O., *Professor of Music and University Organist.*

†H. Jan Popper, Ph.D., *Professor of Music.*

Feri Roth, Mus.Doc., *Professor of Music.*

Walter H. Rubsamen, Ph.D., *Professor of Music.*

Clarence Sawhill, M.M., *Professor of Music.*

John N. Vincent, Jr., Ph.D., *Professor of Music.*

\_\_\_\_\_, *Professor of Music.*

<sup>1</sup>Mantle Hood, Ph.D., *Associate Professor of Music.*

W. Thomas Marrocco, Ph.D., *Associate Professor of Music.*

Raymond Moremen, M.S.M., *Associate Professor of Music.*

Robert M. Stevenson, Ph.D., *Associate Professor of Music.*

Frances Wright, *Associate Professor of Music, Emeritus.*

<sup>2</sup>Paul E. Des Marais, M.A., *Assistant Professor of Music.*

Maurice Gerow, M.M., *Assistant Professor of Music.*

Edwin H. Hanley, A.B., *Acting Assistant Professor of Music.*

Paul J. Revitt, Ph.D., *Assistant Professor of Music.*

†Roy E. Travis, M.A., *Assistant Professor of Music.*

Robert M. Trotter, Ph.D., *Assistant Professor of Music.*

Harry R. Edwall, M.M., *Acting Assistant Professor of Music.*

\_\_\_\_\_, *Assistant Professor of Music.*

\_\_\_\_\_, *Assistant Professor of Music.*

\_\_\_\_\_, *Assistant Professor of Music.*

\_\_\_\_\_, *Instructor in Music.*



Irving Beckman, M.A., *Lecturer in Music.*

Robert L. DiVall, A.B., *Lecturer in Music.*

† Absent on leave, 1960-1961.

<sup>1</sup> In residence fall semester only, 1960-1961.

<sup>2</sup> Sabbatical leave in residence fall semester, 1960-1961.



- George Drexler, *Lecturer in Music.*  
 Charles Delancey, M.A., *Lecturer in Music.*  
 Arthur Edwards, Ph.D., *Lecturer in Music.*  
 Bert Gasman, *Lecturer in Music.*  
 \*Albert Goldberg, Mus.M., *Lecturer in Music.*  
 Sinclair R. Lott, A.B., *Lecturer in Music.*  
 Frederick W. Moritz, *Lecturer in Music.*  
 Stanley E. Plummer, *Lecturer in Music.*  
 Leo Smit, *Lecturer in Music.*  
 Paul O. W. Tanner, A.B., *Lecturer in Music.*  
 Erwin Windward, A.B., *Lecturer in Music.*  
 Waldo Winger, A.B., *Lecturer in Music.*  
 Roger Wagner, Mus.Doc., *Lecturer in Music.*  
 Natalie Limonick, A.B., *Associate in Music.*  
 Pauline Turrill, M.A., *Associate in Music.*  
 Charles A. Seeger, *Research Associate in Ethnomusicology.*  
 ———, *Lecturer in Music.*  
 ———, *Lecturer in Music.*  
 ———, *Lecturer in Music.*  
 ———, *Associate in Music.*



Virginia J. Whitfield, *Supervisor of Training, Music.*

**Requirements for Entering Music Students.**—Specialization in music presupposes some knowledge of the fundamentals of music and some ability in sight reading at the piano. Therefore, every entering undergraduate intending to prepare for the major or teaching minor in music must take the Basic Music Test and the Sight Reading Test during the week prior to his first registration in the University. The student with previous preparation may substitute the corresponding Advanced Standing Examination (Musicianship or Piano).

Every student who fails the Sight Reading Test must immediately enroll in course B (Sight Reading). Any student failing this course will be required to repeat it in the next semester of his residence in the University.

**Advanced Standing Examinations.**—Any student wishing to be placed above the beginning level in course 1A-1B-1C (Musicianship), 3A-3B-3C (Harmony), 41A (Voice), or 41E (Piano) must take the Advanced Standing Examination covering the subject matter of this course during the week prior to his first registration or in the previous spring during the University examination period. Placement depends on the results of these examinations rather than on any unit credit previously received. If he already has unit credit for part or all of these courses, he retains that credit, but receives no further unit credit for any part repeated as a result of the Advanced Standing Examinations.

For details concerning the Basic Music Test, the Sight Reading Test, and the Advanced Standing Examinations, inquire of the Department of Music.

The student may select a major in music in either the College of Letters and Science or in the College of Applied Arts; these majors lead to the degree of Bachelor of Arts in both instances. For information concerning teaching credentials, consult the ANNOUNCEMENT OF THE SCHOOL OF EDUCATION, LOS ANGELES.

\* In residence spring semester only, 1960-1961.

### College of Letters and Science

*Letters and Science List.*—All courses included in the series 1A to 30B; 100A to 115D, 118, 121A to 177, 197, and 199. For regulations governing this list, see page 2.

*Preparation for the Major.*—Courses 1A-1B-1C, 3A-3B-3C, 20A-20B, two semesters from the series 40A-J, and a year of University work in French, German, or Italian (or its high-school equivalent). Recommended: History 1A-1B and Physics 2A-2B or 10.

*The Major.*—Twenty-four units of upper division courses, distributed as follows: (a) course 100A-100B, (b) at least 4 units chosen from courses 121A to 177, (c) courses 104A-104B, 107A, and 109A, and (d) additional upper division courses in music, including four semesters from the series 190A-J.

### College of Applied Arts

*Distribution of Units.*—The total number of units in Music Department courses which may be included in the 120 units required for the Bachelor of Arts degree may not exceed 54. Only 16 units from courses 40A-J, 41A-W, 190A-J, 191A-W, 192A-W, and 193 may be applied towards the bachelor's degree.

*Preparation for the Major.*—Courses 1A-1B-1C, 3A-3B-3C, 20A-20B, two semesters from the series 40A-J, and a year of University work in French, German, or Italian (or its high-school equivalent). Recommended: History 1A-1B, and Physics 2A-2B or 10.

*The Major.*—Thirty-six units of upper division courses, distributed as follows: (a) course 100A-100B, (b) at least 4 units chosen from courses 121 to 177, (c) courses 104A-104B, 107A, and 109A, (d) four semesters from the series 190A-J, and (e) electives from upper division music courses to bring the total to 36 units.

*Requirements for Teaching Credentials.*—Within the 36 units required for the major, the candidate for a teaching credential must fulfill requirement (e) by including courses 110, 111, 115A-B-C-D. In addition he must take courses 41A or 191A (4 units) and 41E or 191E (4 units). For further information on teaching credentials, consult the ANNOUNCEMENT OF THE SCHOOL OF EDUCATION, LOS ANGELES.

### Graduate Division

All students planning to become candidates for the Master of Arts or Doctor of Philosophy degrees in music are required to take Placement Examinations in the following subjects during their first semester of residence: *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 medium. The student's transcript of credits must show at least a grade B average in each of the following subjects: *dictation, sight singing, keyboard harmony, orchestration, and conducting*. Deficiencies in the record must be removed by examination or formal course work. The completion of these requirements in their entirety is prerequisite to the final examinations for the M.A. degree and the qualifying examination for the Ph.D. degree; they also function as guidance examinations which point out to the student possible weaknesses or gaps in his undergraduate work. These examinations are given in the fall and spring semester during the fourth week of instruction; some portion of the examinations may also be given during the summer sessions. The student will be

allowed to take each examination no more than three times and all must be passed within a two-year period. As soon as possible, and in any case before being assigned a committee to guide his studies for a higher degree, the student must demonstrate his ability to write with insight on a musical subject in clear English, or to compose music showing definite promise.

**A. Requirements for the General Secondary Credential.**—Consult the ANNOUNCEMENT OF THE SCHOOL OF EDUCATION, LOS ANGELES.

**B. Requirements for Admission to Graduate Courses.**—

1. *As a candidate for the general secondary credential:* ordinarily the undergraduate major in music, or its equivalent, including courses 41A or 191A (4 units), 41E or 191E (4 units), 100A–100B, 104A–104B, 107A, 109A, 110, 111, 115A–115B–115C–115D, 4 units chosen from courses 121A, 177.

2. *As a candidate for the master's degree:* ordinarily the undergraduate major of 24 upper division units of music.

**C. Requirements for the Master's Degree.**—

For the general requirements, see page 66. In addition, candidates for the Master of Art degree in music must satisfy the following:

1. *Admission:* the candidate must have the bachelor's degree with a major in music (or equivalent) as stated in this bulletin.

2. *Thesis:* the thesis plan (page 67, Plan I) is favored. A musical composition in large form is acceptable as a thesis.

3. *Course of Study:* the planning of the course of study will be done under the guidance of the graduate adviser. The candidate may place emphasis upon composition, musicology, or music education. He is expected to attend a seminar appropriate to his discipline during each semester of residence: *historical musicology*, courses 250, 256, 260A–260B; *composition*, courses 251A–251B, 252A–252B; *ethnomusicology*, course 280A–280B; *systematic musicology*, course 269; *music education*, course 270A–270B.

4. *Foreign Language:* a reading knowledge of French, German or Italian is required of all candidates for the degree.

5. *Course requirements:* all candidates are required to complete course 200A (Research Methods and Bibliography); all candidates save those whose field of specialization is composition must also complete course 200B.

6. *Examinations:* all candidates must take the *Placement Examinations* and pass them completely before taking the *Final Examination*.

**D. Requirements for the Doctor's Degree.**—

1. *General requirements:* candidates for the Ph.D. degree in music must fulfill the general requirements of the Graduate Division (see page 68). These include the completion of the undergraduate major in music in the College of Applied Arts or the College of Letters and Science, or an equivalent major completed elsewhere.

2. *The placement examinations:* passing the placement examinations described above is prerequisite to the qualifying examinations.

3. *Foreign language and other tools:* all candidates are expected to have a command of French and German, and of such other languages (Italian, Latin, Russian, Spanish) and skills (notation, statistics) as the field of specialization may require.

4. *Course requirements:* the candidate is required to complete course 200A–200B (Research Methods and Bibliography). He is also expected to attend a seminar appropriate to his discipline during each semester of residence (until the Ph.D. qualifying examinations have been passed): *historical musicology*, courses 250, 256, 260A–260B; *ethnomusicology*, course 280A–280B; *systematic musicology*, course 269; *music education*, course 270A–270B. Course 299 serves to guide the preparation of the dissertation and

should normally be taken for two semesters after the completion of the qualifying examinations.

5. *Qualifying examinations*: before he is admitted to candidacy, the student must pass a series of qualifying examinations, both written and oral. The general written examinations required of all candidates consist of the following: an orchestral composition (the student will use specified musical materials and complete the assignment within one month); an intensive examination in the analysis of musical form and style; two comprehensive examinations in the history and literature of western art music, one on music before 1750 and one on music since that date; an examination to demonstrate a basic knowledge of the music of other cultures; and an examination to demonstrate a basic knowledge of acoustics, aesthetics, and psychology of music. In the field of specialization, further written examinations are required in two areas. Among possible fields of specialization are the following: *the history and theory of western art music*, one area to be selected from ancient, medieval, renaissance, or baroque music, and one from classic-romantic or twentieth-century music; *the music of other cultures*, two areas, not contiguous, to be selected from Africa, the Americas (exclusive of art music), Europe (exclusive of art music), the Far East, the Near and Middle East, Oceania, and Southeast Asia; *music education*, one area comprising its historical, philosophical, and psychological bases, the other to be selected from music education on the early childhood-elementary, secondary, college-university, or adult level; *systematic musicology*, two areas to be selected from acoustics, psychology of music, aesthetics of music, and physiology of the voice together with construction and technique of instruments. To conclude the qualifying examinations, an oral examination covering all the special and general fields chosen from the above will be given by the entire doctoral committee.

6. *The dissertation*: each candidate will be required to present a dissertation on a subject chosen by the candidate in consultation with his committee, of such a character as to show a thorough mastery of the sources of information and the ability to carry on independent and original research.

7. *The final oral examination*: after the acceptance of the dissertation in its final form the candidate will be required to pass an oral examination covering principally the field within which the dissertation falls. The candidate will be expected to show a mastery of his special field, as well as of any subject which has an immediate bearing upon the dissertation.

#### LOWER DIVISION COURSES

##### Theory and Literature

##### B. Sight Reading. (No credit) I, II

Mrs. Turrill

Two hours weekly. Although this course yields no credit, it displaces 2 units on the student's program. Every student failing the Sight Reading Test is required to take course B in the semester immediately following this failure.

Development of facility in sight reading at the piano. Preparatory exercises; accompaniments of the difficulty of Schubert's "Who Is Sylvia?"; simple four-part chorale harmonizations.

##### 1A-1B-1C. Musicianship. (2-2-2) Three semesters. Beginning either semester.

Mr. Des Marais, Mr. Travis, Mr. Trotter

Three hours weekly, including one laboratory hour. Prerequisite: passing the Basic Music Test and concurrent registration in course 3A-3B-3C except as excused by the Advanced Standing Examination in Harmony.

Ear training, sight singing, dietation, and keyboard harmony correlated with the corresponding semester of course 3A-3B-3C.

**3A-3B-3C. Harmony. (2-2-2)** Three semesters. Beginning either semester. Mr. Des Marais, Mr. Travis, Mr. Trotter

Two hours weekly. Prerequisite: passing the Sight Reading Test and concurrent registration in course 1A-1B-1C except as excused by the Advanced Standing Examination in Musicianship.

The harmonization of figured basses and of given and original melodies; 3A deals with triads and passing and auxiliary tones; 3B continues with the addition of seventh chords, elementary modulation, and the remaining non-chord tones; 3C deals with chromatic harmony.

**20A-20B. Survey of Musical Literature. (2-2)** Yr. Beginning either semester. Mr. Hanley, Mr. Marrocco

Three hours weekly, including one listening hour. Prerequisite: course 3A or concurrent registration in 3B. 20A is prerequisite to 20B.

Designed for the major and teaching minor in music. (Course 30A-30B is for general University students.) The study of representative musical masterworks and their background.

**30A-30B. Introduction to the Literature of Music. (2-2)** Yr. Beginning either semester. Mr. Des Marais, Mr. Hanley, Mr. Revitt, Mr. Travis, Mr. Trotter

Two hours lecture, one hour discussion, and one hour listening weekly. Course 30A is prerequisite to 30B. Designed for the general University student. Course 20A-20B is for the major and teaching minor in music.

A general survey of music literature, with emphasis on music from Bach's time to the present, including an introduction to technical and formal principles.

**31. Fundamentals of Music. (3)** I, II. Mr. Edwall, Mr. Gerow,

Three class meetings and one laboratory period weekly. May not be applied toward the degree by the student whose major is music.

Singing, ear training, music reading, elementary harmony, transposition, and conducting.

### Performance

Courses in this series may be repeated for credit. Prerequisite: audition for consent of the instructor.

**40A-J. Organizations. I, II.**

**40A. University Symphony Orchestra. (1)** Mr. Foss

(Replaces former course 60.)

Four hours of rehearsal each week.

The study and performance of symphonic literature.

**40B. University Band. (1)** Mr. Sawhill

(Replaces former course 61.)

Four hours of rehearsal each week.

**40C. University Chorus. (½)** No Audition.

(Replaces former course 62.)

Two hours of rehearsal each week.

**40D. University A Cappella Choir. (1)** Mr. Wagner

(Replaces former course 63.)

Three hours of rehearsal each week.

The study and performance of choral literature.

**40E. University Glee Club. (½)** Mr. Gerow

(Replaces former course 64.)

Two hours of rehearsal each week.

- 40F. Madrigal Singers.** (1) Mr. Moremen  
 Three hours of rehearsal each week.  
 The study and performance of significant music of the madrigal school.
- 40G. Chamber Music Ensemble.** (1) Mr. Roth  
 Three hours of rehearsal each week.  
 The study and interpretation of chamber music literature.
- 40H. Opera Workshop.** (2) Mrs. Limonick, Mr. Popper  
 (Replaces former course 59.)  
 Eight hours of rehearsal each week.  
 The study of the musical, dramatic, and language techniques in opera through the performance of representative scenes and acts.
- 40J. Collegium Musicum.** ( $\frac{1}{2}$ ) Mr. Rubsamen  
 Two hours of rehearsal each week.  
 The study and performance of instrumental and vocal music of the Medieval, Renaissance, and Baroque periods, using the original instruments wherever possible.
- 41A-W. Classes in Applied Music.** (2) I, II.
- 41A. Voice.** Mr. Moremen, Mr. Windward, Mr. Winger  
 (Replaces former course 40.)
- 41E. Piano.** Mrs. Turrill  
 (Replaces former course 41.)
- 41J. Organ.** Mr. Petran  
 (Replaces former course 57.)
- 41K. Violin.** Mr. Roth  
 (Replaces former course 42.)
- 41L. Viola.** Mr. Plummer  
 (Replaces former course 43.)
- 41M. Cello.** \_\_\_\_\_  
 (Replaces former course 44.)
- 41N. Bass Viol.** \_\_\_\_\_  
 (Replaces former course 45.)
- 41P. Flute.** Mr. Drexler  
 (Replaces former course 46.)
- 41Q. Oboe.** Mr. Gassman  
 (Replaces former course 47.)
- 41R. Clarinet.** \_\_\_\_\_  
 (Replaces former course 48.)
- 41S. Bassoon.** Mr. Moritz  
 (Replaces former course 50.)
- 41T. French Horn.** Mr. Lott  
 (Replaces former course 51.)
- 41U. Trumpet.** Mr. DiVall  
 (Replaces former course 52.)
- 41V. Trombone.** Mr. Tanner  
 (Replaces former course 53.)
- 41W. Percussion.** Mr. Delancey  
 (Replaces former course 55.)

## UPPER DIVISION COURSES

**100A-100B. History and Analysis of Music.** (4-4) Yr. Beginning either semester. Mr. Marrocco, Mr. Rubsamen, Mr. Stevenson

Five hours weekly, including one listening hour. Prerequisite: courses 3A-3B-3C, 20A-20B, or their equivalent. Course 100A (from antiquity to 1750) is not prerequisite to course 100B (from 1750 to the present).

A study of the development of music; lectures, listening, technical analysis, and written reports.

## Theory

**101. Advanced Keyboard Harmony.** (2) I. Mr. Des Marais, Mr. Trotter  
Three hours weekly, including one laboratory hour. Prerequisite: course 3A-3B-3C.

The reading of figured bass; sequences, modulations, etc., in the harmonic vocabulary of the eighteenth and nineteenth centuries.

**102. Score Reading.** (2) II. Mr. Des Marais, Mr. Trotter  
Three hours weekly, including one laboratory hour. Prerequisite: course 101 or consent of the instructor.

Reading at the piano of several staves, the various C clefs, and parts for transposing instruments; chamber music and simple orchestral scores.

**103A-103B. Advanced Harmony.** (2-2) Yr. Mr. Travis  
Prerequisite: course 3A-3B-3C.

Modes and new scales. Freer concepts of modulation. Chords built on fourths. Bitonality and polytonality. The Hindemith, the 12-tone, and other systems. Modern uses of rhythm. Analysis of contemporary works.

**104A-104B. Counterpoint.** (2-2) Yr. Beginning either semester. Mr. Edwall, Mrs. Limonick, Mr. Revitt

(Replaces the former course 5A-5B.)

Prerequisite: course 3A-3B or consent of the instructor.

Two-voice writing and analysis of representative contrapuntal works in two and more voices. Course 104A, modal counterpoint, with emphasis on the motet; 104B, tonal counterpoint, with emphasis on the invention.

**105. Advanced Modal Counterpoint.** (3) I. \_\_\_\_\_  
Prerequisite: course 104A and consent of the instructor.  
Writing in three and more voices, with emphasis on the motet.

**106. Advanced Tonal Counterpoint.** (3) II. Mr. Nelson  
Prerequisite: course 104A-104B and consent of the instructor.  
Writing in three and more voices, with emphasis on the fugue.

†**107A-107B. Composition.** (2-2) Yr. Mr. Kremenliev, Mr. Vincent  
Prerequisite: courses 3A-3B-3C, 104A-104B, 100A-100B, and consent of the instructor; 100A-100B may be taken concurrently.

Vocal and instrumental composition in the smaller forms.

**108A-108B. Studies in Musical Analysis.** (2-2) Yr. Mr. Foss, Mr. Kremenliev  
Prerequisite: courses 3A-3B-3C, 20A-20B, 100A-100B, or consent of the instructor.

The application of a broad analytical approach to compositions in widely divergent styles.

**109A-109B. Orchestration.**  
Prerequisite: course 3A-3B-3C.

† Course 107A given I and II; course 107B, II only.

- 109A. sec. 1, and 109B. (2-2) Yr.** Mr. Foss  
 For regular music majors.  
 Ranges and properties of orchestral instruments. Scoring for full orchestra. Problems of balance and sonority. Analysis of orchestral scores.
- 109A, sec. 2. (2) I, II.** Mr. Vincent  
 For candidates for the special secondary teaching credential.  
 Theory and practice of writing for instrumental ensembles. The study of orchestral scores and an introduction to symphonic orchestration.
- 110. Choral Conducting. (2) I, II.** Mr. Moremen  
 Prerequisite: courses 1A-1B, 3A-3B, and 4 units of course 40.  
 The theory and practice of conducting choral organizations.
- 111. Instrumental Conducting. (2) I, II.** Mr. Roth, Mr. Sawhill  
 Prerequisite: courses 1A-1B, 3A-3B.  
 The theory and practice of conducting instrumental organizations.
- 115A-B-C-D. Instrumental Technique.**  
 Mr. Edwards, Mr. Delancey, Mr. Tanner, Mr. Sawhill  
 A practical and theoretical study of the technique of orchestra and band instruments, including the principles of arranging music for representative combinations. Appropriate literature for instrumental ensembles.
- 115A. Strings. (2) I, II.**
- 115B. Woodwind. (2) I, II.**
- 115C. Brass. (2) I, II.**
- 115D. Percussion and Ensemble. (2) I, II.**
- 116. Composition for Motion Pictures, Radio, and Television. (2)**  
 Prerequisite: consent of the instructor. Mr. Kremenliev  
 Survey and analysis of contemporary usage of music in dramatic productions. Microphone technique; problems of acoustics, recording and editing. Composition of background music.
- 118. Acoustics of Music. (2) I.** Mr. Petran  
 Prerequisite: one year of high school physics, Physics 10, 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.

### **History and Literature**

- 121A-121B. Music of the Americas. (2-2) Yr.**  
 (Replaces former course 121.) Mr. Stevenson, Mr. Marrocco  
 No prerequisite. Course 121A is not prerequisite to 121B.  
 First semester: a survey of music from pre-Columbian times to the present in the countries lying south of the United States. Second semester: a survey of music from colonial times to the present in the United States and Canada.
- 122. Music of Indonesia. (3) I.** Mr. Hood  
 Prerequisite: course 136A-136B 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. Two hours lecture and three hours supervised study in gamelan performance weekly.

\*123. **Music in the Middle Ages, 900-1400.** (3) I. Mr. Marrocco  
Prerequisite: courses 3A-3B-3C, 20A-20B.

A detailed study of the musical forms and the notation of sacred and secular music from the beginnings of polyphony to the end of the fourteenth century.

\*124. **Music in the Renaissance Period, 1400-1600.** (3) II. \_\_\_\_\_  
Prerequisite: courses 3A-3B-3C, 20A-20B.

The meaning of the Renaissance as it applies to music. A study of musical forms, techniques, and aesthetic attitudes from the pre-Renaissance to Palestrina.

125. **Music in the Baroque Period, 1600-1750.** (3) I. Mr. Hanley  
Prerequisite: courses 3A-3B-3C, 20A-20B.

The music of the baroque period from Monteverdi to Handel and J. S. Bach.

126. **Music in the Classic Period, 1730-1827.** (3) II. Mr. Edwall  
Prerequisite: courses 3A-3B-3C, 20A-20B.

The music of the early classic schools and of Haydn, Mozart, and Beethoven.

\*127. **Music in the Romantic Period, 1829-1900.** (3) I. Mr. Revitt  
Prerequisite: courses 3A-3B-3C, 20A-20B.

The music of the romantic period from Weber and Schubert to the end of the nineteenth century.

128. **Music of the Twentieth Century.** (3) I. Mr. Trotter  
Prerequisite: courses 3A-3B-3C, 20A-20B.

A study of form, style, and idiom in music from 1900 to the present.

\*129. **Music of the Balkans.** (3) II. Mr. Kremenliev  
Prerequisite: course 136A-136B, 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. Two hours lecture and three hours supervised study in performance weekly.

130. **Bach.** (2) I. Mr. Roth  
No prerequisite.

Primarily for the general University student. May not be applied toward the major in music.

131. **Beethoven.** (2) II. Mr. Roth

Primarily for the general University student. May not be applied toward the major in music.

\*132. **Opera in the Classic Period.** (2) II. Mr. Popper  
Prerequisite: course 170 or its equivalent.

A study of eighteenth-century opera, with special concentration on the dramatic works of Gluck, Haydn, Mozart, and Beethoven.

133. **The Operas of Wagner.** (2) I. Mr. Popper  
Prerequisite: course 170 or its equivalent.

\* Offered in alternate years; not to be given 1960-1961.

134. **The Operas of Verdi.** (2) II. Mr. Popper  
Prerequisite: course 170 or its equivalent.
- \*135. **Opera of the Twentieth Century.** (2) I. Mr. Popper  
Prerequisite: course 170 or its equivalent.  
The history of opera from Debussy and Richard Strauss to the present.  
Analysis of representative masterworks.
- 136A-136B. **Musical Cultures of the World.** (3-3) Yr. Mr. Hood, Mr. Petran  
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.
- \*137. **Music for the Legitimate Drama, Screen, and Radio.** (2) II. Mr. Rubsamen  
A history and analysis of incidental music for the theater from ancient Greece to the present. The place and function of background or mood music, overtures, entr'actes, and music that serves the action or locale.
138. **Political Influences on Music.** (2) II. Mr. Rubsamen  
The influence of revolution and dictatorship upon music and its allied arts from antiquity to the present.
139. **Aesthetics of Music.** (2) II. Mr. Marrocco  
A survey of the literature of music aesthetics from Plato to the present.
170. **History of the Opera.** (3) II. Mr. Edwall, Mr. Popper  
A survey of operatic music from its inception to the present day.
- \*171. **History and Literature of Church Music.** (2) I. Mr. Stevenson  
Prerequisite: courses 3A-3B-3C, 20A-20B.  
A study of the history and development of church music, including worship forms and liturgies.
172. **Oratorio Literature.** (2) II. Mr. Petran, Mr. Stevenson  
Prerequisite: courses 3A-3B-3C, 20A-20B.  
A survey of oratorio music from its inception to the present day.
- \*173. **The Concerto.** (2) II. Mr. Revitt  
Prerequisite: courses 3A-3B-3C, 20A-20B, or consent of the instructor.  
Origins and development of the concerto, with emphasis on the classic period.
174. **History of the Sonata.** (2) I. Mr. Des Marais, Mr. Edwall  
Prerequisite: courses 3A-3B-3C, 20A-20B, or consent of the instructor.  
The development of the sonata from its beginnings to the close of the romantic period.
175. **Music Criticism.** (2) II. Mr. Goldberg  
A study of factors in critical evaluation of musical works in performance.
177. **The Art Song.** (2) II. Mr. Trotter  
Prerequisite: courses 3A-3B-3C, 20A-20B, or consent of the instructor.  
The study of the literature of the art-song from its origins to the present day.

\* Offered in alternate years; not to be given 1960-1961.

**179A-179B. Instrumental and Choral Literature. (2-2) Yr.**

(Replaces former course 179.) Mr. Sawhill, Mr. Gerow, Mr. Moremen  
 Course 179A is not prerequisite to 179B.

First semester: a study of instrumental works for string and wind ensembles. Second semester: a study of choral works from the Renaissance to the present day. In both semesters attention will be given to music suitable for use in the secondary schools.

**Performance**

Courses in this series may be repeated for credit. Prerequisite: audition for consent of the instructor.

**190A-H. Organizations. I, II.**

**190A. University Symphony Orchestra. (1)** Mr. Foss  
 (Replaces former course 160.)  
 Four hours of rehearsal each week.  
 The study and performance of symphonic literature.

**190B. University Band. (1)** Mr. Sawhill  
 (Replaces former course 161.)  
 Four hours of rehearsal each week.

**190C. University Chorus. (½) No audition.\*** \_\_\_\_\_  
 (Replaces former course 162.)  
 Two hours of rehearsal each week.

**190D. University A Cappella Choir. (1)** Mr. Wagner  
 (Replaces former course 163.)  
 Three hours of rehearsal each week.  
 The study and performance of choral literature.

**190E. University Glee Club. (½)** Mr. Gerow  
 (Replaces former course 164.)  
 Two hours of rehearsal each week.

**190F. Madrigal Singers. (1)** Mr. Moremen  
 (Replaces former course 165.)  
 Three hours of rehearsal each week.  
 The study and performance of significant music of the madrigal school.

**190G. Chamber Music Ensemble. (1)** Mr. Roth  
 (Replaces former course 166.)  
 Three hours of rehearsal each week.  
 The study and interpretation of chamber music literature.

**190H. Opera Workshop. (2)** Mrs. Limonick, Mr. Popper  
 (Replaces former course 159.)  
 Eight hours of rehearsal each week.  
 The study of the musical, dramatic, and language techniques in opera through the performance of representative scenes and acts.

**190J. Collegium Musicum. (½)** Mr. Rubsamen  
 Two hours of rehearsal each week.  
 The study and performance of instrumental and vocal music of the Medieval, Renaissance, and Baroque periods, using the original instruments wherever possible.

**191A-W. Classes in Applied Music. (2) I, II.**

**191A. Advanced Voice.** Mr. Moremen, Mr. Windward, Mr. Winger  
 (Replaces former course 140.)  
 Prerequisite: 4 units of course 41A.

<b>191E. Advanced Piano.</b> (Replaces former course 141.)	Mr. Smit, Mrs. Turrill
<b>191J. Organ.</b> (Replaces former course 157.)	Mr. Petran
<b>191K. Advanced Violin.</b> (Replaces former course 142.)	Mr. Roth
<b>191L. Viola.</b> (Replaces former course 143.)	Mr. Plummer
<b>191M. Cello.</b> (Replaces former course 144.)	_____
<b>191N. Bass Viol.</b> (Replaces former course 145.)	_____
<b>191P. Flute.</b> (Replaces former course 146.)	Mr. Drexler
<b>191Q. Oboe.</b> (Replaces former course 147.)	Mr. Gassman
<b>191E. Clarinet.</b> (Replaces former course 148.)	_____
<b>191S. Bassoon.</b> (Replaces former course 150.)	Mr. Moritz
<b>191T. French Horn.</b> (Replaces former course 151.)	Mr. Lott
<b>191U. Trumpet.</b> (Replaces former course 152.)	Mr. DiVall
<b>191V. Trombone.</b> (Replaces former course 153.)	Mr. Tanner
<b>191W. Percussion.</b> (Replaces former course 155.)	Mr. Delancey
<b>192A-W. Master Classes. (2) I, II.</b>	
<b>192A. Voice.</b> (Replaces former course 180.)	Mr. Moremen, Mr. Windward, Mr. Winger
<b>192E. Piano.</b> (Replaces former course 181.)	Mr. Smit
<b>192J. Organ.</b>	Mr. Petran
<b>192K. Violin</b> (Replaces former course 182.)	Mr. Roth
<b>192L. Viola.</b> (Replaces former course 183.)	Mr. Plummer
<b>192M. Cello.</b> (Replaces former course 184.)	_____
<b>192N. Bass Viol.</b> (Replaces former course 185.)	_____
<b>192P. Flute.</b> (Replaces former course 186.)	Mr. Drexler
<b>192Q. Oboe.</b> (Replaces former course 187.)	Mr. Gassman
<b>192R. Clarinet.</b> (Replaces former course 188.)	_____
<b>192S. Bassoon.</b> (Replaces former course 190.)	Mr. Moritz

- 192T. **French Horn.** Mr. Lott  
(Replaces former course 191.)
- 192U. **Trumpet.** Mr. DiVall  
(Replaces former course 192.)
- 192V. **Trombone.** Mr. Tanner  
(Replaces former course 193.)
- 192W. **Percussion.** Mr. DeLancey  
(Replaces former course 195.)
193. **Studies in Accompanying** (1) II. Mrs. Limonick, Mr. Popper  
(Replaces former course 158.)  
Open to qualified pianists; other instrumentalists and singers desiring work in repertoire and interpretation may also enroll.

### Seminars and Special Studies

197. **Pro-Seminar in Ethnomusicology.** (3) II. Mr. Hood  
Prerequisite: course 136A-136B or consent of the instructor.
198. **Special Course.** (2) I, II. Mr. Foss  
The topic for 1960-1961 is *The Technique of Ensemble Improvisation*.  
Four hours weekly. Prerequisite: audition for consent of instructor.
199. **Special Studies in Music.** (1-4) I, II. The Staff  
Prerequisite: consent of the instructor.

### GRADUATE COURSES

- 200A-200B. **Research Methods and Bibliography.** (3-3) Yr. The Staff
- 210A-210B. **Early Notation.** (3-3) Yr. Mr. Marrocco, Mr. Popper  
(Formerly numbered 254A-254B.)  
Prerequisite: course 100A-100B, or the equivalent.
- \*250. **Seminar in the History of Music Theory.** (3) II. ———  
(Formerly numbered 263.)  
Prerequisite: consent of the instructor.
- 251A-251B. **Seminar in Orchestration.** (3-3) Yr. Mr. Kremenliev  
(Formerly numbered 202A-202B.)  
Prerequisite: courses 107A-107B, 109A-109B, or the equivalents.
- 252A-252B. **Seminar in Composition.** (3-3) Yr. Mr. Foss, Mr. Vincent  
(Formerly numbered 201A-201B.)  
Prerequisite: course 107A-107B, 109A-109B, and either 105 or 106, or the equivalents. This course may be repeated for credit.
- †253. **Seminar: Notation and Transcription in Ethnomusicology.** (3) I. Mr. Hood  
Prerequisite: course 136A-136B and 197, which may be taken concurrently.
254. **Seminar: Field and Laboratory Methods in Ethnomusicology.** (3) I. Mr. Hood  
Prerequisite: Music 136A-136B and 197, which may be taken concurrently.
255. **Seminar in Musical Instruments of the World.** (3) II. Mr. Petran  
Prerequisite: Music 136A-136B; course 118 recommended.

\* Offered in alternate years; not to be given 1960-1961.

† Offered every three semesters; not to be given, 1960-1961.

- \*256. Seminar in Musical Form. (3) I. Mr. Nelson and the Staff  
Prerequisite: course 100A-100B or the equivalent.
- 260A-260B. Seminar in Historical Musicology. (3-3) Yr. Mr. Rubsamén  
(Formerly numbered 253A-253B.)  
Prerequisite: course 100A-100B or the equivalent and course 200A-200B,  
which may be taken concurrently.
266. Seminar in the Music of the Twentieth Century. (3) II. The Staff  
Prerequisite: consent of the instructor.
- \*269. Seminar in the History of Instruments. (3) II. Mr. Petran  
Prerequisite: consent of the instructor.
- 270A-270B. Seminar in Music Education. (2-2) Yr. ———  
Prerequisite: consent of the instructor.
275. Seminar in the Aesthetics of Music. (3) I. Mr. Marrocco  
(Formerly numbered 268.)  
Prerequisite: course 139 or the equivalent.
- 280A-280B. Seminar in Ethnomusicology. (3-3) Yr. Mr. Hood  
(Formerly numbered 264A-264B.)  
Prerequisite: course 136A-136B or the equivalent and course 200A-200B,  
which may be taken concurrently.
296. Individual Studies in Orchestration and Composition. (1-4) I, II.  
The Staff
297. Individual Reading and Research. (1-4) I, II. The Staff
299. Guidance of Master's Thesis or Doctoral Dissertation. (1-4) I, II.  
The Staff

## PROFESSIONAL COURSES IN METHOD

330. Music Education for Classroom Teachers. (3) I, II. Mr. Gerow  
Four hours weekly, including one laboratory hour. Prerequisite: sophomore  
standing and course 31 or the equivalent. Required of candidates for the  
general elementary credential whose major is not music. *Not open to students  
whose major is music.*  
Sections 3 and 4 are for kindergarten-primary majors only. Should be taken  
concurrently with Education 128B.  
A professionalized course to equip the student to teach many phases of  
music in the modern school. Emphasis is placed upon exploring musical litera-  
ture and interpretive activities.
370. The Teaching of Music. (3) I, II. Mr. Gerow  
Prerequisite: senior standing and the approval of the Department by  
interview and examination. Required of music majors who are candidates  
for the general secondary credential.  
A study of the place and function of general music in secondary educa-  
tion, with some attention to the elementary curriculum. Three class meet-  
ings and one laboratory period weekly.

## RELATED COURSES IN OTHER DEPARTMENTS

- Integrated Arts 1A-1B. Man's Creative Experience in the Arts. (3-3) Yr.  
Mr. With
- Psychology 172A-172B. Psychology of Music. (3-3) Yr. Mr. Petran

\* Offered in alternate years; not to be given 1960-1961.

## NAVAL SCIENCE

(Department Office, 123 Men's Gymnasium)

Franklin G. Hess, B.S., Captain, U. S. Navy, *Professor of Naval Science (Chairman of the Department)*

John M. Meyer, B.S., Commander, U. S. Navy, *Associate Professor of Naval Science.*

J. C. Brooks, B.S., Lieutenant, U. S. Navy, *Assistant Professor of Naval Science.*

J. C. Froid, Lieutenant, U. S. Navy, *Assistant Professor of Naval Science.*

W. J. Harper, B.S., Lieutenant Commander, U. S. Navy, *Assistant Professor of Naval Science.*

Kenneth McLennan, B.S., Major, U. S. Marine Corps, *Assistant Professor of Naval Science.*

C. F. Palmer, B.S., Lieutenant, U. S. Navy, *Assistant Professor of Naval Science.*

**Letters and Science List.**—All undergraduate courses in this department up to a total of 12 units are included in the Letters and Science List of Courses. Note: This in no way prejudices counting additional Naval Science courses up to the 12 units of non-Letters and Science credit accepted toward the degree. For regulations governing this list, see page 2.

**College of Engineering.**—Credit for Naval Science:

Lower Division: 6 units are acceptable toward the baccalaureate.

Upper Division: 6 units of nonmajor field electives and the 3 units of optional electives, a total of 9, may be applied.

### 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 object 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. The Naval Reserve Officers' Training Corps is expected to train junior officers for 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 Regular Navy, Naval Reserve, Marine Corps, and Marine Corps Reserve. While only students signifying such a purpose will be admitted, students who for sufficient reasons are forced to discontinue their training before their commission is granted, will be permitted, at the end of two years, to count such training in lieu of the military training prescribed by the University. All courses in naval science described herein include infantry drill and laboratory sessions for two hours weekly for all Naval R.O.T.C. students.

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, never have been married, and agree to remain unmarried until commissioned or disenrolled. Students must pass the same physical examination as is required for all candidates for admission to the Naval Academy.

All courses listed are those prescribed by the Navy Department for the Naval Reserve Officers' Training Corps. The United States furnishes, on loan to the individual, arms, equipment, uniforms, and naval science textbooks for the use of these students. Upon satisfactory completion of the course, a uniform becomes the property of the student who was enrolled in the Regular or Contract status.

*Types of N.R.O.T.C. Students.*—Officer candidates in the N.R.O.T.C. will be of three types:

(a) *Regular N.R.O.T.C. students* are appointed Midshipmen, U.S.N.R., and receive retainer pay at a rate of \$600 per year for a maximum period of four years while under instruction at the N.R.O.T.C. institution or during summer training periods. Their tuition, fees, books, and laboratory expenses are paid by the U. S. government during the above period. These students assume an obligation to make all required summer practice cruises (three) 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 Ensigns, U. S. Navy, or Second Lieutenants, U. S. Marine Corps. Students enrolled in this status are selected by nation-wide examination and selection commencing in early December of the year preceding the student's entrance into the University in the fall.

(b) *Contract N.R.O.T.C. students* have the status of civilians who have entered into a mutual contract with the Navy. For administrative purposes, they are styled Midshipmen. During their junior and senior years they are entitled to commutation of subsistence from the first day during an academic term until they complete the course at the institution or their connection with the Naval Reserve Officers' Training Corps is severed in accordance with the regulations prescribed, except that subsistence in kind will be furnished in lieu of commutation of subsistence for any periods devoted to cruises. The amount allowed for subsistence, which will be fixed from time to time by the Secretary of the Navy, will not exceed the value prescribed by law for a commuted ration in the Navy. Contract N.R.O.T.C. students agree to accept a commission in the Naval Reserve or in the Marine Corps Reserve to remain a member of a reserve component of the U. S. Naval Service until the sixth anniversary of receipt of original commission in that service and to serve not less than two years on active duty if ordered, or if a Marine Corps option student, three years on active duty if ordered. Contract N.R.O.T.C. students are required to make one summer practice cruise.

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.

(c) *Naval Science Students*

(1) With the approval of the academic authorities, and the Professor of Naval Science, students may be permitted to pursue naval science courses for college credit only. They are not eligible to make N.R.O.T.C. practice cruises nor to be paid any compensation or benefits.

(2) Naval science students may become eligible for enrollment in N.R.O.T.C. as candidates for commissions provided they comply in every respect with the requirements for original enrollment, when vacancies occur in the unit quota.

Credit may be allowed for work completed during practice cruises and summer camps at the rate of  $\frac{1}{2}$  unit per each two weeks' duty performed, not to exceed a total of 6 units.

*Freshman Year*

**1A. Naval Orientation. (3) I.**

Mr. Harper

A course in fundamentals of the naval science, its mission, ideals, standards, traditions, customs and duties required of the midshipman. This orientation is vital in developing a common naval background and in stimulating an interest in the study of sea power.

**1B. Evolution of Sea Power. (3) II.**

Mr. Harper

The course in sea power concentrates in six broad and interlocked areas: (1) the influence of sea power on history; (2) the evolution of tactics; (3)



the rationale of strategic decisions; (4) the development of ships; (5) the evolution of weapons; and (6) the qualities of character and professional competence which have made great naval leaders.

#### *Sophomore Year*

##### **2A. Naval Weapons. (3) I, II.**

Mr. Palmer

Major areas to be covered in the course include weapon delivery problems, basic gunnery, typical fire control problems, antisubmarine warfare, missiles, nuclear weapons, and space technology. Theoretical presentation will be supplemented by practical work in the laboratory sessions.

##### **2D. Naval Science Drill. (0) I, II.**

Mr. Palmer, Mr. McLennan

Infantry drill under arms and classroom weapons systems demonstration.

#### *Junior Year*

##### **101A. Naval Engineering. (3) I.**

Mr. Brooks

The first semester deals with naval machinery. Stress is on the basic steam cycle, including auxiliary equipment. Concepts of temperature, heat transfer, flow of fluids, gas turbine cycle, distillation and refrigeration are included. An introduction is made to physics of nuclear power, principles of nuclear reactors and problems of radiation shielding and instrumentation. Principles and application of marine stability.

##### **101B. Navigation. (3) II.**

Mr. Brooks

During the second semester, navigation and nautical astronomy are studied. The problems of determining position, direction, and distance on the water. Development of methods, use of instruments, tables, and almanacs in problem solving. The field of navigation is studied in its four major divisions: dead reckoning; piloting; electronic navigation and celestial navigation.

##### **\*103A-103B. Basic Strategy and Tactics. (3-3) Yr.**

Mr. McLennan

The first year's study within the marine option concerns the evolution of the art of land warfare. Particular attention is given to military and foreign policies of the United States. The student gains a basic insight into the historical and sociological principles of national strategy and modern military tactics.

#### *Senior Year*

##### **102A. Naval Operations. (3) I.**

Mr. Froid

Solution of relative movement problems by application of radar and tactical information to the polar coordinate plot using vectors. Maneuvering instructions and tactics. Communication systems and introduction to cryptography. Types of electronics countermeasures. Aerology and typhoon evasion.

##### **102B. Principles and Problems of Naval Leadership. (3) II.**

Mr. Froid

Conceptual approaches to leadership, interpersonal relationships in Navy groups, motivational practices and counseling techniques, ethical and moral responsibilities of authority positions, extragroup relations as a representative of the Navy. Division Administration: function of the division officer, military law and courts.

##### **\*104A-104B. Amphibious Warfare. (3-3) Yr.**

Mr. McLennan

The primary function of the Marine Corps is to conduct amphibious warfare. Attention is given to strategic decision and the tactical employment of amphibious weapons. The midshipman is also given indoctrination in military law, coordinated with the development of administrative and leadership qualities.

\* These courses to be pursued by candidates for commissions in the Marine Corps or Marine Corps Reserve in lieu of courses 101A, 101B, and 102A and 102B.

## NEAR EASTERN LANGUAGES

(Department Office, 302 Royce Hall)

Wolf Leslau, *Docteur ès Lettres, Professor of Hebrew and Semitic Linguistics (Chairman of the Department)*.

Wilhelm B. Hoenerbach, Ph.D., *Professor of Arabic*.

Andreas Tietze, Ph.D., *Professor of Turkish and Persian*.

Jean Aubin, *Licencié ès Lettres, Visiting Associate Professor of Persian*.

Arnold J. Band, Ph.D., *Assistant Professor of Hebrew*.

Jonas C. Greenfield, Ph.D., *Assistant Professor of Hebrew*.

†Irfan Kawar, Ph.D., *Assistant Professor of Arabic*.

David Lieber, D.H.L., *Acting Assistant Professor of Hebrew*.

Charles Wendell, A.B., *Associate in Arabic*.

*Letters and Science List.*—All undergraduate courses in the department are included in the Letters and Science List of Courses. For regulations governing this list, see page 2.

*The Major.*—See the curriculum in Near Eastern Studies, page 15.

*The Master's Degree.*—The degree is offered in Near Eastern Studies and Near Eastern Languages and Literatures. In order to qualify, the candidate must satisfy the requirements described on page 66 of the ANNOUNCEMENT OF THE GRADUATE DIVISION, SOUTHERN SECTION.

*The Ph.D. Degree.*—For the general University requirements, see page 68 of the ANNOUNCEMENT OF THE GRADUATE DIVISION, SOUTHERN SECTION.

A. Requirements for admission to the program:

1. A reading knowledge of two foreign languages chosen from French, German, or Italian, to be tested by a written or oral examination. The student is expected to take the examination in one of the two languages at the beginning of his first semester in residence; the examination of the second not later than at the beginning of his third semester of residence.

2. The student who comes into the program should have competence in two major Semitic languages. This competence is expected to be acquired either in the Graduate Division of the University of California or in another recognized Graduate School. In case of deficiencies, the student may be required to take additional work. The student is advised to take his M.A. degree previous to his Ph.D. degree.

B. Requirements for the degree:

1. Two years of graduate study according to the regulations of the University.

2. A full year course in Comparative Semitics as well as a full year course in general linguistics.

3. The candidate interested in Semitic languages will be required to demonstrate his knowledge in three Semitic languages with particular stress on two major languages. It is mainly the structural mastery of the languages and familiarity with their development and their position within the Semitic family of languages that are required. The student is advised to acquaint himself with the historical, literary, religious, and social background of the various languages of his interest. His fields of examination will be three languages and the literary and historical background of at least two of them. The candidate interested in literature will be required to demonstrate the knowledge of one additional Semitic language outside of his particular field. He 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. His field of examination will be two languages and the historical and cultural background of these languages with particular stress on one of them.

† Absent on leave, 1960-1961.

4. A doctoral dissertation which embodies the results of original investigation in the field of specialization.

5. The passing of the final examination concerned with the discipline and related subjects to be determined for each candidate.

### ARABIC

#### LOWER DIVISION COURSES

- 1A-1B. Elementary Arabic.** (4-4) Yr. Mr. Wendell  
 (Formerly Arabic 3A-3B.)  
 Not open to students with previous training.  
 A course in standard Arabic.

#### UPPER DIVISION COURSES

- 101A-101B. Intensive Arabic.** (3-3) Yr. Mr. Hoenerbach  
 Prerequisite: consent of the instructor. For students who wish to accelerate the study of Arabic.  
 Equivalent to two years of regular study.

- 102A-102B. Intermediate Arabic.** (4-4) Yr. Mr. Wendell  
 (Formerly Arabic 103A-103B.)  
 Prerequisite: Arabic 1A-1B or consent of the instructor.

- 103A-103B. Advanced Arabic.** (3-3) Yr. Mr. Hoenerbach  
 (Formerly Arabic 120A-120B.)  
 Prerequisite: Arabic 102A-102B, or consent of the instructor.  
 Selected literary texts.

- \*130A-130B. Arabic Literary Texts.** (2-2) Yr. \_\_\_\_\_  
 Prerequisite: Arabic 102A-102B or consent of the instructor.  
 Readings in representative Arabic prose writers.

- 150A-150B. A Survey of Arabic Literature.** (2-2) Yr. Mr. Wendell  
 (Formerly Arabic 142A-142B.)  
 No knowledge of Arabic is required.  
 150A. A series of lectures on classical Arabic poetry with emphasis on the culture it reflects.  
 150B. A study of the Koran and other literary documents.

- 199. Special Studies in Arabic.** (1-4) I, II. The Staff  
 Prerequisite: senior standing and consent of the instructor.

#### GRADUATE COURSES

- 230A-230B. Arabic Poetry.** (2-2) Yr. Mr. Hoenerbach  
**231A-231B. Arab Historians.** (3-3) Yr. Mr. Hoenerbach

### HEBREW

#### LOWER DIVISION COURSES

- 1A-1B. Elementary Hebrew.** (4-4) Yr. Mr. Greenfield  
 (Formerly Hebrew 5A-5B.)  
 Sections meet five hours weekly.

#### UPPER DIVISION COURSES

- 102A-102B. Intermediate Hebrew.** (4-4) Yr. Mr. Band  
 (Formerly Hebrew 105A-105B.)  
 Prerequisite: Hebrew 1A-1B or the equivalent.

\* Not to be given, 1960-1961.

- 103A-103B. Advanced Hebrew.** (3-3) Yr. \_\_\_\_\_  
(Formerly Hebrew 110A-110B.)  
Prerequisite: Hebrew 102A-102B or equivalent.  
Selected modern literary texts.
- \*110. Hebrew Conversation and Composition.** (2) II. \_\_\_\_\_  
(Formerly Hebrew 101.)  
Prerequisite: Hebrew 102A-102B or consent of the instructor.
- 120A-120B. Selected Texts of the Bible.** (3-3) Yr. Mr. Greenfield  
Courses 120A and 120B may be taken independently for credit. Prerequisite: Hebrew 102A-102B or the equivalent.  
Translation and analysis of portions of the Old Testament. Special attention will be given to texts of primary literary and historical importance.
- \*120C-120D. Selected Texts of the Bible.** (3-3) Yr. Mr. Greenfield  
Courses 120C and 120D may be taken independently for credit. Prerequisite: Hebrew 102A-102B or the equivalent.  
Further readings in Biblical texts.
- 140A-140B. Modern Hebrew Poetry and Prose.** (3-3) Yr. Mr. Band  
Prerequisite: consent of the instructor.  
A study of the major Hebrew writers of the past hundred years: prose—Mendele, Ahad Ha'am, Agnon, Yizhar; poetry—Bialik, Tchernichovsky, Shneur, Greenberg, Shlonsky.
- 145A-145B. A Survey of Hebrew Grammar.** (2-2) Yr. Mr. Leslau  
Prerequisite: Hebrew 102A-102B or consent of the instructor.  
Descriptive and comparative study of the Hebrew phonology and morphology.
- 150A-150B. A Survey of Hebrew Literature in English.** (2-2) Yr.  
(Formerly Hebrew 182A-182B.) Mr. Band  
A knowledge of Hebrew is not required. Courses 150A and 150B may be taken independently for credit.  
150A. From Biblical period to 1300.  
150B. From 1300 to the present day.
- 199. Special Studies.** (1-5) I, II. The Staff  
Prerequisite: senior standing and consent of the instructor.  
Studies in history, literature, and Semitic linguistics in accordance with the requirements of the students.

## SEMITICS

## UPPER DIVISION COURSES

- 101A-101B. Elementary Amharic (Ethiopic).** (2-2) Yr. Mr. Leslau  
Elementals of Amharic, the national language of Ethiopia. Grammar and reading of texts.
- \*130. Biblical Aramaic.** (2) I. Mr. Leslau  
(Formerly Hebrew 130.)  
Prerequisite: Hebrew 102A-102B or the equivalent.  
Grammar of Biblical Aramaic and reading of texts.

## GRADUATE COURSES

- 211A-211B. Ethiopic.** (2-2) Yr. Mr. Leslau  
Grammar of Old Ethiopic and reading of texts.

\* Not to be given, 1960-1961.

- \*212A-212B. Readings in Ethiopic Literature.** (2-2) Yr. Mr. Leslau  
Prerequisite: Semitics 211A-211B.  
Special attention will be given to the reading of Geez manuscripts.
- \*220A-220B. Comparative Ethiopic.** (2-2) Yr. Mr. Leslau  
Prerequisite: consent of the instructor.  
Comparative study of the various Semitic Ethiopic languages: Geez, Tigrinya, Tigre, Amharic, Harari, Gurage, and Gafat.
- \*231. Ancient Aramaic.** (2) II. Mr. Greenfield  
(Formerly Hebrew 131.)  
Prerequisite: Hebrew 103A-103B or the equivalent.  
Study of the grammar and vocabulary of Ancient Aramaic and reading of the surviving inscriptions and texts.
- 232. Readings in Aramaic Literature.** (2) II. Mr. Greenfield  
(Formerly Hebrew 132.)  
Prerequisite: Semitics 130 or the equivalent.  
Advanced readings in Aramaic papyri, inscriptions, literary and historical texts, and the Aramaic translations of the Bible.
- 235. Ugaritic.** (2) I. Mr. Greenfield  
(Formerly Hebrew 135.)  
Prerequisite: Hebrew 103A-103B or the equivalent.  
Study of the Ugaritic language and literature (found at Ras-Shamra in Syria) with special reference to the development of Hebrew literature.
- \*280A-280B. Seminar in Comparative Semitics.** (2-2) Yr. Mr. Leslau
- \*290A-290B. Comparative Morphology of the Semitic Languages.** (2-2) Yr. Mr. Leslau  
Prerequisite: Semitics 280A-280B or consent of the instructor.  
Comparative study of the noun and verb of the various Semitic languages (Arabic, Hebrew, Ethiopic, Akkadian, and Aramaic.)
- 297. Individual Studies for Graduate Students.** (1-6) I, II. The Staff
- 299. Research on Thesis or Dissertation.** (1-6) I, II. The Staff  
(Formerly Semitics 298A-298B.)

#### PERSIAN

##### UPPER DIVISION COURSES

- 101A-101B. Elementary Persian.** (3-3) Yr. Mr. Aubin  
(Formerly Persian 104A-104B.)  
Not open to students with previous training.
- 102A-102B. Advanced Persian.** (3-3) Yr. Mr. Aubin  
(Formerly Persian 124A-124B.)  
Prerequisite: Persian 101A-101B or the equivalent.
- 150A-150B. A Survey of Persian Literature in English.** (2-2) Yr. Mr. Aubin  
Courses 150A and 150B may be taken independently for credit.  
A knowledge of Persian is not required.
- 199. Special Studies in Persian.** (1-4) I, II. The Staff  
Prerequisite: consent of the instructor.  
Historical and literary texts in accordance with the requirements of the students.

\* Not to be given, 1960-1961.

## TURKISH

## UPPER DIVISION COURSES

- 101A-101B. Elementary Turkish.** (3-3) Yr. Mr. Tietze  
(Formerly Turkish 100A-100B.)  
Not open to students with previous training.
- 102A-102B. Advanced Turkish.** (3-3) Yr. Mr. Tietze  
(Formerly Turkish 190A-190B.)  
Prerequisite: Turkish 101A-101B or the equivalent.
- \*150A-150B. Turkish Literature** (2-2) Yr. Mr. Tietze  
(Formerly Turkish 143A-143B.)

## GRADUATE COURSES

- 210A-210B. Old Ottoman.** (2-2) Yr. Mr. Tietze  
Prerequisite: Turkish 102A-102B.  
The texts for the readings will be selected from literature (prose and poetry).
- 299. Research on Thesis or Dissertation.** (1-4) I, II. Mr. Tietze  
Prerequisite: consent of the instructor.  
Readings from Ottoman historians and documents in accordance with the requirements of the student.

## ISLAMICS

- 299. Research on Thesis and Dissertation.** (1-6) I, II. The Staff

## NEAR EASTERN STUDIES

The program for the Master of Arts in Near Eastern Studies provides specialized training primarily for the following classes of students: (1) students seeking a general education and desiring a special emphasis in this particular area; (2) students who plan to live and work in this area, whose careers will be aided by a knowledge of the peoples, languages, and institutions (such careers might be centered on teaching, research, business, engineering, journalism, or government service); (3) students preparing for advanced study in the language, peoples, or institutions of the area. 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 Bachelor's Degree.*—For details concerning the curriculum in Near Eastern Studies leading to the degree of Bachelor of Arts see page 15.

*Requirements for the Master's Degree*

1. General Requirements (as throughout the Graduate Division). See page 67.

2. Admission to the Program. The degree of Bachelor of Arts in Near Eastern Studies of the University of California, Los Angeles, or its equivalent is required. The Committee to Administer the Curriculum in Near Eastern Studies will pass on the application for admission to the program.

3. Plan. The program is offered under both Plan I (Thesis Plan, required of the Hebraist, cf. 5c) and Plan II (Comprehensive Examination Plan). See page 67. The selection of a plan will be decided upon by the candidate and his adviser and approved by the committee.

4. Language Requirements. Candidates for the Degree of Master of Arts in Near Eastern Studies and of Master of Arts in Near Eastern Languages and Literatures will be required to show proficiency in either French or Ger-

\* Not to be given, 1960-1961.

man, in addition to the language or languages of their field of specialization. In view of the scholarly literature in the field, candidates are earnestly advised to acquaint themselves with a second European language in which relevant material for their studies is available.

5. Program. The program of each candidate will be especially prescribed by the Advisory Committee. The program should, wherever possible, be established before the candidate enters his first semester of work. The program will be planned to allow emphasis on one of the following three fields: (a) Arabic, Persian or Turkish (Islamic) Studies; (b) Semitic Studies; and (c) Hebraic Studies. (a) Is intended for the student desiring a broad knowledge of the Arab (Islamic) world or to prepare for an academic career in this field; (b) and (c) are designed primarily for the student wishing to round out a theological degree or desiring to prepare for an academic career.

(a) Program in Arabic, Persian or Turkish (Islamic) Studies.

The program of each candidate in Arabic, Persian or Turkish (Islamic) Studies will, in addition to Arabic, Persian or Turkish, include a full year's course in one of the remaining two languages. The additional required units will be chosen by the candidate from History 215A-215B, 268A-268B; Sociology 236, 237; political science, and at his option, courses in closely related fields, such as Indian history, anthropology, or geography of the area.

(b) and (c) Programs in Hebrew and Semitic Languages and Literatures.

The program of both (b) the Semitist and (c) the Hebraist will have to include a full year course in comparative semitics (Semitics 280A-280B, 2-2) and a full year course in general linguistics and two minor Semitic languages (totaling 4 units), other than those taken in their undergraduate work. The remaining units of (b) the Semitist will generally be Arabic Poetry (Arabic 230A-230B) and/or Arab Historians (Arabic 231A-231B), Ethiopic (Semitics 211A-211B) and Semitics 299 (Research on Thesis or Dissertation).

The program of (c) the Hebraist will generally include Semitics 280A-280B, Semitics 235 (Ugaritic), Semitics 231 (Ancient Aramaic), and Semitics 298A-298B (Special Studies).

#### *Requirements for the Ph.D. in Islamic Studies*

1. For the general University requirements, see page 68.

2. Requirements for 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, in alphabetical order, history, political science and sociology, with some specialization in the Near East. The guidance committee may require the student to take additional work to make good any deficiencies in his undergraduate program.

3. Requirements of the Program.

(a) Upon beginning his studies under this Program, the candidate will present to the Chairman of the Committee to Administer the Curriculum in Near Eastern Studies a written statement of his preparation in one of the two modern languages required by the University regulations (general French and German) at the beginning of his first semester in residence. For work in some fields, a reading knowledge of Italian and/or Spanish is essential.

(b) In the first year (normally two semesters) 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. (See 5a above.)

(c) Normally the candidate will devote the second year to suitable courses and seminars in the departments affiliated with the Program, these courses to be determined by the candidate's special advisory committee (to be appointed by the Chairman of the Committee to Administer the Curriculum

in Near Eastern Studies); after which he will complete his qualifying examinations and be advanced to candidacy. Of course, this period may be curtailed or expanded according to circumstances.

(d) A final year (which under University rules cannot be curtailed) 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 Islamicics 298.

#### *Qualifying Examination*

The qualifying examination will, depending on the social science concentration elected by the student, consist (if, for example, his chosen field be history) in examinations on the whole range of Near Eastern history, one field of sociology (or political science) and the testing of the student's knowledge of his chosen Near Eastern languages and their literatures. Qualifying examinations for students with different concentrations will be constructed accordingly.

#### LOWER DIVISION COURSES†

##### *Near Eastern Languages*

- Arabic 1A-1B. Elementary Arabic. (4-4) Yr.  
(Numbered 3A-3B prior to 1959-1960.)
- Hebrew 1A-1B. Elementary Hebrew. (4-4) Yr.  
(Numbered 5A-5B prior to 1959-1960.)

#### UPPER DIVISION COURSES†

- Anthropology and Sociology.* Anthropology 123. Nomadic Societies. (3)
- Sociology 166. Population and Society in the Middle East. (3)
- Sociology 167. Comparative Sociology of the Middle East. (3)

##### *Art* 101B. Preclassical Art. (2)

- 112. Oriental Art. (2)
- 113A. Arts of India. (3)
- 113D. Islamic Art. (3)
- 199. Special Studies in Art. (1-4)

##### *Geography* 126. The Geography of Africa. (3)

- 127. The Geography of the Middle East. (3)

##### *History* 117A-117B. History of Ancient Egypt. (3-3) Yr.

- 123A-123B. Byzantine History. (3-3) Yr.
- 134A-134B. Near and Middle East from 600 A.D. (3-3) Yr.
- 135. Introduction to Islamic Culture. (2)
- 136. Islamic Institutions and Political Ideas. (2)
- 137. The Near East in the Nineteenth and Twentieth Centuries. (3)
- 138A-138B. Jewish History. (3-3)
- 139. History of the Turks to 1687. (3) I, II.

##### *Near Eastern Languages*

- Arabic 102A-102B. Intermediate Arabic. (4-4) Yr.  
(Numbered 103A-103B prior to 1959-1960.)
- 103A-103B. Advanced Arabic. (4-4) Yr.  
(Numbered 120A-120B prior to 1959-1960.)
- 150A-150B. Arabic Literature. (2-2) Yr.  
(Numbered 142A-142B prior to 1959-1960.)
- Hebrew 102A-102B. Intermediate Hebrew. (3-3) Yr.  
(Numbered 105A-105B prior to 1959-1960.)
- 103A-103B. Advanced Hebrew. (3-3) Yr.  
(Numbered 110A-110B prior to 1959-1960.)

† For additional courses, see relevant departments.



110. Hebrew Conversation and Composition. (2)  
 (Numbered 101 prior to 1959-1960.)  
 120C-120D. Selected Texts of the Bible. (3-3) Yr.  
 140A-140B. Hebrew Poetry and Prose. (3-3) Yr.  
 145A-145B. Survey of Hebrew Grammar. (2-2) Yr.  
 150A-150B. Survey of Hebrew Literature in English. (3)  
 (Numbered 182A-182B prior to 1959-1960.)

199. Special Studies. (1-5)

- Persian 101A-101B. Elementary Persian. (3-3) Yr.  
 (Numbered 104A-104B prior to 1959-1960.)

- 102A-102B. Advanced Persian. (3-3) Yr.  
 (Numbered 124A-124B prior to 1959-1960.)

- Turkish 101A-101B. Elementary Turkish. (3-3) Yr.  
 (Numbered 100A-100B prior to 1959-1960.)

- 102A-102B. Advanced Turkish. (3-3) Yr.  
 (Numbered 190A-190B prior to 1959-1960.)

- 150A-150B. Turkish Literature. (2-2) Yr.  
 (Numbered 143A-143B prior to 1959-1960.)

- Political Science 134. International Relations of the Middle East. (3)

151. Governments of the Middle East. (3)

#### GRADUATE COURSES†

##### *Anthropology and Sociology.*

- Sociology 236. Social Change in the Middle East. (2) I.

- Sociology 237. Social Stratification in the Middle East. (2) II.

##### *Geography* 273. Seminar in Selected Regions (The Middle East). (3)

##### *History* 202F. Advanced Historiography. The Near East. (3) I, II.

- 215A-215B. Westernization of the Arabic Speaking World. (2-2) Yr.

- 268A-268B. Seminar in Near Eastern History. (3-3) Yr.

298. Directed Studies. (1-3) I, II.

##### *Near Eastern Languages*

- Arabic 230A-230B. Arabic Poetry. (2-2) Yr.

- 231A-231B. Arab Historians. (2-2) Yr.

- Islamic 299. Research on Thesis and Dissertation. (1-6).

- Semitics 211A-211B. Ethiopic. (2-2) Yr.

- 212A-212B. Readings in Ethiopic Literature. (2-2) Yr.

- 220A-220B. Comparative Ethiopic. (2)

231. Ancient Aramaic. (2)

(Numbered 131 prior to 1959-1960.)

232. Readings in Aramic Literature. (2)

(Numbered 132 prior to 1959-1960.)

235. Ugaritic. (2)

(Numbered 135 prior to 1959-1960.)

- 280A-280B. Seminar in Comparative Semitics. (2-2) Yr.

- 290A-290B. Comparative Morphology of the Semitic Languages. (2-2)

Yr.

299. Research on Thesis and Dissertation. (1-6)

## NURSING

(Department Office, 12-139C Medical Center)

Lulu Wolf Hassenplug, R.N., M.P.H., *Dean of the School of Nursing and Professor of Nursing (Chairman of the Department).*

Harriet M. Coston, R.N., M.A., *Associate Professor of Medical-Surgical Nursing (Vice-Chairman of the Department).*

† For additional courses, see relevant departments.

- Dorothy E. Johnson, R.N., M.P.H., *Associate Professor of Maternal-Child Health Nursing.*
- Alfred H. Katz, D.S.W., *Associate Professor of Social Welfare in Nursing, Associate Professor of Social Welfare in Medicine, and Associate Professor of Social Welfare.*
- Agnes A. O'Leary, R.N., M.P.H., *Associate Professor of Public Health Nursing and Lecturer in Public Health.*
- Mildred A. Disbrow, R.N., M.Litt., *Assistant Professor of Maternity Nursing.*
- Eleanor E. Drummond, R.N., Ed.D., *Assistant Professor of Medical-Surgical Nursing.*
- Mabel Johnson, R.N., M.A., *Assistant Professor of Public Health Nursing.*
- Margaret A. Kaufmann, R.N., Ed.D., *Assistant Professor of Medical-Surgical Nursing*
- Miriam Morris, Ph.D., *Assistant Professor of Nursing.*
- Rita Braitto, R.N., M.S., *Instructor in Medical Nursing.*
- Jeanne E. Blumberg, R.N., M.S., *Instructor in Nursing.*
- Anita B. Chusid, R.N., M.S., *Instructor in Pediatric Nursing.*
- Amelia H. Dowd, R.N., M.A., *Instructor in Public Health Nursing.*
- Whilimina H. Gebhart, R.N., M.S., *Instructor in Maternity Nursing.*
- Patricia A. Hummel, R.N., M.S., *Instructor in Medical-Surgical Nursing.*
- Harriet A. Jackson, R.N., M.S., *Instructor in Maternal-Child Health Nursing.*
- Mary E. Meyers, R.N., M.S., *Instructor in Medical-Surgical Nursing.*
- Sharon J. Ringholz, R.N., M.S., *Instructor in Maternal-Child Health Nursing.*
- Jeanne P. Ross, R.N., M.A., *Instructor in Pediatric Nursing.*
- Mary Ann Short, R.N., M.S., *Instructor in Psychiatric Nursing.*
- Mary K. Stanley, R.N., M.S., *Instructor in Public Health Nursing.*
- Millicent J. Stein, R.N., M.A., *Instructor in Public Health Nursing.*
- Mary A. Swartz, R.N., M.S., *Instructor in Medical-Surgical Nursing.*
- Patricia A. Tilton, R.N., M.S., *Instructor in Medical-Surgical Nursing.*
- Ira D. Trail, R.N., M.A., *Instructor in Psychiatric Nursing.*
- Dorothy G. Wright, R.N., M.S., *Instructor in Public Health Nursing.*
- Kathryn L. Argabrite, R.N., M.S., *Lecturer in School Nursing and Supervisor—Health Education.*
- Clara Arndt, R.N., M.S., *Lecturer in Nursing Service Administration and Assistant Superintendent of Nurses.*
- Virginia M. Brantl, R.N., M.A., M.N., *Lecturer in Medical Nursing.*
- Virginia P. Crenshaw, R.N., M.S., *Lecturer in Nursing.*
- Marjorie S. Dunlap, R.N., Ed.D., *Lecturer in Nursing and Associate Research Nurse.*
- Phyllis N. Esslinger, R.N., M.S., *Lecturer in Pediatric Nursing.*
- Charles K. Ferguson, Ed.D., *Lecturer in Nursing.*
- Beatrice R. Hillard, R.N., M.A., *Lecturer in Maternal-Child Health Nursing.*
- Eleanor B. Sheldon, Ph.D., *Lecturer in Nursing and Associate Research Sociologist.*
- Else Niebuhr, R.N., M.P.H., *Associate in Public Health Nursing.*
- ◇
- Genevieve R. Meyer, Ph.D., *Assistant Research Psychologist.*
- Maura C. Carroll, R.N., M.S., *Assistant Research Nurse.*
- Elizabeth J. Cooley, R.N., M.S., *Career Teacher.*
- Barbara J. Hudziak, R.N., M.S., *Junior Research Nurse.*
- Ruby A. Palmer, R.N., M.A., *Junior Research Nurse.*
- Ruth P. Schindler, R.N., M.A., *Junior Research Nurse.*
- Louise B. Thomas, R.N., M.S., *Junior Research Nurse.*
- Edith F. Schulze, R.N., M.S., *Career Teacher.*
- ◇
- F. Doris Bresnahan, R.N., M.A., *Associate Clinical Professor of Nursing Service Administration.*

- Helen M. Wolfe, R.N., M.P.H., *Associate Clinical Professor of Public Health Nursing.*
- Jamella M. Bell, R.N., M.S., *Assistant Clinical Professor of Nursing Service Administration.*
- Cynthia A. Dauch, R.N., M.A., *Assistant Clinical Professor of Public Health Nursing.*
- Irene C. Haarstick, R.N., M.A., *Assistant Clinical Professor of Psychiatric Nursing.*
- Olive Whitlock Klump, R.N., B.S., *Assistant Clinical Professor of Public Health Nursing.*
- Mary McQuillen, R.N., M.A., *Assistant Clinical Professor of Public Health Nursing.*
- Ruby W. Miller, R.N., M.A., *Assistant Clinical Professor of Psychiatric Nursing.*
- Lucile Perozzi, R.N., M.A., *Assistant Clinical Professor of Public Health Nursing.*
- Geraldine Skinner, R.N., M.S., *Assistant Clinical Professor of Medical-Surgical Nursing.*
- Ruth E. Augustson, R.N., *Clinical Instructor of Maternity Nursing.*
- Colleen W. Blair, R.N., B.S., *Clinical Instructor in Medical Nursing.*
- Katherine M. Bryan, R.N., B.S., *Clinical Instructor in Public Health Nursing.*
- Beverly V. Davies, R.N., B.S., *Clinical Instructor in Pediatric Nursing.*
- Dorothea Hansen, R.N., B.S., *Clinical Instructor of Public Health Nursing.*
- Eleanor E. Hicks, R.N., B.S., *Clinical Instructor in Psychiatric Nursing.*
- Gladys M. Hughes, R.N., *Clinical Instructor in Nursing.*
- Mary L. Jarvis, R.N., *Clinical Instructor in Public Health Nursing.*
- Edith A. Mars, R.N., B.S., *Clinical Instructor in Psychiatric Nursing.*
- Edith V. Martins, R.N., B.S., *Clinical Instructor in Public Health Nursing.*
- Helen S. Marvel, R.N., *Clinical Instructor in Maternal-Child Health Nursing.*
- Helen F. Nicholson, R.N., M.S., *Clinical Instructor in Medical-Surgical Nursing.*
- Frederica G. Patterson, R.N., B.A., *Clinical Instructor in Medical-Surgical Nursing.*
- Georgia E. Patterson, R.N., A.B., *Clinical Instructor in Nursing.*
- Jerry G. Peers, R.N., B.S., *Clinical Instructor in Surgical Nursing.*
- Edith Pross, R.N., B.S., *Clinical Instructor in Public Health Nursing.*
- Theresa C. Ryan, R.N., B.A., *Clinical Instructor in Nursing Service Administration.*
- Helen L. Salmon, R.N., B.S., *Clinical Instructor of Public Health Nursing.*
- Genevieve R. Stevenson, R.N., B.Ph., *Clinical Instructor of Surgical Nursing.*
- Vera L. Thompson, R.N., M.S., *Clinical Instructor of Public Health Nursing.*

The School of Nursing admits students of junior or higher standing and offers curricula leading to the degrees of Bachelor of Science and Master of Science in nursing.

Two curricula are offered for the Bachelor of Science degree:

### 1. Basic Program.

*Preparation for the Major.*—Completion of 60 units of college work including the following courses or transfer credit evaluated as equivalent:

<i>Course</i>	<i>Units</i>
Physical Education .....	2
Foreign Language or History or Mathematics .....	8-13
English .....	6
English 1A, 1B	

Natural Sciences .....	26-31
Chemistry 1A, 1B, 8	
Physics 10	
Bacteriology 1	
Psychology 1B	
Zoology 1A, 1B	
Social Sciences .....	9
Sociology 1 or 12	
Anthropology 2	
Psychology 1A	
Humanities .....	6
Literature, Philosophy, or the Arts	

*The Major.*—The 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.

## 2. Program for Registered Nurses.

*Preparation for the Major.*—Completion of the admission requirements.

*The Major.*—A minimum of 60 units of coordinated upper division courses planned on the basis of professional need.

### UPPER DIVISION COURSES FOR BASIC PROGRAM

#### 100. Nursing and Social Change. (3) I. Miss Crenshaw

A study of nursing as it affects and is affected by those factors which influence the health of the individual, the family, and the community, and the provision of nursing service.

#### 105A. Nursing Care of Adults and Children. (6) I.

Miss Dowd, Mrs. Esslinger, Miss Hummel, Miss Ringholz, Mrs. Thomas

Lecture, three hours; laboratory, twelve hours.

Study of those principles which underlie the nurse's role in the promotion and maintenance of health and the prevention of illness. Guided participation in the care of selected patients and families.

#### 105B. Nursing Care of Adults and Children. (9) II.

Miss Dowd, Mrs. Esslinger, Miss Hummel, Miss Ringholz, Mrs. Thomas

Lecture, five hours; laboratory, sixteen hours. Prerequisite: course 105A.

Study of the knowledge and skills utilized in the nursing care of adults and children with emphasis upon nutritional and drug therapies and upon the interrelationships of health practices and family life. Guided participation in nursing care of selected patients in hospital and community settings.

#### 105C. Nursing Care of Adults and Children. (8) I.

Miss Brantl, Miss Hillard, Miss Kaufmann, Miss Ross

Lecture, four hours; laboratory, sixteen hours. Prerequisite: course 105B.

Guided participation in the nursing care of patients with increasingly complex health problems in hospital and community settings.

#### 110. Survey of Nursing. (3) I.

Miss Drummond

Critical analysis of studies in nursing and their relationship to the development of the profession.

#### †120C-120D. Family Nursing Program. (1-1) I, II.

Mrs. Morris

Prerequisite: course 120A-120B.

A continuing observation of a family, over a two-year period, in order to increase the student's understanding of a pattern of family life, the factors that influence the selection of family health practices, and the relationships of individuals within the family.

† Courses 120C, 120D, and 125B not to be given after 1960-1961.

## †125B. Medical-Surgical Nursing. (8) I.

Mrs. Blumberg, Miss Drummond, Miss Hummel,  
Miss Meyers, Miss Swartz, Miss Tilton

Lecture, four hours; laboratory, sixteen hours. Prerequisite: satisfactory completion of course 125A.

Study of the nursing care of selected patients with medical and surgical conditions. Nursing functions essential to meeting the psychological, social, and physical needs of the patient in the hospital and community.

## 144. Community Health Nursing, Including School Nursing. (6) II.

Mrs. Argabrite, Miss Dowd, Miss M. Johnson, Miss Niebuhr, Mrs. Stein

Lecture, two hours; laboratory, sixteen hours. Prerequisite: Public Health 180 (may be taken concurrently) and/or consent of the instructor. Automobile required.

A study of public health nursing, including school nursing; philosophy; functions; responsibilities, current practices, and their relationship to present and future health needs of people. Guided participation in a community health agency and/or school.

## 165. Fundamentals of Psychiatric Nursing. (4) II.

Miss Cooley, Miss Jackson, Miss Schulze, Miss Short, Mrs. Thomas

Lecture, two hours per week; laboratory, eight hours per week.

Study of the changing concepts in the care of psychiatric patients, with guided participation in nursing care essential to meet the needs of the mentally ill patient and his family.

## \*185. The Nurse and the Law. (2) II.

Prerequisite: senior standing and consent of the instructor.

Analysis and discussion of the legal status, obligations, and liabilities of the nurse. Consideration will be given to the significance of the court's interpretation of the law.

## \*190. The Nurse and Rehabilitation. (3) I.

Prerequisite: senior standing and consent of the instructor.

Exploration and critical examination of modern concepts of rehabilitation; responsibilities and functions of the nurse to the individual patient and family, to the health team, and to the program. Study and discussion of knowledge and skills needed and consideration of areas needing special study and review.

## 199. Special Studies in Nursing. (1-3) II.

The Staff

Prerequisite: senior standing and consent of the instructor.

## UPPER DIVISION COURSES FOR REGISTERED NURSES

Registered nurses having upper division standing are admitted to all upper division required courses with consent of the instructor or upon completion of prerequisites selected from the areas of physical education, guidance, education, psychology, or sociology, depending upon the goals of the individual student.

## 108. Nursing in Maternal and Child Health Services. (5) II.

Mrs. Chusid, Miss Gebhart, Mrs. Esslinger, Miss Ringholz

Lecture, four hours; laboratory, four hours.

Exploration and critical examination of modern concepts of maternal and child care coordinated with guided participation in meeting the nursing needs of children and families in hospital, home, and public health agency. Participation in individual and group teaching.

\* Not to be given, 1960-1961.

† Courses 120C, 120D, and 125B not to be given after 1960-1961.

**109. Nursing in Adult Health Services. (5) II.**

Mrs. Blumberg, Miss Braito, Miss Drummond, Miss Hummel

Lecture, four hours; laboratory, four hours.

Exploration and critical examination of modern concepts of care of adults. Guided participation in meeting nursing needs of individuals and families; special emphasis upon health promotion, disease prevention, nursing care; rehabilitation in hospital, home, public health and other community agencies. Participation in individual and group teaching.

**110. Survey of Nursing. (3) II.**

Miss Drummond

(Former number, 116.)

Critical analysis of studies in nursing and their relationship to the development of the profession.

**122. Survey of Tuberculosis Nursing. (2) II.** Miss Drummond, Miss Trail

Lecture, one hour; laboratory, four hours.

Survey of recent advances in the prevention, treatment, and control of tuberculosis, and participation in nursing care in the hospital, the home, and public health agencies, including opportunity to assist in the rehabilitation of the tuberculous patient and his family.

**144. Community Health Nursing, Including School Nursing. (6) I.**

Mrs. Argabrite, Miss M. Johnson, Miss Niebuhr, Mrs. Stein, Miss Wright

Lecture, two hours; laboratory, sixteen hours. Prerequisite: Public Health 180 (may be taken concurrently) and/or consent of the instructor. Automobile required.

A study of public health nursing, including school nursing; philosophy; functions; responsibilities, current practices, and their relationship to present and future health needs of people. Guided participation in a community health agency and/or school.

**165. Fundamentals of Psychiatric Nursing. (4) I.**

Miss Cooley, Miss Jackson, Miss Schulze, Miss Short, Miss Trail

Section 2 for graduate students only.

Lecture, two hours; laboratory, eight hours.

Study of the changing concepts in the care of psychiatric patients, with guided participation in nursing care essential to meet the needs of the mentally ill patient and his family.

**180. Survey of Hospital Nursing Service. (2) I.**

Miss Arndt

Lecture, two hours per week.

Analysis of the administrative aspects of the hospital nursing unit and of the functions and relationships of the nursing team.

**199. Special Studies in Nursing. (1-3) I, II.**

The Staff

Prerequisite: senior standing and consent of the instructor.

**GRADUATE COURSES****205A-205B. Nursing Research and Statistical Data. (2) I, II.** Mrs. Morris

Prerequisite: upper division course in statistics.

Exploration and evaluation of studies and research in nursing. Use of the scientific method and the handling of statistical data as an aid in the selection and solution of studies and thesis problems.

**\*210. Changing Perspectives in the Nursing Profession. (2) I.**

A critical examination of the current situation in nursing and a consideration of the changing perspectives in the health fields. Consideration of the social and economic aspects of nursing and the interrelationship of the nurse as a member of the health team. Discussion is directed toward developing a working philosophy for leaders of professional nursing.

\* Not to be given, 1960-1961.

**225. Human Relations in Administration. (2) I, II.**

Mr. Ferguson

A systematic study of the principles of human relations in administration, with emphasis upon their application to the field of nursing.

**230. Curriculum Development in Nursing. (2) I, II.**

Miss Crenshaw, Mrs. M. S. Dunlap

A critical evaluation of present-day nursing curricula, with a consideration of objectives, teaching methods, source materials, community resources, and sequence of instruction. Individual and group studies in University nursing-curriculum building.

**236. Current Concepts in Pediatric Nursing. (2) I.**

Miss D. Johnson

A critical evaluation of new scientific discoveries in major clinical conditions occurring in childhood and of recent developments in the care and guidance of children from which principles and practices of pediatric nursing may be derived.

**237A-237B. Psychiatric Concepts in Nursing and Community Health**

Programs. (2-2) Yr.

Miss Crenshaw and the Staff

A study of theoretical and practical problems in human behavior which the nurse encounters when meeting mental health needs of individuals and their families.

**252A-252B. Seminar in Nursing Service Administration. (2-2) Yr.**

Miss Arndt and the Staff

Evaluation of the fundamentals of hospital nursing service administration, including ward administration, personnel management, in-service education programs, nursing functions, team activities, and community relationships. Individual and group study and field work.

**253. Seminar in Tuberculosis Nursing. (2-4) II.**

Miss Drummond

Prerequisite: consent of the instructor.

Study of the fundamentals of administration of tuberculosis nursing, with emphasis upon program planning, supervision, personnel management, in-service education, and community activities. Individual and group study and field work.

**254. Seminar in Nursing School Administration. (2-4) I, II.**

Mrs. Hassenplug

Evaluation of the fundamentals of nursing school administration, including organization, control, personnel, physical and clinical facilities, curriculum, teaching, student selection, and student welfare. Individual and group study and field work.

**256A-256B. Seminar in Public Health Nursing. (2-2) Yr.**

Miss O'Leary

Automobile required.

Evaluation of the fundamentals of public health nursing administration, including agency interrelationships, student welfare, supervisory activities, and program planning in official and nonofficial agencies in urban and rural areas. Individual and group study and field work.

**258A-258B. Seminar in Advanced Pediatric Nursing. (2-2) Yr.**

Miss D. E. Johnson

Evaluation of the needs of infants and children at different age levels and the various programs designed to meet these needs in urban and rural areas. Individual and group study and field work in child-care programs.

**261A-261B. Seminar in Advanced Psychiatric-Mental Health Nursing.**

(2-2) Yr.

Miss Palmer and the Staff

Critical analysis of the philosophy, therapeutic principles, skills, and techniques inherent in the professional nursing care of the mentally ill. Guided study and field work.

**262A-262B. Seminar in Advanced Maternity Nursing. (2-2) Yr.**

Miss Disbrow

Evaluation of present obstetric practices, and analysis of recent advances and changing philosophy in the care of mother and baby; community organization for maternal and child care; individual and group study and field work.

**270. Seminar in Advanced Medical-Surgical Nursing. (2-4) I, II.**

Miss Coston

Evaluation of the fundamentals of medical-surgical nursing; implications for nursing in recent scientific advances; current trends in rehabilitation. Critical analysis of methods used in patient care and student teaching. Individual and group study and field work.

**280. Interdisciplinary Research Seminar. (3) I, II.**

Mrs. Sheldon and the Staff

Prerequisite: master's degree and consent of the instructor.

Intensive study of selected areas of knowledge in the behavioral sciences as theoretical bases for nursing practice and research, together with consideration of research designs pertinent to clinical nursing research. This course may be repeated provided subject matter is not duplicated.

**285. Nursing Research Seminar. (3) I, II.** Miss D. Johnson and the Staff

Prerequisite: master's degree and consent of the instructor.

Analysis of the underlying theoretical bases for nursing practice and research and explorations in the formulation of hypotheses related to assessment and intervention in nursing care problems. This course may be repeated provided subject matter is not duplicated.

**299. Research on Thesis. (No credit) I, II.**

The Staff

**401. Guided Supervision in Nursing Services. (5) I, II.**

The Staff

Laboratory, thirty hours. Prerequisite: master's degree or the equivalent, or consent of the instructor. May be repeated for credit.

A course in guided supervision in nursing service in hospitals and/or health agencies which places emphasis upon supervisor-nurse-team relationships and the evaluation process. Opportunity is given to apply the theory of supervision and to handle supervisory problems.

## OCEANOGRAPHY

Roger Revelle, Ph.D., Sc.D., *Director of the Scripps Institution of Oceanography and Professor of Oceanography.*

Milton N. Bramlette, Ph.D., *Professor of Geology.*

†Adriano A. Buzzati-Traverso, Ph.D., *Professor of Biology.*

Carl Eckart, Ph.D., *Professor of Geophysics.*

Walter M. Elsasser, Ph.D., *Professor of Physics.*

Denis L. Fox, Ph.D., *Professor of Marine Biochemistry.*

Carl L. Hubbs, Ph.D., *Professor of Biology.*

Martin W. Johnson, Ph.D., *Professor of Marine Biology.*

Leonard N. Liebermann, Ph.D., *Professor of Physics.*

Walter H. Munk, Ph.D., *Professor of Geophysics.*

Fred B. Phleger, Ph.D., *Professor of Oceanography.*

Russell W. Raitt, Ph.D., *Professor of Geophysics.*

Norris W. Rakestraw, Ph.D., *Professor of Chemistry.*

Per F. Scholander, M.D., Ph.D., *Professor of Physiology.*

Francis P. Shepard, Ph.D., *Professor of Submarine Geology.*

Hans E. Suess, Ph.D., *Professor of Geochemistry.*

† Absent on leave, 1960-1961.



- Charles D. Wheelock, M.A., *Professor of Marine Resources.*  
 Claude E. ZoBell, Ph.D., *Professor of Marine Microbiology.*  
 G. F. McEwen, Ph.D., *Professor and Curator of Physical Oceanography, Emeritus.*  
 Gustaf O. S. Arrhenius, Ph.D., *Associate Professor of Marine Geology.*  
 Robert S. Arthur, Ph.D., *Associate Professor of Oceanography.*  
 Harmon Craig, *Associate Professor of Geochemistry.*  
 E. William Fager, Ph.D., D.Phil., *Associate Professor of Biology.*  
 Edward D. Goldberg, Ph.D., *Associate Professor of Chemistry.*  
 Francis T. Haxo, Ph.D., *Associate Professor of Biology.*  
 Douglas L. Inman, Ph.D., *Associate Professor of Geology.*  
 John D. Isaacs, B.S., *Associate Professor of Oceanography.*  
 Henry W. Menard, Ph.D., *Associate Professor of Geology.*  
 Victor C. Anderson, Ph.D., *Research Physicist.*  
 Seibert Q. Duntley, Ph.D., *Research Physicist and Director of the Visibility Laboratory.*  
 James M. Snodgrass, A.B., *Research Engineer.*  
 Fred N. Spiess, Ph.D., *Research Geophysicist and Director of the Marine Physical Laboratory.*  
 Victor Vacquier, M.A., *Research Geophysicist.*  
 Roswell W. Austin, B.S., *Associate Research Engineer.*  
 Maurice Blackburn, D.Sc., *Associate Research Biologist.*  
 Almerian R. Boileau, M.A., *Associate Research Engineer.*  
 Kenneth A. Clendenning, Ph.D., *Associate Research Biologist.*  
 Gifford C. Ewing, Ph.D., *Associate Research Oceanographer.*  
 Jeffery D. Frautschy, B.A., *Associate Research Engineer and Assistant Director of the Scripps Institution of Oceanography.*  
 Philip Rudnick, Ph.D., *Associate Research Physicist.*  
 George G. Shor, Jr., Ph.D., *Associate Research Geophysicist.*  
 Frank E. Snodgrass, M.S., *Associate Research Engineer.*  
 John H. Taylor, Ph.D., *Associate Research Psychologist.*  
 John E. Tyler, B.S., *Associate Research Physicist.*  
 Tjeerd H. van Andel, Ph.D., *Associate Research Geologist.*  
 Warren S. Wooster, Ph.D., *Associate Research Oceanographer.*  
 William L. Belsler, Ph.D., *Assistant Research Biologist.*  
 George S. Bien, Ph.D., *Assistant Research Chemist.*  
 Brian P. Boden, Ph.D., *Assistant Research Biologist.*  
 R. N. C. Bowen, Ph.D., *Assistant Research Geologist.*  
 Edward Brinton, Ph.D., *Assistant Research Biologist.*  
 Tsaihwa J. Chow, Ph.D., *Assistant Research Chemist.*  
 Charles S. Cox, Ph.D., *Assistant Research Oceanographer.*  
 Joseph R. Curray, Ph.D., *Assistant Research Geologist.*  
 Frederick H. Fisher, Ph.D., *Assistant Research Physicist.*  
 Robert L. Fisher, Ph.D., *Assistant Research Geologist.*  
 Gordon W. Groves, Ph.D., *Assistant Research Oceanographer.*  
 Robert W. Holmes, B.S., *Assistant Research Biologist.*  
 Masatake Honda, Sc.D., *Assistant Research Chemist.*  
 Galen E. Jones, Ph.D., *Assistant Research Microbiologist.*  
 Charles D. Keeling, Ph.D., *Assistant Research Chemist.*  
 Ronald G. Mason, Ph.D., *Assistant Research Geophysicist.*  
 Wheeler J. North, Ph.D., *Assistant Research Biologist.*  
 Grace L. Orton, Ph.D., *Assistant Research Biologist.*  
 Frances L. Parker, M.S., *Assistant Research Geologist.*  
 June C. Pattullo, Ph.D., *Assistant Research Oceanographer.*  
 Rudolph W. Preisendorfer, Ph.D., *Assistant Research Mathematician.*  
 Joseph L. Reid, Jr., M.S., *Assistant Research Oceanographer.*  
 William R. Riedel, M.S., *Assistant Research Geologist.*

Beatrice M. Sweeney, Ph.D., *Assistant Research Biologist.*  
 William H. Thomas, Ph.D., *Assistant Research Biologist.*  
 Theodore J. Walker, Ph.D., *Assistant Oceanographer.*  
 Elbert H. Ahlstrom, Ph.D., *Research Associate.*  
 David H. Davies, Ph.D., *Research Associate.*  
 Edwin L. Hamilton, Ph.D., *Lecturer and Research Associate.*  
 A. Baird Hastings, Ph.D., *Research Associate.*  
 Elizabeth Kampa, Ph.D., *Research Associate.*  
 John C. Marr, M.A., *Research Associate.*  
 John Radovich, A.B., *Research Associate.*  
 †Marston C. Sargent, Ph.D., *Research Associate.*  
 Milner B. Schaefer, Ph.D., *Research Associate.*  
 Charles R. Schroeder, Ph.D., *Research Associate.*

Courses in oceanography, marine biology, and geochemistry are given at the Scripps Institution of Oceanography, La Jolla, California. For further information concerning the Institution, write to the Director.

*Letters and Science List.*—All undergraduate courses in oceanography and marine biology are included in the Letters and Science List of Courses. For regulations governing this list, see page 2.

*Advanced Degrees.*—Two curricula are offered, leading to graduate degrees in the fields of oceanography and marine biology, respectively. A limited number of qualified students are accepted under the provisions set forth in the ANNOUNCEMENT OF THE GRADUATE DIVISION, SOUTHERN SECTION. A student must be well trained in the fundamentals before coming to the Scripps Institution and must obtain the approval of both the Director of the Institution and the Dean of the Graduate Division, Southern Section. Resident work at Los Angeles or Berkeley may be required of candidates for advanced degrees.

### Requirements for Admission to the Graduate Curricula

#### *In the Division of Marine Geophysics:*

The standard requirements for entrance are those described by a major in physics. In addition, some course work in biology and geology is very desirable.

Students having majored in other subjects such as mathematics, meteorology, geophysics, or engineering, must have an adequate preparation in:

1. Mathematics through differential equations; vector analysis recommended.
2. Physics, two years; electronics laboratory recommended.
3. Chemistry, one year; a second year recommended.

#### *In the Division of Marine Biology:*

1. Undergraduate major in biology or the substantial equivalent.
2. One year each of: English, mathematics, and physics with appropriate laboratory.
3. One and one-half years of chemistry, including organic chemistry. Physical and biochemistry are recommended.
4. Two and one-half years of biology, including basic courses in botany and zoology.

#### *In the Division of Marine Geology and Geochemistry:*

1. Undergraduate major in geology, chemistry, geochemistry, or physics.
2. Mathematics through differential and integral calculus.

† Absent on leave, 1960-1961.

3. Physics and chemistry, one year of each, designed for physics or chemistry majors.

4. (a) For marine geology majors: one additional year of either physics or chemistry; physical geology, historical geology, optical mineralogy, petrology. (b) For marine chemistry majors: quantitative analysis and one year of physical chemistry.

*For all Divisions.*—Preparation in modern foreign language sufficient to pass reading examinations by the end of the second year. One language (German, French or Russian) is required for the master's degree, two for the degree of Doctor of Philosophy.

### Requirements for Advanced Degrees

(For general requirements see pages 18-28 in the ANNOUNCEMENT OF THE GRADUATE DIVISION, SOUTHERN SECTION.)

#### MASTER OF SCIENCE

*In Oceanography:* Offered under Plan II only, except by special arrangement. Required courses: 110, 111, 112, 113, and 12 units in graduate courses. A reading knowledge of German or a suitable substitute is required.

*In Marine Biology:* Offered under either Plan I or II. Required courses: 110, 112, 113, 252, two of 225, 226, and 227; additional elective courses may be chosen from those listed in either oceanography or marine biology. A reading knowledge of German, French, or Russian is required.

#### DOCTOR OF PHILOSOPHY

*In Oceanography:* Required courses: 110, 111, 112, 113, 299. Foreign languages: German and either French or Russian. Independent study and research in such fields as those listed in course 299. In addition each division will require certain other courses of students in its particular field.

*In Marine Biology:* Required courses: 299 and those required for the M.S. degree. Foreign languages: German, and either French or Russian. Independent study and research in such fields as those listed in course 299.

In addition to those listed below, certain courses in other departments will be of special interest to students in oceanography. These include: Earth Sciences 125, 132, 217, 240A, 240B, 246.

*Advanced Degrees in Other Fields.*—Students from other departments of the University may arrange to do their research work at the Scripps Institution, in fields closely related to oceanography, such as chemistry, geological sciences, meteorology, microbiology, plant science, or zoology. In addition to requirements of their major departments, such students will be expected to complete two of the courses in oceanography 110 to 113.

Any department of the University is invited to send students to the Scripps Institution for special work, either under its own direction or under joint direction with members of the staff of the Institution. The credentials and study programs of such students must be approved by the major department, the Director of the Scripps Institution and the Dean of the Graduate Division, Southern Section.

### OCEANOGRAPHY

#### UPPER DIVISION COURSES

110. Introduction to Physical Oceanography. (3) I.

Mr. Arthur

Methods of measurement with demonstration at sea; physical state of the sea; physical properties of sea water; boundary processes including interaction between sea and atmosphere; principles of dynamics applied to motion and distribution of variables.

**111. Submarine Geology. (3) I.**

Mr. Shepard, Mr. Inman

Covers the topography and sediments of the ocean floor along with their recent history. Also considers beaches, waves and currents as they affect the shore and the continental shelf, the comparison between recent sediments and sedimentary rocks, and the development of coral reefs.

**112. Biology of the Sea. (3) I.**

Mr. Johnson, Mr. Berner

An integrated survey course dealing with fundamental aspects of the biological economy of the sea, the explanation of biologically associated marine phenomena, and the interrelation of biological, chemical and physical processes in the environment.

**113. Chemistry of Sea Water. (3) I.**

Mr. Rakestraw, Mr. Goldberg

Chemical processes that take place in the sea and their relation to such general matters as fertility, sedimentation, distribution of organisms, and so forth. Consideration of various areas of physical chemistry which are involved in these processes.

**†118. Statistics. (3) II.**

Mr. Fager

Methods of statistical analysis, sampling and design of experiments applicable to marine studies.

**199. Special Studies. (1-4) I, II.**

The Staff

Prerequisite: senior standing and consent of the instructor.

**GRADUATE COURSES****210. Physical Oceanography—General. (3) II.**

Mr. Arthur

Dynamics of ocean currents; turbulence; wind currents; atmospheric boundary layer; water masses and currents of the ocean; work at sea.

**211. Waves. (3) II.**

Mr. Cox

Theory of surface and internal waves; wind waves, swell and surf; wave action on beaches; methods of observation; field work.

**212. Tides. (3) I.**

The Staff

Theory of tides; seiches; tides in adjacent seas; character of tides in different oceans; application of harmonic analysis.

**219. Micropaleontology. (2) II.**

Mr. Phleger

Prerequisite: course 111 or the equivalent.

Laboratory work, with occasional lectures, on the identification and ecology of foraminifera, with special emphasis on their significance in marine geology.

**220. Special Topics in Oceanography. (2-4) I, II.**

The Staff and Visitors

Lectures and demonstrations by different members of the staff and visitors. Present problems in oceanography; applications of oceanographic knowledge.

**†223. Beach and Nearshore Processes. (2) II.**

Mr. Inman

Prerequisite: courses 110, 111.

Study of the physical processes in the nearshore environment, including waves and currents, and their effect on the transportation of sediments.

**224. Petrography of Sediments. (2) II.**

Mr. Bramlette

Laboratory and occasional lectures on determination of the important constituents of sediments, organic and inorganic, with special emphasis on the immersion method of identifying mineral grains.

† Offered in alternate years.

- 228. Sedimentary Petrogenesis. (2) II.** Mr. van Andel  
Prerequisite: optical mineralogy.  
Formation of sediments; classification, depositional environments and sedimentary facies; sediments in stratigraphy and paleogeography.
- 229. Advanced Sedimentary Petrogenesis. (2) I.** Mr. van Andel  
Prerequisite: courses 224 and 228; consent of the instructor.  
Advanced treatment of special topics in sedimentology: case histories of sediment research; trends of sediment research and their influence on geological thinking; application of sediment studies to stratigraphy and paleogeography. Lectures and oral reports by students.
- 250. Seminar in Oceanography. (1) I, II.** The Staff
- 251. Problems in General Oceanography. (3) I.** \_\_\_\_\_  
Presentation of reports and review of literature in general oceanography.
- †**254. Marine Sediments. (3) II.** Mr. Bramlette, Mr. Inman, Mr. Menard,  
Mr. Phleger, Mr. Revelle, Mr. Shepard  
Seminar and laboratory. Origin, distribution, interpretation, and methods of study of marine sediments.
- †**255. Problems in Submarine Geology. (2) II**  
Mr. Bramlette, Mr. Inman, Mr. Menard,  
Mr. Phleger, Mr. Revelle, Mr. Shepard  
Seminar.
- 299. Research. (1-6) I, II.** The Staff  
Research in one or more of the following oceanographic sciences: physical oceanography; submarine geology; chemical oceanography; biological oceanography, including marine biochemistry, marine microbiology, marine botany, marine vertebrates and invertebrates. Students must present evidence of satisfactory preparation for the work proposed.

## MARINE BIOLOGY

## UPPER DIVISION COURSES

- 114. Marine Vertebrates. (3) I.** Mr. Hubbs
- 121. Marine Microbiology. (3) II.** Mr. ZoBell, Mr. Jones  
Prerequisite: courses 110, 112, 113.  
Methods of studying bacteria and allied microorganisms, with particular reference to their importance as biochemical and geological agents in the sea.
- †**122. Marine Biochemistry. (3) II.** Mr. Fox  
Prerequisite: fundamental courses in chemistry and biology, or Oceanography 112 and 113, and consent of the instructor.  
The chemistry of living matter; marine colloids, comparative biochemical and physiological activities of marine animals; biochemical cycles in the sea.
- 125. Physiology of Marine Algae. (2) II.** Mr. Haxo  
Prerequisite: basic courses in biology and chemistry, and Oceanography 112, 113.  
Comparative physiology and biochemistry of algae with emphasis on marine problems.
- 126. Microbial Genetics. (3) I, II.** Mr. Belser  
Prerequisites: general biology, microbiology, and biochemistry, or their substantial equivalent.  
Lectures, laboratory demonstrations and special problems in principles and techniques of genetics, with particular reference to microorganisms.

† Offered in alternate years.

## 199. Special Studies. (1-4) I, II.

The Staff

Prerequisite: senior standing and consent of the instructor.

## GRADUATE COURSES

## \*222. Biochromes. (2-3) II.

Mr. Fox, Mr. Haxo

Prerequisites: course work in organic chemistry and in the biochemistry of physiology of plants or animals.

Physical and chemical foundations of color manifestation; the chemistry, distribution, metabolism and significance of pigments occurring in the living world.

## 225. Marine Ecology. (3) II.

Mr. Fager

Behavior, single-species population dynamics, interspecific relationships and environmental factors as they relate to the distribution and abundance of marine organisms.

## 226. Biochemical Problems in the Sea. (3) II.

Mr. Fox, Mr. Haxo, Mr. Scholander, Mr. ZoBell

Biochemical and physiological processes in marine plants and animals and the influence of the kinds and concentration of nonconservative components of the sea. Biochemical cycles in the hydrosphere.

## 227. Evolution in the Marine World. (2) II.

Mr. Hubbs

Origin and evolution of the sea and its organisms. Migration from and to the sea. Adaptation and speciation in various habitats.

Experimental studies on evolution of marine forms.

## 252. Seminar in Experimental and Comparative Biology. (2) I, II.

Mr. Fager

## 299. Research. (1-6) I, II.

The Staff

Research in such biological fields as: algology, biophysics, genetics, microbiology, vertebrate and invertebrate zoology, comparative biochemistry or physiology of marine animals and plants, evolution and population dynamics. Students must present evidence of satisfactory preparation for the work proposed.

## ORIENTAL LANGUAGES

Kenneth K. S. Ch'en, Ph.D., *Professor of Oriental Languages (Acting Chairman of the Department to December 31, 1960).*†Richard C. Rudolph, Ph.D., *Professor of Oriental Languages (Chairman of the Department).*Ensho Ashikaga, M.Litt., Giko, *Associate Professor of Oriental Languages.*———, *Assistant Professor of Oriental Languages.*Y. C. Chu, M.A., *Associate in Chinese.*———, *Associate in Japanese.**Letters and Science List.*—All undergraduate courses in Oriental languages are included in the Letters and Science List of Courses. For regulations governing this list, see page 2.*Preparation for the Major.*—Courses 1A-1B, 9A-9B, and 32 or 42. Recommended: Anthropology 1-2.*The Major.*—Required: 24 upper division units of Oriental languages, of which 18 units must be in language courses including course 199; Art 113A, 113C, and History 191A-191B. Recommended: Anthropology 110, and Geog-

\* Offered in alternate years.

† Absent on leave, fall semester, 1960-1961.

raphy 124B. A reading knowledge of French and German should be acquired by those planning to go on to graduate work.

*Requirements for Admission to Graduate Courses.*—A candidate for admission to graduate courses in Oriental languages must meet, in addition to the general University requirements, the minimum requirements for an undergraduate major in this department. The candidate must pass a reading examination in French or German during the first semester of graduate study.

*Requirements for the Master's Degree.*—For the general requirements see page 66. The department favors the Comprehensive Examination plan, but under certain conditions the thesis plan may be approved. For specific departmental requirements, see the ANNOUNCEMENT OF THE GRADUATE DIVISION, SOUTHERN SECTION.

#### LOWER DIVISION COURSES

1A-1B. **Elementary Modern Chinese.** (4-4) Yr. Mr. Chu  
Not open to students with previous training. Five hours a week.  
Introduction to the standard or "National Language" (Kuo Yü) of China.

9A-9B. **Elementary Modern Japanese.** (4-4) Yr. Mr. Ashikaga  
Not open to students with previous training. Five hours a week.

13A-13B. **Classical Chinese.** (2-2) Yr. Mr. Rudolph  
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.

29A-29B. **Japanese Oral and Written Composition.** (3-3) Yr. \_\_\_\_\_  
An elementary course for those who have had previous training in Japanese.

32. **History of Japanese Civilization.** (2) II. Mr. Rudolph  
A survey of the development of Japanese culture and its relationship to the Asiatic mainland.

42. **History of Chinese Civilization.** (2) I. Mr. Ch'en  
No knowledge of Chinese is required.  
A survey of the development of the outstanding aspects of Chinese culture from prehistoric to modern times.

#### UPPER DIVISION COURSES

101A-101B. **Intermediate Chinese.** (3-3) Yr. Mr. Chu  
A continuation of 1A-1B.

109A-109B. **Intermediate Modern Japanese.** (3-3) Yr. \_\_\_\_\_  
A continuation of 9A-9B.

\*112. **Chinese Literature in Translation.** (2) II. \_\_\_\_\_  
No knowledge of Chinese is required.  
Lectures and collateral reading of representative works—including classics, histories, belles-lettres, and fiction—in English translations.

113A-113B. **Intermediate Classical Chinese.** (2-2) Yr. Mr. Ch'en  
Further readings in the classics.

119A-119B. **Advanced Modern Japanese.** (3-3) Yr. Mr. Ashikaga  
A continuation of 29A-29B and 109A-109B.

121A-121B. **Advanced Chinese.** (3-3) Yr. Mr. Chu  
A continuation of 21A-21B and 101A-101B, with practice in newspaper style.

\* Not to be given, 1960-1961.

- \*129A-129B. **Classical Japanese and Kambun.** (2-2) Yr. Mr. Ashikaga
132. **Japanese Literature in Translation.** (2) I. \_\_\_\_\_  
 History of Japanese literature from the beginning to modern times, emphasizing Chinese, Buddhist, and Western influences.
- \*152A. **Chinese Poetry and Fiction.** (3) I. \_\_\_\_\_  
 Prerequisite: A reading knowledge of Chinese.
- 152B. **Japanese Poetry and Fiction.** (3) II. \_\_\_\_\_  
 Prerequisite: A reading knowledge of Japanese.
163. **Readings in Chinese.** (3) I. Mr. Ch'en  
 Prerequisite: course 113A-113B.  
 Selections from masters in the *Ku wen* style.
- 164A-164B. **Tibetan.** (2-2) Yr. Mr. Ch'en
170. **Archaeology of China.** (2) II. Mr. Rudolph  
 No knowledge of Chinese is required.  
 The important archaeological sites and types of antiquities of ancient China and peripheral regions; the history and development of archaeological work in China.
- 172A-172B. **The Influence of Buddhism on Far Eastern Cultures.** (3-3) Yr. Mr. Ch'en  
 The historical development of Buddhism in China and Japan and its influence on the culture, society and institutions of these areas. No language requirement.
173. **Chinese Historical Texts.** (2) II. Mr. Rudolph  
 Prerequisite: course 113A-113B.
- 179A-179B. **Readings in Japanese.** (3-3) Yr. Mr. Ashikaga  
 Prerequisite: course 129B, or consent of the instructor.
199. **Special Studies in Oriental Languages.** (1-4) I, II. The Staff  
 Prerequisite: senior standing and consent of the instructor.

GRADUATE COURSES

- 203A-203B. **Chinese Philosophical Texts.** (2-2) Yr.
- 213A-213B. **Chinese Buddhist Texts.** (3-3) Yr.
- 229A-229B. **Japanese Buddhist Texts.** (3-3) Yr.
- 252A-252B. **Seminar in Japanese Literature.** (3-3) Yr.
- 253A-253B. **Seminar in Buddhist Studies.** (2-2) Yr.
262. **Seminar in Sinological Literature.** (3) I.
275. **Seminar in Chinese Cultural History.** (3) II.
295. **Bibliography and Methods of Research.** (2) I.

\* Not to be given, 1960-1961.



## PATHOLOGY

(Department Office, 13-267 Medical Center)

- †Harrison Latta, M.D., *Professor of Pathology.*  
 Sidney C. Madden, M.D., *Professor of Pathology (Chairman of the Department).*  
 Frank W. McKee, M.D., *Professor of Pathology (Director, Clinical Laboratories).*  
 †Louis J. Zeldis, M.D., *Professor of Pathology.*  
 W. Jann Brown, M.D., *Associate Professor of Pathology.*  
 Baldwin G. Lamson, M.D., *Associate Professor of Pathology.*  
 Raymond A. Allen, M.D., *Assistant Professor of Pathology.*  
 Clarence H. Johnston, M.D., *Assistant Professor of Pathology in Residence.*  
 Dean L. Moyer, M.D., *Assistant Professor of Pathology.*  
 Robert S. Stone, M.D., *Assistant Professor of Pathology.*  
 †Roy L. Walford, Jr., M.D., *Assistant Professor of Pathology.*  
 Drake W. Will, M.D., *Assistant Professor of Pathology.*  
 Robert E. Anderson, M.D., *Instructor in Pathology.*  
 †Thomas E. Edgeington, M.D., *Instructor in Pathology.*  
 Frank M. Hirose, M.D., *Instructor in Pathology in Residence.*

### GRADUATE COURSE

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.

#### 231. Pathological Anatomy and Physiology. (11) I. The Staff

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 twelve students.

Demonstrations, discussions, and individual study of a student loan collection of microscopic slides preparations and 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.

## PERSIAN

For courses in Persian, see under Department of Near Eastern Languages.

## PHARMACOLOGY

(Department Office, 23-267 Medical Center)

- Gordon A. Alles, Ph.D., *Professor of Pharmacology in Residence.*  
 Dermot B. Taylor, A.B., M.B., B.Ch., B.A.O., *Professor of Pharmacology (Chairman of the Department).*  
 Emery M. Gal, Ph.D., *Associate Professor of Pharmacology in Residence.*  
 Donald J. Jenden, M.B., B.S., *Associate Professor of Pharmacology.*

† Absent on leave, 1960-1961.

John A. Bevan, M.B., B.S., M.R.C.S., L.R.C.P., *Assistant Professor of Pharmacology.*

George W. Stevenson, M.D., M.S., *Assistant Professor of Pharmacology.*

Richard C. Ursillo, Ph.D., *Assistant Professor of Pharmacology.*

Maurice Verity, M.B., B.S., M.R.C.S., L.R.C.P., *Acting Assistant Professor of Pharmacology.*

#### *Admission to Graduate Status*

In addition to meeting the requirements of the Graduate Division, the student must have received the bachelor's degree in a biological or physical science or in the premedical 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 as defined on pages 66-68, the student must complete the following:

1. Pharmacology 201. Mammalian Pharmacology and Toxicology.
2. Pharmacology 232. Fundamental Principles of Drug Action.
3. Pharmacology 233. Bioassay Theory.
4. Pharmacology 234. Experiments in Bioassay and Modes of Drug Action.
5. Pharmacology 251A-251B. Seminar.
6. Suitable additional courses in related subjects to make a total of 20 units.
7. 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 semester in which the candidate hopes to qualify. The deadline for this application is set each semester by the Graduate Division.

#### *Requirements for the Doctor's Degree*

1. *Advancement to Candidacy.* In addition to the general requirements of the Graduate Division as defined on pages 68-70, 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.

2. *Departmental Requirements.* The minimum requirements in addition to those for the master's degree in pharmacology and toxicology are:

- (1) Reading knowledge of French and German.
- (2) Two semesters of physical chemistry.
- (3) A course in calculus.
- (4) Such additional subjects as his guidance committee may designate.

The language and course requirements should be satisfied as soon as possible, and students must pass the examinations in foreign languages before applying for the qualifying examination.

The responsibility for completion of all technical requirements for the doctor's degree rests solely with the candidate.

## GRADUATE COURSES

## 201. Mammalian Pharmacology and Toxicology. (8) II.

Mr. Taylor and the Staff

Lectures, demonstrations, laboratories and conferences.

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.

## 232. Fundamental Principles of Drug Action. (2) I.

Mr. Taylor and the Staff

Advanced lectures on the scientific basis of pharmacological action. Interactions 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.

## 233. Bioassay Theory. (1) I.

Mr. Dixon and the Staff

Prerequisite: Preventive Medicine 101 (Biostatistics).

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.

## 234. Experiments in Bioassay and Modes of Drug Action. (1) I.

Mr. Ursillo and the Staff

A detailed laboratory course on the bioassay of pharmacological agents and the experimental techniques involved in the elucidation of their modes of action.

## 251A-251B. Seminar in Pharmacology. (1-1) Yr. Mr. Taylor and the Staff

## 290. Research in Pharmacology. (1-6) Yr. Mr. Taylor and the Staff

## PHILOSOPHY

(Department Office, 3303 Humanities Building)

<sup>1</sup> Alonzo Church, Ph.D., *Flint Professor of Philosophy.*† Abraham Kaplan, Ph.D., *Professor of Philosophy.*Hans Meyerhoff, Ph.D., *Professor of Philosophy.*Ernest A. Moody, Ph.D., *Professor of Philosophy.*<sup>1</sup> Donald A. Piatt, Ph.D., *Professor of Philosophy.*J. Wesley Robson, Ph.D., *Professor of Philosophy.*Hugh Miller, Ph.D., *Professor of Philosophy, Emeritus.*Rudolf Carnap, Ph.D., *Professor of Philosophy, Emeritus.*Paulette Fevrier, Ph.D., *Visiting Associate Professor of Philosophy.*Donald Kalish, Ph.D., *Associate Professor of Philosophy.*<sup>2</sup> Richard Montague, Ph.D., *Associate Professor of Philosophy.*Robert M. Yost, Jr., Ph.D., *Associate Professor of Philosophy (Chairman of the Department).*Herbert Morris, LL.B., D.Phil., *Assistant Professor of Philosophy.*Montgomery T. Furth, A.B., *Acting Instructor in Philosophy.*Douglas C. Long, M.A., *Acting Instructor in Philosophy.*Patrick G. Wilson, A.B., B.L.S., *Acting Instructor in Philosophy.*John Hospers, Ph.D., *Lecturer in Philosophy.*<sup>1</sup> Absent on leave, 1960-1961.<sup>2</sup> In residence fall semester only, 1960-1961.<sup>3</sup> In residence spring semester only, 1960-1961.

*Letters and Science List.*—All undergraduate courses in this department are included in the Letters and Science List of Courses. For regulations governing this list, see page 2.

*Preparation for the Major.*—Twelve units of lower division courses in philosophy, including courses 20A and 20B. Course 30 or 31 must be taken either as part of the preparation for the major or in the upper division.

*The Major.*—Twenty-four units in upper division courses, including at least 3 units in each of the following four groups:

Group I. 114, 152, 153, 157A, 157B, 162, 163, 166, 170A, 170B.

†Group II. 126, 182, 184A, 184B, 185, 186, 187A, 187B, 191.

Group III. 104, 105, 121, 136, 147, 149, 188, 189, 190.

Group IV. 101, 111, 112, 123, 124, 125, 146A, 146B, 175, 180, 181.

*Requirements for Admission of Philosophy Majors to Graduate Courses.*—Students may be admitted to a graduate course only if they have graduate standing and adequate preparation for this course.

*Requirements for the Master's Degree.*—For the general requirements, see page 66. In addition, candidates for the master's degree in philosophy must satisfy the following:

1. A reading knowledge of one of the following languages: Greek, Latin, French, or German.

2. At least 20 semester units in courses numbered over 100, 9 or more of which must be in courses numbered over 200.

3. An oral examination designed to test the student's general knowledge of philosophy.

4. A thesis supervised and approved by the department.

*Requirements for the Doctor's Degree.*—For the general requirements, see page 68. In addition, candidates for the doctor's degree in philosophy must satisfy the following:

1. 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 especially relevant to the candidate's field of specialization.

2. At least 24 related upper division units approved by the adviser in any one of the following fields: (a) natural sciences and mathematics, (b) social sciences, (c) life sciences, (d) humanities, excluding philosophy.

3. Qualifying examinations for advancement to candidacy consisting of a written examination in each of the following fields: logic, history of philosophy, theory of value, metaphysics, and a field of specialization within philosophy. Ordinarily, preparation for these examinations includes some work in courses numbered over 200. In addition, there is an oral qualifying examination in one of the four fields and in the related fields represented by the nondepartmental members of the doctoral committee.

4. An oral examination in the field of the student's special interest as represented by his dissertation.

#### LOWER DIVISION COURSES

All lower division courses are introductory and without prerequisite, except as otherwise stated.

† Students who have taken Philosophy 80 and passed Philosophy 81 with at least a grade B are not required to offer units from Group II in satisfaction of the requirement of 24 upper division units for the major.

**3. Logic in Practice. (2) I.**

Mr. Long

Language and its analysis as an instrument of sound thinking in morals, politics, and everyday life.

**\*4. Short Introduction to Philosophy. (2) I.**

Not open for credit to students who have completed 6A.

**\*5. Problems of Ethics and Religion. (2) I.**

Human conduct, its rules and natural law; the moral basis of institutions; religion and the moral order.

**6A-6B. Introduction to Philosophy. (3-3) Yr. Beginning either semester.**

Mr. Hospers, Mr. Long, Mr. Morris, Mr. Wilson, Mr. Yost

A philosophical analysis of the basic ideas and methods in political theory, morals, art, science, and religion; and of the interrelations of these fields. An attempt is made to provide the student with a critical technique for developing a well-considered philosophy of his own. Recommended as a course to satisfy requirement (G) (2) in the College of Letters and Science.

Course 6A is a prerequisite to course 6B, and is not open for credit to students who have completed course 4.

**20A. History of Greek Philosophy. (3) I, II.**

Mr. Moody, Mr. Furth

The beginnings of Western science and philosophy; Socrates, Plato, and Aristotle; Greek philosophies in the Roman world and in the Christian era.

**20B. History of Modern Philosophy. (3) I, II.**

Mr. Furth, Mr. Robson

The Renaissance and the rise of modern science; rationalism in Descartes, Spinoza, Leibniz; empiricism in Locke, Berkeley, Hume; Kant and his successors; recent movements.

**\*25. Democratic and Totalitarian Ideologies. (3) II.**

Mr. Kaplan

Not open to freshmen.

Contemporary philosophic conceptions of the relation between the state, society, and culture.

**30. Introduction to Modern Logic. (3) I, II.**

Mrs. Fevrier, Mr. Wilson

A survey of elementary logic, both inductive and deductive, with applications to ordinary language, the foundations of arithmetic, and science.

**31. Deductive Logic. (3) I, II.**

Mr. Kalish, Mr. Montague

The elements of symbolic logic; forms of reasoning and structure of language. Recommended for students who plan to pursue more advanced studies in logic.

## 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. Philosophy majors are recommended to make a selection of upper division courses that is well balanced with respect to the principal fields of philosophy. Many courses in the department of philosophy contain material that is relevant to programs of study in the following areas: fine arts, literary and intellectual history, jurisprudence, social sciences, psychology, natural sciences, and mathematics. The following courses, which require little or no philosophical background, are especially suitable for nonmajors who are interested simply in taking a course in philosophy as an elective: 101, 104, 111, 112, 114, 121, 123, 136, 146A, 146B, 147, and 149.

\* Not to be given, 1960-1961.

- \*101. The Philosophical Enterprise. (3) II.** Mr. Kaplan  
 Prerequisite: course 6A-6B or 20A-20B, or consent of the instructor.  
 Modern conceptions of the aims, problems, and methods of philosophy as a part of culture.
- 104. Ethics. (3) I.** Mr. Piatt  
 The fundamental concepts and theories of morals; the history and development of ethical theory.
- \*105. Ethics and Society. (3) II.** Mr. Piatt  
 Prerequisite: course 5, 25, or 104; or upper division standing in psychology or a social science.  
 A critical application of ethical theory to contemporary social problems and institutions.
- 111. Metaphysics. (3) II.** Mr. Long  
 Prerequisite: 6 units of philosophy or consent of the instructor.  
 Metaphysical theories of the universe and man's place in it; types of metaphysical approaches to philosophical problems; relations of metaphysics to science and to other philosophical disciplines.
- 112. Philosophy of Religion. (3) I.** Mr. Wilson  
 The nature and existence of God; the concept of immortality; religious obligation and the question of free will; the systematic nature of theology and its relation to the philosophical enterprise.
- 114. American Philosophy. (3) I.** Mr. Piatt  
 Philosophical foundations of American thought. Theories of human nature, political philosophy, and religion, from colonial times to the present.
- 121. Political Philosophy. (3) I.** Mr. Morris  
 Prerequisite: 6 units of philosophy.  
 Analysis of fundamental political conceptions: the state, sovereignty, political obligation, natural rights, natural law, and others.
- 123. Existentialist Philosophies. (3) II.** Mr. Meyerhoff  
 An analysis of existentialist thought in modern philosophy: the nineteenth century background (Kierkegaard and Nietzsche) and the major varieties of contemporary existentialism, both religious and nonreligious (Heidegger, Sartre, Marcel, and Buber).
- \*124. Oriental Philosophy. (3) I.** Mr. Kaplan  
 Prerequisite: course 20A-20B. Recommended: course 30.  
 A survey of the major philosophical systems of China and India: Hindu, Buddhist, Confucian, and Taoist. Attention will be paid to differences and similarities between these and dominant Western conceptions of methodology, ethics, and social philosophy.
- \*125. Nineteenth-Century Idealism and Romanticism. (3) I.** Mr. Meyerhoff  
 The philosophies of post-Kantian idealism, romanticism and evolution, with special reference to Hegel, Schopenhauer, Nietzsche, and Bergson.
- \*126. Nineteenth Century: Scientific Philosophy. (2) II.** Mr. Robson  
 Prerequisite: course 20B.  
 Scientific philosophies of the nineteenth century, including positivism, materialism, and evolutionary philosophy, with special reference to Comte, Mill, Spencer, and Mach.

- 136. Philosophy of Art. (3) I, II.** Mr. Wilson, Mr. Hospers  
The aesthetic experience; form and expression; the functions of art; bases of art criticism.
- 146A. Philosophy in Literature. (3) I.** Mr. Robson  
A study of philosophical ideas expressed in the literary masterpieces of Plato, Lucretius, Dante, Shakespeare, Goethe, Tolstoy, Lewis Carroll, Thomas Mann, and others.
- 146B. Philosophy in Literature. (3) II.** Mr. Meyerhoff  
A study of philosophical ideas expressed in contemporary literary masterpieces.
- \*147. Social Philosophy. (3) I.** Mr. Meyerhoff  
Prerequisite: 3 units in group III of the major, or upper division standing in history or a social science.  
Examination of the sociology of knowledge, the objectivity of the social sciences, the meaning of culture, and other problems in social philosophy.
- 149. Philosophy of History. (3) I.** Mr. Meyerhoff  
Prerequisite: 3 units in group III of the major, or upper division standing in history or a social science.  
A survey of philosophical theories of history and an analysis of contemporary problems of historical knowledge.
- 152. Plato. (3) I.** Mr. Meyerhoff  
Prerequisite: course 20A or consent of the instructor.
- 153. Aristotle. (3) II.** Mr. Moody  
Prerequisite: course 20A or consent of the instructor.
- 157A. Medieval Thought from Augustine to Aquinas. (3) I.** Mr. Moody  
Prerequisite: course 20A or the equivalent.  
The development of the intellectual tradition of western Christendom from the fourth to the thirteenth century, with special attention to the work of St. Augustine and of St. Thomas Aquinas; Byzantine, Moslem, and Jewish influences on a scholastic philosophy.
- 157B. Medieval and Early Renaissance Thought. (3) II.** Mr. Moody  
Prerequisite: course 20A or the equivalent.  
The origins and development of major currents of early modern thought in philosophy, religion, science, and political theory, from the late thirteenth to the late sixteenth century.
- 162. Continental Rationalism. (3) I.** Mr. Yost  
Prerequisite: course 20B.  
The philosophies of Descartes, Spinoza, and Leibniz.
- 163. British Empiricism. (3) II.** Mr. Furth  
Prerequisite: course 20B.  
The philosophies of Locke, Berkeley, and Hume.
- \*166. Kant. (3) I.** Mr. Kaplan  
Prerequisite: course 162 or 163.
- 170A. Contemporary Philosophy. (3) I.** Mr. Furth  
Prerequisite: course 20B. Recommended: course 31.  
Analysis of the views of several recent philosophers.

- 170B. Contemporary Philosophy. (3) II.** Mr. Furth  
 Prerequisite: course 20B. Recommended: course 31.  
 Analysis of the views of several recent philosophers.
- \*175. Pragmatism. (3) I.** Mr. Piatt  
 Prerequisite: consent of the instructor, based on the student's knowledge of the history of philosophy.  
 A systematic and critical analysis of American pragmatism, with special reference to James, Dewey, and Mead.
- 180. Philosophy of Mind. (3) I.** Mr. Long  
 Prerequisite: course 30 or 31, or upper division standing in psychology.  
 Analysis of psychological concepts.
- 181. Theory of Knowledge. (3) II.** Mr. Long  
 Prerequisite: course 30 or the equivalent.  
 Philosophical problems of perception, memory, belief, and knowledge.
- 182. Logic and Meaning. (3) I.** Mr. Church  
 Prerequisite: one year of mathematical logic or consent of the instructor.  
 An informal treatment of logical problems connected with the notion of meaning and related notions. Attention will be given in particular to intensional questions and to ideas of Frege.
- 184A. Intermediate Logic. (3) I, II.** Mr. Kalish  
 Prerequisite: course 31 or the equivalent.  
 Symbolic logic: extension of the systematic development of course 31. Set theory; foundations of arithmetic; concept of the infinite.
- 184B. Advanced Logic. (3) II.** Mr. Montague  
 Prerequisite: course 31, and either course 184A or consent of the instructor.  
 Methodology of logic and the deductive sciences; consistency and completeness of formal systems; concepts of truth and logical truth.
- \*185. Foundations of Probability and Statistics. (3) I.** Mr. Montague  
 Prerequisite: course 184A or Mathematics 127B or consent of instructor.  
 Logical and mathematical theories of probability; development of the mathematical calculus of probability in a logistic form; outlines of a general mathematical theory of probability and statistics; different interpretations of probability; problem of induction; probability logic.
- 186. Philosophy of Science. (3) I.** Mrs. Fevrier  
 (Replaces the former 148.)  
 Prerequisite: course 184A or Mathematics 127A or Mathematics 127B or consent of the instructor.  
 A general survey and philosophical analysis of the concepts and laws of modern natural science.
- 187A. Semantics. (3) I.** Mr. Furth  
 Prerequisite: course 30 or the equivalent.  
 General theory of signs; meaning and communication; logic and natural languages.
- 187B. Semantics. (3) II.** Mr. Wilson  
 Prerequisite: course 31 or the equivalent.  
 Formalized languages; theory of truth; synonymy and analyticity; modal logic.



188. **Ethical Theory.** (3) I. Mr. Hospers  
Prerequisite: course 104.  
A systematic study of moral philosophy; right and wrong; good and evil; and some leading theories about these topics.
- \*189. **Aesthetic Theory.** (3) I. Mr. Kaplan  
Prerequisite: course 20A-20B, 136.  
A survey of the major philosophies of art from Plato to the present.
190. **Legal Philosophy.** (3) II. Mr. Morris  
Prerequisite: course 121 or consent of the instructor.  
Analysis of modern legal theories, fundamental legal conceptions, and the foundations of legal institutions.
- \*191. **Philosophy of Mathematics.** (3) II. Mr. Montague  
Prerequisite: course 184A or Mathematics 127B or consent of the instructor.  
Axiomatic and set-theoretical foundations of systems of numbers: natural numbers, integers, rationals, reals, and complex numbers. Foundational approaches of Russell, Hilbert, and Brouwer.
199. **Special Studies.** (1-5) I, II. The Staff (Mr. Yost in charge)  
Prerequisite: senior standing and consent of the instructor.

## GRADUATE COURSES

*Prerequisite for Graduate Courses.*—See requirements listed above for admission of philosophy majors to graduate courses; graduate students from other departments may secure admission to graduate courses with the consent of the instructor.

211. **Philosophical Foundations of Physics.** (3) I. Mr. Carnap  
Prerequisite: course 186 or consent of the instructor.
240. **Semantics.** (3) II. Mr. Kalish  
Prerequisite: course 187B.
241. **Logic.** (3) II. Mr. Montague  
Prerequisite: course 184A or 184B.
- \*242. **Probability and Induction.** (3) II. Mr. Carnap  
Prerequisite: course 185 or consent of the instructor.
251. **Seminar: Metaphysics.** (3) I. Mr. Moody  
Prerequisite: course 111.
252. **Seminar: Naturalism.** (3) I. Mr. Piatt
- \*253. **Seminar: Pragmatism.** (3) II. Mr. Kaplan  
Prerequisite: course 175.
254. **Seminar: Philosophy of History.** (3) II. Mr. Meyerhoff  
Prerequisite: course 149.
255. **Seminar: Theory of Knowledge.** (3) II. Mr. Yost  
Prerequisite: course 181.
- \*257. **Seminar: Plato.** (3) I. Mr. Meyerhoff  
Prerequisite: course 152.

\* Not to be given, 1960-1961.

- \*258. Seminar: Hume. (3) I. Mr. Robson  
Prerequisite: course 163.
- \*259. Seminar: Leibniz. (3) II. Mr. Yost  
Prerequisite: course 162.
- \*263. Seminar: History of Formal Logic. (3) I. Mr. Moody  
Prerequisite: consent of instructor.
- \*264. Seminar: Medieval Philosophy. (3) I. Mr. Moody
- \*265. Seminar: General Theory of Value. (3) I. Mr. Robson
- \*266. Seminar: Ethical Theory. (3) II. Mr. Piatt  
Prerequisite: course 188.
- \*267. Seminar: Legal Philosophy. (3) II. Mr. Morris  
Prerequisite: course 190.
269. Seminar: Philosophy of Art. (3) II. Mr. Hospers  
Prerequisite: course 136.
- \*270. Seminar: Methodology of the Human Sciences. (3) I. Mr. Kaplan
271. Seminar: Logical Theory. (3) I, II. Mr. Church, Mr. Carnap  
Prerequisite: consent of the instructor.
- \*272. Seminar: Semantic Theory. (3) I. Mr. Carnap  
Prerequisite: course 187B.
- \*273. Seminar: Logical Foundations of Mathematics. (3) II. Mr. Carnap  
Prerequisite: course 184A or the equivalent.
297. Individual Studies for Graduate Students. (2-4) I, II.  
The Staff (Mr. Carnap in charge)
299. Research on Dissertation. (2-4) I, II.  
The Staff (Mr. Carnap in charge)

## PHYSICAL EDUCATION

(Department Offices, 206 Men's Gymnasium, 124 Women's Gymnasium)

Ruth Abernathy, Ph.D., *Professor of Physical Education.*

\*Rosalind Cassidy, Ed.D., *Professor of Physical Education and Coordinator of the Women's Staff.*

\*Edward B. Johns, Ed.D., *Professor of Physical Education.*

Ben W. Miller, Ph.D., *Professor of Physical Education.*

†Laurence E. Morehouse, Ph.D., *Professor of Physical Education.*

Raymond A. Snyder, Ed.D., *Professor of Physical Education.*

\*Carl Haven Young, Ed.D., *Professor of Physical Education.*

John F. Bovard, Ph.D., *Professor of Physical Education, Emeritus.*

Camille Brown, Ed.D., *Associate Professor of Physical Education.*

Donald T. Handy, Ed.D., *Associate Professor of Physical Education and Acting Coordinator of the Men's Staff.*

Alma M. Hawkins, Ed.D., *Associate Professor of Physical Education.*

Valerie Hunt, Ed.D., *Associate Professor of Physical Education.*

\* Not to be given, 1960-1961.

† Sabbatical leave in residence, 1960-1961.

‡ In residence fall semester only, 1960-1961.

§ In residence spring semester only, 1960-1961.

- Marjorie E. Latchaw, Ph.D., *Associate Professor of Physical Education.*  
 Wayne W. Massey, Ph.D., *Associate Professor of Physical Education.*  
 Norman P. Miller, Ed.D., *Associate Professor of Physical Education.*  
 Jeanette B. Saurborn, Ed.D., *Associate Professor of Physical Education.*  
 Wilfred Sutton, Ed.D., *Associate Professor of Physical Education.*  
 Serena Arnold, Ed.D., *Assistant Professor of Physical Education.*  
 Joy G. Cauffman, Ph.D., *Assistant Professor of Physical Education.*  
 Marguerite Clifton, Ed.D., *Assistant Professor of Physical Education.*  
 Jack Keogh, Ed.D., *Assistant Professor of Physical Education.*  
 Hope M. Smith, Ph.D., *Assistant Professor of Physical Education.*  
 William H. Spaulding, A.B., *Director of Athletics, Emeritus.*  
 Norman D. Duncan, M.A., *Supervisor of Physical Education.*  
 Cecil B. Hollingsworth, Ed.D., *Supervisor of Physical Education.*  
 Edith I. Hyde, M.A., *Supervisor of Physical Education.*  
 Orsie M. Thomson, M.A., *Supervisor of Physical Education.*  
 Paul Frampton, M.A., *Supervisor of Physical Education, Emeritus.*  
 Ethel T. Bell, Ed.D., *Associate Supervisor of Physical Education.*  
 Pia Gilbert, *Associate Supervisor of Physical Education.*  
 M. Briggs Hunt, Ed.B., *Associate Supervisor of Physical Education.*  
 \*Joan L. Martin, M.S., *Associate Supervisor of Physical Education.*  
 †William F. Pillich, M.S., *Associate Supervisor of Physical Education.*  
 Glen H. Egstrom, M.S., *Assistant Supervisor of Physical Education.*  
 Gerald W. Gardner, M.S., *Assistant Supervisor of Physical Education.*  
 Nanette T. McIntyre, M.S., *Assistant Supervisor of Physical Education.*  
 Carol J. Scothorn, M.A., *Assistant Supervisor of Physical Education.*  
 Mary E. Weber, Ed.D., *Assistant Supervisor of Physical Education.*  
 Bryant J. Cratty, M.S., *Junior Supervisor of Physical Education.*  
 Janice C. Hanlon, M.S., *Junior Supervisor of Physical Education.*  
 Beverly K. Kozlow, M.S., *Junior Supervisor of Physical Education.*  
 Aubrey A. Robinson, M.S., *Junior Supervisor of Physical Education.*  
 David W. Benson, M.S., *Associate in Physical Education.*  
 Stratton F. Caldwell, M.S., *Associate in Physical Education.*  
 Leonore L. Emery, M.S., *Associate in Physical Education.*  
 Richard K. Means, M.S., *Associate in Physical Education.*  
 Kenneth M. Moore, M.S., *Associate in Physical Education.*  
 Marita L. Nelson, M.S., *Associate in Physical Education.*  
 Gerald F. Norman, M.S., *Associate in Physical Education.*  
 Derek N. Nunney, M.S., *Associate in Physical Education.*  
 Kenneth V. Pike, Ed.D., *Associate in Physical Education.*  
 Emma V. Spencer, M.S., *Associate in Physical Education.*  
 Maryann Waltz, M.S., *Associate in Physical Education.*  
 Edward J. Wright, M.S., *Associate in Physical Education.*



Donald S. MacKinnon, M.D., *Director, Student Health Service.*

### Physical Education Activities

*Course Description.*—The following descriptions may be used as a guide in selecting activities (Physical Education 1):

**Adapted Sports and Therapeutic Exercise**—Restricted and special supervised activities for students with "C" medical classification cards.

**Apparatus and Tumbling**—tumbling, horizontal bar, parallel bars, side horse, long horse, flying rings and trampoline.

<sup>1</sup> In residence fall semester only, 1960-1961.

<sup>2</sup> In residence spring semester only, 1960-1961.

- Archery**—history, terminology, safety rules, tournament procedures, basic fundamentals of good form in target shooting and other forms of archery.
- Badminton**—knowledges and skills of badminton, fundamental strokes, rules, etiquette, strategy, singles and doubles play.
- Body Conditioning**—selected activities, such as, working with weights, running cross country, handball, and basketball.
- Basketball**—knowledges and skills of the game.
- Body Mechanics**—an understanding of individual movement postures, capacities and limitations in activities, and mechanics of efficient movement.
- Bowling**—fundamentals, scoring procedures, etiquette, and safety precautions. \$12 fee.
- Dance**: Folk—international dances, American square and round dances.  
Modern—exploration of basic dance movement and experience in creating dance studies.  
Social—basic forms and variations: waltz, fox trot, swing, and Latin-American dances.
- Deck Sports**—activities that may be used in the home and community, such as: table tennis, paddle tennis, deck tennis, wall handball, aerial darts and shuffleboard.
- Fencing**—beginning knowledge and skill in foil fencing, historical development, terminology, fundamental skills and bout procedures.
- Games**—skills and fundamentals of flag football, volleyball, softball and speedball.
- Golf**—basic patterns of swings, knowledges of choice of clubs, rules, etiquette, scoring and tournaments. Equipment provided by student or rented.
- Techniques of Relaxation**—restricted to those referred by the Student Health Center.
- Self-Defense**—basic skills and practice in the techniques of self-defense.
- Skiing**—ski terminology, fundamental stationary turns, moving turns, etiquette and safety. Equipment provided by student or rented.
- Sports Fundamentals**—a variety of student-selected activities which best fit needs and interests of the student.
- Swimming**: Beginning—fundamental principles of movement applied to execution of basic strokes, elementary diving and personal survival skills.  
Intermediate—review and individual correction of basic skills and diving.  
Advanced—use of strokes in long distance, speed, and synchronized swimming. Beginning spring board diving.  
Lifesaving and Water Safety—safety knowledges and skills of lifesaving.  
Synchronized—exploration in strokes, stunts and accompaniment. Experiences in creating swimming studies.
- Tennis**: Beginning—base knowledges and skills of drives, volley, service, strategy, rules and etiquette.  
Intermediate and Advanced—correction of individual faults and advanced techniques and strategy.
- Track and Field**—conditioning and testing in seven track events. Opportunity to participate in a track meet.
- Volleyball**—skills, team strategy, tournaments, and game variations.
- Wrestling**—basic skills and practice in the techniques of wrestling.

Complete uniform and towel are furnished by the Department of Physical Education, except that gym shoes and swimming caps are provided by the student.

Since the place of the first meeting of many classes is not the same as that listed in the class schedule, students should check bulletin boards in the men's and women's gymnasiums.

No refund on the bowling fee will be made after the final date for filing study lists. Bowling shoes will be required, but they can be rented at the bowling alley for ten cents per class meeting.

Students who select a major in the Department of Physical Education must satisfy the general requirements of the College of Letters and Science for the

bachelor's degree, *except as noted below*. Students registering according to the following schedule and continuing to the bachelor's degree may obtain the degree by satisfying the requirements of the College of Applied Arts:

*Continuing students* registering in the fall semester, 1960, with 15 or more units in the College of Applied Arts.

*New students* registering during the academic year, 1960-1961, with 30 or more acceptable units of advanced standing; 1961-1962, 55 or more units; 1962-1963, 85 or more units.

*Reëntering students*, formerly in the College of Applied Arts, registering during the academic year, 1960-1961, with 30 or more units; 1961-1962, 55 or more units; 1962-1963, 85 or more units.

*Letters and Science List*.—Courses 1, 44, 130, 139, 146, 147, 150A-150B, 151 and 155 are included in the Letters and Science List of Courses. For regulations governing this list, see page 2.

The Department of Physical Education offers the following majors:

### 1. Major in Physical Education.

#### WOMEN

*Preparation for the Major*.—Courses 29, 30, 31, 32, 35, 44; Chemistry 2 or Physics 10; Zoology 15, 25.

*The Major*.—At least 36 units of upper division courses in physical education, including courses 100, 102, 130, 131, 132, 138, 145A-145B, 152, 326A-326B, 327A-327B; and electives chosen from courses 103, 104, 135, 139, 140, 141, 142A, 143, 144, 150A-150B, 151, 153A-153B, 154, 155, 160, 190A-190B-190C, 199.

#### MEN

*Preparation for the Major*.—Courses 6, 7, 8, 9, 23, 44; Chemistry 2 or Physics 10; Zoology 15, 25.

*The Major*.—At least 36 units of upper division courses in physical education chosen from courses 100, 102, 130, 131, 138, 145A-145B, 370, 371A-B-C-D.

### 2. Major in Dance.

*Preparation for the Major*.—Physical Education 35, 36A-36B, 36C-36D, 38, 44. Integrated Arts 1A-1B, English 1A, Speech 1, Psychology 1A, 33, Zoology 15, 25, and four units (including at least one course with an asterisk) chosen from Art 10A\*, 10B\*, 20A\*, 30A\*, English 31\*, Humanities 1A, 1B, Music 30A, 30B, Theater Arts 5A.

*The Major*.—Physical Education 100, 150A-150B, 151, 152, 153A-153B, 154, 158A-158B, six units chosen from Art 100A-100B, 108, 109, 110B, English 115, 117J, 133, Folklore 101, 105, Music 121A, 136A, 136B, 137, 190H, Philosophy 136, Theater Arts 102, 118A, 119, 140E, 140F, 144, 147, 148A, and electives from Anthropology 102, 124, 125, 127, Sociology 101, 126, Philosophy 101, 146A, 146B, 147, to bring total to 36 units.

### 3. Major in School Health Education.

Plan I is a curriculum for students interested in health education who have a lower division background in physical education. Plan II is a curriculum for other students interested in health education who have a lower division background in such areas as science, sociology, and psychology.

#### (a) Plan I. School Health Education.

*Preparation for the Major*.—Chemistry 2; Bacteriology 1; Zoology 15, 25; Psychology 1A, 1B, or 33; English 1A-1B, or English 1A-Speech 1, or Speech 1-2; Physical Education 44, and 6, 7, 8, 9 (men), or 29, 30, 31, 32 (women).

*The Major.*—At least 36 units of upper division courses, including Home Economics 111, 138 or Sociology 142; Sociology 101; Psychology 145A; Education 110A; Public Health 100; Physical Education 100, 102, 132, 145A-145B, 160.

(b) *Plan II. School Health Education*

*Preparation for the Major.*—Chemistry 2; Bacteriology 1; Zoology 15, 25; Psychology 1A, 1B or 33; English 1A-1B, or English 1A-Speech 1, or Speech 1-2; Physical Education 1, 44.

*The Major.*—At least 36 units of upper division courses, including Education 110B; Home Economics 111, 138 or Sociology 142; Sociology 101; Psychology 145A-145B; Public Health 100, 110, 134; Physical Education 145A-145B, 160.

#### 4. Major in Physical Therapy.

(a) *Affiliation Plan* (leading to degree and certificate). This program includes three years of University work (90 units) and a fourteen-month course at the Children's Hospital School of Physical Therapy‡, which is affiliated with the University. The hospital work, which is completed in the senior year, is accepted in fulfillment of the residence requirement provided 24 units have been completed in the University of California, Los Angeles, immediately prior to study at the Children's Hospital School of Physical Therapy. Students completing the combined program will receive the degree of Bachelor of Science and the Certificate in Physical Therapy.

*Preparation for the Major.*—Courses 1, 43, 44; Chemistry 2A; Physics 10; Zoology 15, 25; Psychology 1A, 1B or 33; plus 12 units of social science.

*The Major.*—Courses 100, 102; and the fourteen-month course at the Children's Hospital School of Physical Therapy. The Hospital program includes courses in anatomy, pathology, psychology, electrotherapy, hydrotherapy, massage, therapeutic exercise, physical therapy (as applied to medicine, neurology, orthopedics, surgery), ethics and administration, electives recommended by the American Medical Association and the American Physical Therapy Association, and clinical practice. A maximum of 30 units will be allowed for completion of the Hospital program.

(b) *Four-Year Plan* (leading to degree only). This program is designed for students who wish to earn the degree of Bachelor of Science before enrolling in a school of physical therapy.

*Preparation for the Major.*—Courses 1, 43, 44; Chemistry 2A; Physics 10 or 2A; Zoology 15, 25. Recommended: Psychology 1A, 1B or 33; Speech 1-2; Sociology 1, 12.

*The Major.*—Thirty-six units of upper division courses, including Physical Education 100, 102, 103, 104, 190A; and electives selected from Physical Education 130, 139, 142A, 146, 171, 190B; Education 108, 110A-110B, 116, 147; Psychology 108, 110, 112, 113, 161, 168, 169; Anthropology 150; Home Economics 111; Public Health 170.

#### 5. Major in Recreation.

This major is designed to develop professional leaders in recreation with a sound general education, and an insight into the social responsibilities of community agencies.

‡ Students completing the three-year University program are not assured admission to the Children's Hospital School of Physical Therapy. When the number of qualified applicants exceeds the available facilities, selection of students will be made on the basis of scholarship and personal qualifications, as determined from the transcript of record, examination, and by personal interview.

**Preparation for the Major.**—Physical Education 1, 7, 23, 27A–27B, 43, 44; Botany 1; English 1A; Music 30A–30B; Psychology 1A, 33; Speech 1; Sociology 1, 12; Life Sciences 1A–1B.

**The Major.**—At least 36 units of upper division courses, including Physical Education 132, 139, 140, 141, 142A, 143, 144, 155, 190C–190D; and electives selected from Art 330; Business Administration 152; Education 110A; Psychology 145A–145B, 147; Sociology 126, 143; Physical Education 138, 330; Theater Arts 118A.

#### *Teaching Minor in Physical Education*

Not less than 20 units of coordinated courses, at least 6 of which are in the upper division. All courses must be approved by an adviser in the Department of Physical Education. For requirements, consult the ANNOUNCEMENT OF THE SCHOOL OF EDUCATION, LOS ANGELES.

#### *The Minor in Recreation*

Not less than 20 units of coordinated courses, at least 6 of which are in upper division. All courses must be approved by a recreation education adviser in the Department of Physical Education.

Courses: Physical Education 7, 23, 27A–27B, Sociology 1, Psychology 33, Physical Education 132, 138, 139, 140, 141, 142A, 144, 190C–190D, 199.

#### *Requirements for the Special Secondary Credential†*

Students may complete a teaching major in physical education for a special secondary credential. For the general requirements, consult the ANNOUNCEMENT OF THE SCHOOL OF EDUCATION, LOS ANGELES.

#### *Requirements for the General Secondary Credential*

Students may complete requirements for the general secondary credential with a major either in physical education or in health education. For the general requirements, consult the ANNOUNCEMENT OF THE SCHOOL OF EDUCATION, LOS ANGELES. For more specific information, consult the Department of Physical Education.

#### *Requirements for the Master's Degree*

The degree of Master of Science is awarded with a program in either physical education, health education, or recreation education. With skillful planning, the student may combine a portion of the course work for the master's degree with the work for the general secondary credential, although, generally, to complete both programs will require approximately three semesters of work. For the general requirements, see page 66 of this bulletin and the ANNOUNCEMENT OF THE GRADUATE DIVISION, SOUTHERN SECTION.

Thesis Seminar for M.S. Degree, Plan I. (No credit) I, II

Miss Abernathy

Comprehensive Study Group for M.S. Degree, Plan II. (No credit) I, II.

Mr. Massey

#### LOWER DIVISION COURSES

1. Physical Education Activities (Men and Women). (½) I, II. The Staff

Classes meet three hours weekly. Section assignments are made by the department. Only 4 units are accepted toward a degree. Students whose physical condition indicates the need of modified activity are assigned to adapted physical education classes. (Special equipment and course fee are required for certain activities. Information regarding these activities may be obtained from the department at the time of registration, or see pages 356–357 of this bulletin.)

† Recommended programs on the Los Angeles campus leading to special secondary credentials are being discontinued. Certificates of completion for these credentials will not be awarded after September, 1961.

†6. **Professional Activities (Men).** (1½) I, II. Mr. Egstrom  
Designed for the orientation and guidance of major and minor students in physical education. Course must be taken during the first semester of enrollment in the major or minor.

†7. **Professional Activities.** (1½) I, II. Mr. Pillich  
Only for major and minor students in health, physical, and recreation education. Fundamental knowledge and skills in dance, including rhythm analysis and social-recreation dance.

†8. **Professional Activities (Men).** (1½) I, II. Mr. Hunt, Mr. Egstrom  
Designed for major and minor students in physical education. Fundamental knowledges in swimming and wrestling.

†9. **Professional Activities (Men).** (1½) I. Mr. Hollingsworth, Mr. Caldwell  
Designed for major and minor students in physical education. Fundamental knowledges and skills in track and field, and tumbling and apparatus.

23. **Recreational Activities.** (2) I, II. Mr. Pike, ———  
An introduction to a variety of social recreational activities, with opportunity for planning, participation, and leadership in music, dramatics, games and sports, camping, arts and crafts, dance, informal gatherings, and hobbies.

\*27A. **Elementary School Physical Education Activities.** (1) I, II.  
Prerequisite: sophomore standing. Mr. Caldwell, ———  
Participation in playground activities designed for the elementary school child; emphasis on skills and knowledge leading to proficiency in physical education.

\*27B. **Elementary School Physical Education Activities.** (1) I, II.  
Miss Latchaw, Mr. Pillich, Miss Saurborn  
Prerequisite: sophomore standing.  
Participation in physical education activities in the classroom, gymnasium, and rhythm room which are designed for the elementary school child.

29. **Professional Activities (Women).** (3) I. Miss Waltz  
Open only to students with a major or minor in physical education.  
An introduction to the field of physical education. Sports and dance activity units are approached through a study of competencies, skills, and personal qualities needed for teaching.

30. **Professional Activities (Women).** (3) II. Miss Waltz  
Open only to students with a major or minor in physical education.  
An introduction to the field of physical education. Sports and dance activity units are approached through a study of competencies, skills, and personal qualities needed for teaching.

31. **Professional Activities (Women).** (3) I. Miss Smith  
Open only to students with a major or minor in physical education.  
Sports, games, and dance activities to develop further the competencies needed for teaching. Emphasis upon preparation for and experience in working with youth in a community situation.

\* Open only to students who are to be candidates for the elementary school credential and students majoring in recreation. Lower division students may not take these courses concurrently.

† Open to nonmajor students only by consent of the instructor.



- 32. Professional Activities (Women). (3) II.** Miss Smith  
Open only to students with a major or minor in physical education. Sports, games, and dance activities to develop further the competencies needed for teaching. Emphasis upon preparation for and experience in working with youth in a community situation.
- ‡34. Stage Movement. (2) II.** Mrs. Scothorn  
Four hours, lecture and laboratory.  
Study of the principles of physical timing, rhythm, and control in the acting situation.
- 35. Music Analysis for Dance Accompaniment. (2) I.** Mrs. Gilbert  
Analysis of musical forms and structure in relation to their use in dance forms. A workshop class in study of rhythms, using piano and percussion instruments.
- 36. A-B-C-D. Fundamentals of Creative Dance. (2-2-2-2).** The Staff  
Open only to students with major or minor in dance. 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.
- 38. Dance Notation. (1) II.** Mrs. Scothorn  
Prerequisite: consent of the instructor.  
Study of systems of dance notation with experiences in recording and interpreting dance scores.
- ‡43. Recreation for the Exceptional. (2) II.** Mr. Gardner, Miss Hunt, Miss Weber  
Recreational activities as a means of rehabilitation for the exceptional child and adult in community or hospital. Includes group organization, teaching techniques, and modification of activities. Designed for social workers, nurses, therapists, recreation leaders, and teachers.
- 44. Principles of Healthful Living. (3) I, II.** Mr. Sutton, Mr. Means, Miss Thomson, Mrs. Cauffman, Mrs. Bell  
Fundamentals of healthful living designed to provide scientific health information, and promote desirable attitudes and practices. A prerequisite to Physical Education 330 for all elementary school credential candidates.

## UPPER DIVISION COURSES

- 100. Analysis of Human Movement. (5) I, II.** Miss Hunt, Mr. Gardner, Miss Weber, Mr. Egstrom, Mr. Nunney  
Prerequisite: Zoology 15, 25.  
Analysis of human movement based upon the integration of kinesiology and physiology of activity.
- 102. Adapted Physical Education. (3) I, II.** Miss Hunt, Mr. Gardner, Miss Weber  
Prerequisite: course 100.  
Concerned with growth and developmental patterns with implications for special and regular physical education programs. Includes an analysis of postures and divergencies, with procedures for prevention and correction within the public schools.

‡ Open to nonmajor students only by consent of the instructor.

**103. Advanced Adapted Physical Education. (3) I.** Miss Weber

Prerequisite: course 102.

For students with major interest in Adapted Physical Education. Study of prevalent disabilities and the general organization and supervision of adapted programs. Includes laboratory experiences in the University and community. This course is a prerequisite for student teaching in corrective physical education.

**\*104. Neuromuscular Reëducation. (3) I.**

Prerequisite: course 102 or consent of the instructor.

Appraisal of neuromuscular limitations as a basis for selection of activities for rehabilitation.

**130. History and Principles of Physical Education. (2) I, II.**

Miss Brown, Miss Clifton, Mr. Keogh

An historical analysis of the forces and factors affecting programs of physical education. Philosophical bases are developed from which basic principles are evolved to serve as guides in the profession.

**131. Administration of Physical Education. (3) I, II.**

Mr. Keogh, Miss Smith

An analysis and study of the underlying philosophy, principles, policies, and procedures of administration as applied to physical education. Legal aspects and the interrelationships with the general school curriculum at the local, state, and national levels are considered.

**132. Conduct of the Program of Sports. (2) I, II.**

Section 1. Women physical education majors.

Miss Hyde

Section 2. All others.

Mr. N. Miller

Prerequisite: for women physical education majors, courses 130, 326A, and 326B, or consent of the instructor; no prerequisite for recreation majors.

A study of the principles and policies underlying the program of sports in the secondary schools and community centers; class management, organization of clubs, tournaments, care of equipment and facilities, program planning, and sports days. Intramural sports and other laboratory experiences required.

**135. Evaluation Procedures. (2) I.**

Miss Latchaw

Introduction and general acquaintance with basic tools and techniques through the interpretation of tests and measurements, rating scales, observation, and other evaluation procedures in health, physical, and recreation education.

**138. Recreation and the School. (2) I, II.**

Mr. Hollingsworth, Mr. Pike

The role of the school and its staff in the total community recreation program. A study of school and community recreation programs, with emphasis on basic principles, organization, and administration, supplemented with field trips.

**139. Principles of Recreation. (3) I, II.**

Mrs. Arnold, Mr. N. Miller

A consideration of philosophy and foundations of recreation, the environmental factors influencing it, and the basic principles underlying community organization and professional practice in recreation.

**140. Organization of Community Recreation. (3) II.**

Mrs. Arnold

Prerequisite: course 139 or consent of the instructor.

A study of the organization of recreation in the community, with implications for the administration of public and voluntary agency programs.

\* Not to be given, 1960-1961.

**141. Club Activities. (2) I.**

Mr. N. Miller

An analysis of the activities of clubs of various types, with emphasis upon leadership requirements and program planning to meet needs and interests of groups.

**142A. Outdoor Education. (2) II.**

Mr. N. Miller, Mr. Pike

A study of the principles and practices of camping and outdoor education for the concepts underlying the use of land and water resources for recreation.

**142B. Outdoor Education Leadership. (2) I.**

Mr. Pike

Prerequisite: course 142A or consent of the instructor.

A study of the camping and outdoor education program of public and private agencies and the role of the counselor as a leader and teacher. Field trips required.

**143. Problems in Group Work. (2) II.**

Mr. N. Miller

Principles and procedures of group work in recreation, with emphasis on group structure, community relations, and program planning.

**144. Recreation Survey. (2) I.**

Mrs. Arnold

An examination of the fields and methods of recreation research, with special emphasis on the design and administration of the community recreation survey.

**145A. School Health Education. (3) I, II.**

Mr. Sutton, Miss Abernathy, Mr. Johns, Mr. Snyder

Prerequisite: course 44 or consent of the instructor.

Organization and administration of the school health program; underlying principles, including legal aspects; administrative divisions of health instruction, health services, and healthful school living; and interrelationships with community health agencies. Emphasis on coordinated functions of the school health team—administrator, teacher, school physician, nurse, and other personnel.

**145B. School Health Education. (3) II.**

Mr. Sutton, Mrs. Cauffman

Prerequisite: courses 44, 145A, or consent of the instructor.

Organization of content, methods, and materials for health teaching in schools and colleges, and plans for in-service education; health instruction as an integral part of the total school program, including safety education.

**146. Social Aspects of Health. (2) I, II.**

Mrs. Bell, Mr. Means

Prerequisite: course 44 or consent of the instructor.

A study of the basic health factors underlying democratic society, with special emphasis on health as a social problem.

**147. Development of Modern Health Problems. (3) I, II.**

Mrs. Bell, Mrs. Cauffman, Mr. Means

Prerequisite: course 44 or consent of the instructor. Open to elementary school credential candidates.

A study of the history and development of modern health problems, with special emphasis on interpretation of their effect on individuals and community life.

**150A-150B. Advanced Dance. (3-3) Yr.**

Mrs. Scothorn

Prerequisite: course 36A-B-C-D

A continuing study of dance with emphasis on integration and synthesis of previous dance experience and the creative use of movement in composition.

- 151. History of Dance. (3) I.** Mrs. Seothorn  
Prerequisite: Integrated Arts 1A-1B; or consent of the instructor.  
Study of the functions and form of dance in society. Consideration of various cultures—primitive through the present day with emphasis on dance as an art in Western civilization.
- 152. Organization of Public Performances. (2) I, II.** Miss Brown, Miss Hyde  
Consideration of purpose, sources of materials, production procedure for folk festivals, dance recitals, and other special events.
- 153A-154B. Dance Composition Workshop. (2-2) Yr.** Mrs. Seothorn  
Prerequisite: consent of the instructor.  
Analysis of the elements and process of dance composition, and practice in individual and group composition and evaluation.
- 154. Advanced Music Analysis for Dance. (2) II.** Mrs. Gilbert  
Prerequisite: course 35 or consent of instructor.  
Piano and percussion improvisation; analysis of music for the dance; the historical development of musical forms used in dance; building an accompanist's repertoire.
- 155. Folk Festivals. (2) II.** \_\_\_\_\_  
Prerequisite: one semester of folk dance or consent of the instructor.  
Study of folklore in relation to festivals and pageants. The preparation of an original festival.
- 158A-158B. Philposophical Bases and Trends in Dance. (2-2) Yr.**  
Prerequisite: course 150A-150B, 151. Miss Hawkins  
Critical analysis of dance as a creative experience and the role of professional and educational dance in our society. Study of selected points of view and the relationship of various creative approaches to current developments in dance.
- 160. Counseling in the Health, Physical, and Recreation Education Program. (2) II.** Miss Cassidy  
A study of the counseling responsibilities and procedures of teachers and leaders in all three professional areas.
- 171. Conditioning of Athletes and Care of Injuries. (2) I, II.** \_\_\_\_\_  
Lecture, one hour; laboratory, two hours.  
Prerequisite: course 102 or consent of the instructor.  
Anatomical and physiological approach to conditioning as it relates to athletic teams. Prevention, examination, and care of athletic injuries, methods of taping, bandaging, and therapeutic exercises applied to athletic injuries; diets; training room equipment, protective devices, and supplies.
- 190A-B-C-D-E-F. Field Work in Profession. I, II.**  
Observation and practical experience in public, private, and/or voluntary agency programs.
- 190A-190B. Rehabilitation. (3 units each)** Mr. Young, \_\_\_\_\_  
Prerequisite: course 102 or consent of the instructor.
- 190C-190D. Recreation. (3 units each)** Mr. N. Miller, Mr. Pike, Mrs. Arnold  
Prerequisite: course 140 or consent of the instructor.
- 190E-190F. Health Education. (2-4 units each. Maximum of 6 units only allowed.)** Mr. Johns, Mr. Sutton  
Prerequisite: Public Health 134 or consent of the instructor.

199. **Special Studies.** (1-4) I, II. Mr. Massey and The Staff  
Prerequisite: senior standing and consent of the instructor.

## GRADUATE COURSES

201. **Secondary School Curriculum in Physical Education.** (2) I, II.  
Seminar in laboratory assignments. Miss Brown, Mr. Handy  
A study of physical education programs based on the needs of boys and girls in American secondary schools. (Required of fifth-year students preparing for the general secondary credential.)
227. **Comparative Study of Materials and Methods in Dance.** (2) II.  
Miss Hawkins  
A study of educational ideas and practices as they relate to the various forms of dance.
230. **The Elementary School Program in Health, Physical, and Recreation Education.** (2) I.  
Miss Saurborn  
Prerequisite: consent of the instructor.  
The study of administrative, supervisory, instructional, and curricular problems and practices in elementary school programs of health, physical, and recreation education.
235. **Advanced Evaluation Procedures.** (2) II. Mr. Massey, Miss Latchaw  
Prerequisite: course 135 or consent of the instructor.  
Study and application of advanced evaluation procedures and scientific instruments in the solution of professional problems and projects.
245. **Curriculum Development in Health Education.** (2) II.  
Mr. Johns, Mr. Sutton  
Prerequisite: course 145A-145B or consent of the instructor.  
The development of the health instruction program based on the health needs of school-age children. The formulation of objectives, scope and sequence of instruction, the examination of teaching methods, source materials, community resources, and evaluation procedures.
250. **Changing Perspectives in the Profession. Seminar.** (2) I, II.  
Seminar and group conferences. Mr. Snyder, Miss Cassidy, Mr. Massey  
Prerequisite: consent of the instructor.  
A student-staff examination of changing perspectives in the field, directed toward the formulation of a working professional philosophy in the fields of health education, physical education, and recreation, including a historical development.
254. **Current Problems in Health Education.** (2) I. Mr. Johns  
A critical analysis of new findings in the basic health education areas (nutrition, mental health, family health, consumer health, safety, communicable and chronic diseases) contributing to healthful living in the family, school, and community.
255. **Administrative Interrelationships in Health Education. Seminar.**  
(2) II. Miss Abernathy, Mr. Johns  
Prerequisite: consent of the instructor.  
A consideration of the principles, policies, and practices involved in the interrelationships of the school curriculum, the public and private health agencies in the community.
256. **Administrative Problems in Physical Education. Seminar.** (2) I.  
Miss Abernathy, Mr. B. Miller, Mr. Snyder  
Prerequisite: consent of the instructor.

A consideration of policies, problems, and practices in school and college physical education administration; interrelationships with the general curriculum, and among the local, state, and federal levels.

**257. Administrative Problems in Recreation. Seminar. (2) II.**

Prerequisite: consent of the instructor.

Mr. N. P. Miller

A consideration of policies, problems, and current administrative practices and interrelationships in public and private recreation agencies at the local, state, and national levels.

**258. Problems in Adapted Physical Education. (2) II.**

Miss Hunt

Identification and solution of problems in the administration, supervision, instruction, curriculum, research, evaluation, and personnel services in adapted physical education at the local, state, and national levels.

**259. Intertherapy Education. Seminar. (2) I.**

Mr. Young

Prerequisite: consent of the instructor.

The scope, functions, and interrelationships of physical therapy, occupational therapy, recreational therapy, and adapted physical education pertaining to programs of prevention, treatment, and adjustment in the schools and community.

**265. Foundations of the Curriculum. Seminar. (2) I.**

Prerequisite: consent of the instructor.

Miss Brown, Miss Cassidy

A study of the process of present-day curriculum making in physical education based on a critical analysis of the areas of individual and group needs in contemporary society. Students may center their individual studies at elementary, secondary, or college level.

**266. Social Bases of the Profession. Seminar. (2) II.**

Miss Abernathy

Prerequisite: consent of the instructor.

Analysis of the social forces and relationships bearing on the fields of health education, physical education, and recreation, and the significant role of the professional person in these areas.

**267. Physiological Bases of the Profession. Seminar. (2) I.**

Prerequisite: consent of the instructor.

Miss Hunt, Mr. Morehouse

Critical analysis of the physiological bases of health education, physical education, and recreation, with special attention to concepts from which principles and criteria of the profession are derived.

**275. Seminar in Health, Physical, and Recreation Education. (2) I, II.**

Mr. Handy, Miss Latchaw, Mr. Massey, Mr. Young

An exploration of research in the profession and a critical evaluation of needed studies through survey of literature and other sources leading to the identification and analysis of individual research problems.

**276. Methods of Research in Health, Physical, and Recreation Education.**

(2) I, II.

Mr. Massey

Prerequisite: course 275 or consent of the instructor.

The scientific methods and techniques of research in the organization, solution, and writing of theses, dissertations, and other research studies and projects.

**280. Research in Health, Physical, and Recreation Education. Seminar.**

(2) I, II.

Mr. Massey

Prerequisite: consent of the instructor.

Individual and group analysis of student research problems in progress through discussion, interpretation, and critical evaluation of research methods and resources.

**299. Independent Study. (2-4) I, II.**

Mr. Massey and The Staff

Prerequisite: course 275 or the equivalent and consent of the instructor.

Individual investigation of a special professional problem based on the research needs and interests of the student, and developed and written according to acceptable research standards.

**PROFESSIONAL COURSES IN METHOD****326A-326B. Principles of Teaching Sports (Women). (2-2) Yr. Miss Clifton**

Must be taken concurrently with course 327A-327B.

Analysis of problems in teaching sports, including safety techniques and game forms, with special reference to their use in planning teaching units and lesson plans. Advanced practice is provided in team activities, with emphasis on the interpretation of rules and the technique of officiating.

**327A-327B. Principles of Teaching Dance (Women). (2-2) Yr. \_\_\_\_\_**

Prerequisite or concurrent: course 35 or 154. Must be taken concurrently with course 326A-326B.

A study of methods, curricular materials, and evaluation procedures as related to the teaching of dance in the secondary schools.

**330. Health, Physical, and Recreation Education in the Elementary School. (3) I, II.**

Mrs. Bell, Miss Latchaw, Miss Saurborn

Prerequisite: upper division standing, courses 27A-27B, and 44, or the equivalent, Education 110B, and/or consent of the instructor.

A course to prepare the student to guide elementary school-age children through a well-balanced program in health, physical, and recreation education. Study of aims and objectives, procedures, methods, evaluation and program planning. Prerequisite to all supervised teaching for the kindergarten-primary or general elementary credentials.

**370. The Teaching of Physical Education (Men). (3) I, II.**

Mr. Handy

Lecture, two hours; laboratory, three hours. (Laboratory assignments to be made by instructor.)

Prerequisite: senior standing.

A study of methods, curricular materials, and evaluation procedures in elementary and secondary schools, including directed observation, field experience, class organization, and management of games and relays.

**371A-B-C-D. Technique of Teaching Activities (Men). (3-3-3-3)**

Lecture, two hours; laboratory, four hours.

Prerequisite: senior standing and consent of instructor.

**371A. Basketball and Speedball. I, II.**

Mr. Norman

**371B. Baseball and Volleyball. I, II.**

Mr. Keogh

**371C. Football. I.**

Mr. Duncan

**371D. Track and Field, Tumbling, Apparatus. II.**

Mr. Hollingsworth

A critical analysis of the methods and problems in teaching and coaching. Application is made to the secondary-school teaching situation, with emphasis on lesson planning, development of teaching units, organization for class activity, and administration of the program. Advanced practice is provided in the activities, with emphasis on strategy, selection of players, officiating, interpretation of rules, scoring, scouting, systems of team play, and administration of inter-school meets.

## RELATED COURSE IN ANOTHER DEPARTMENT

Integrated Arts 1A-1B. Man's Creative Experience in the Arts. (3-3) Yr.  
Mr. With

**PHYSICS**

(Department Office, 115 Physics Building)

- Alfredo Baños, Jr., Dr.Eng., Ph.D., *Professor of Physics.*  
 Leo P. Delsasso, Ph.D., *Professor of Physics (Chairman of the Department).*  
 Joseph W. Ellis, Ph.D., *Professor of Physics.*  
 Robert J. Finkelstein, Ph.D., *Professor of Physics.*  
 Joseph Kaplan, Ph.D., Sc.D., L.H.D., *Professor of Physics.*  
 E. Lee Kinsey, Ph.D., *Professor of Physics.*  
 Robert W. Leonard, Ph.D., *Professor of Physics.*  
 Kenneth R. MacKenzie, Ph.D., *Professor of Physics.*  
 J. Reginald Richardson, Ph.D., *Professor of Physics.*  
 Isadore Rudnick, Ph.D., *Professor of Physics.*  
 David S. Saxon, Ph.D., *Professor of Physics.*  
 Harold K. Ticho, Ph.D., *Professor of Physics.*  
 Norman A. Watson, Ph.D., *Professor of Physics.*  
 Byron T. Wright, Ph.D., *Professor of Physics.*  
 Laurence E. Dodd, Ph.D., *Professor of Physics, Emeritus.*  
 Vern O. Knudsen, Ph.D., LL.D., *Professor of Physics, Emeritus.*  
 ———, *Associate Professor of Physics.*  
 ———, *Associate Professor of Physics.*  
 Steven A. Moszkowski, Ph.D., *Associate Professor of Physics.*  
 Derek J. A. Prowse, Ph.D., *Associate Professor of Physics.*  
 Robert A. Satten, Ph.D., *Associate Professor of Physics.*  
 Donald H. Stork, Ph.D., *Associate Professor of Physics.*  
 ———, *Associate Professor of Physics.*  
 Roy P. Haddock, Ph.D., *Assistant Professor of Physics.*  
 David I. Paul, Ph.D., *Assistant Professor of Physics.*  
 Clifford K. Jones, Ph.D., *Lecturer in Physics.*



Edward Teller, Ph.D., Sc.D., *Professor of Physics at Large.*



- David T. Griggs, *Professor of Geophysics.*  
 Robert E. Holzer, Ph.D., *Professor of Geophysics.*  
 †Leon Knopoff, Ph.D., *Professor of Geophysics.*  
 \*Gordon J. F. MacDonald, Ph.D., *Professor of Geophysics.*  
 Clarence E. Palmer, M.S., *Professor of Geophysics.*  
 †Louis B. Slichter, Ph.D., *Professor of Geophysics.*  
 Norman Ness, Ph.D., *Assistant Professor of Geophysics.*

*Letters and Science List.*—All undergraduate courses in physics except 370 are included in the Letters and Science List of Courses. For regulations governing this list, see page 2.

*Preparation for the Major in Physics.*—Required: Physics 1A, 1B, 1C, 1D (to be taken in the order listed), or, with the consent of a departmental adviser, Physics 2A, 1C, 1D or Physics 2A, 2B; Chemistry 1A, 1B; Mathematics 5A, 5B, 6A, 6B; or Mathematics 1 (or the equivalent special examination—

† Absent on leave, 1960-1961.

‡ In residence spring semester only, 1960-1961.



see prerequisites for Mathematics 3A on page 289), 3A (taken concurrently with Mathematics 1 or after passing of the special mathematics examination—see prerequisites for Mathematics 3A on page 289), 3B, 4A, 4B; or their equivalents.

*The Major in Physics.*—The following upper division courses in physics, representing at least one course in each of the main subjects in physics, are required: 105, 107, 107C, 108B, 108C, 110, 112, 114A, 121, 113 or 124A, 113C or 114C or 124C. An average grade of C or higher must be maintained in the above courses. Required: Mathematics 110AB or 110C or 119A. Strongly recommended: Mathematics 122A–122B. Recommended: a reading knowledge of German and French. This major leads to the degree of Bachelor of Arts in the College of Letters and Science.†

*Preparation for the Major in Applied Physics.*—Required: Physics 1A, 1B, 1C, 1D (to be taken in the order listed), or, with the consent of a departmental adviser, Physics 2A, 1C, 1D, or Physics 2A, 2B; Chemistry 1A, 1B; Mathematics 5A, 5B, 6A, 6B, or Mathematics 1 (or the equivalent special examination—see prerequisites for Mathematics 3A on page 289), 3A (taken concurrently with Mathematics 1 or after passing of the special mathematics examination—see prerequisites for Mathematics 3A on page 289), 3B, 4A, 4B, or their equivalents; recommended: mechanical drawing. The last-named course may be taken in high school, University Extension, or elsewhere.

*The Major in Applied Physics.*—One of the following groups of courses prescribed to give a specialization in some particular field of physics is required.

(a) *Specialisation in electronics.* Physics 105, 107, 107C, 108B, 108C, 110, 112, 114A, 116A, 116B, 116C, 116D, 121, 124A.

(b) *Specialization in spectroscopy:* Physics 105, 107, 107C, 108B, 108C, 110, 112, 113, 113C, 114A, 115, 116A, 116C, 121.

(c) *Specialisation in acoustics and electronics:* Physics 105, 107, 107C, 108B, 108C, 112, 114A, 114B, 114C, 116A, 116B, 116C, 116D, 121.

(d) *Specialisation in chemical physics:* Physics 105, 107, 107C, 108B, 108C, 112, 113, 113C or 124C, 116A, 121, 124A; Chemistry 8, 110A, 110B, 111.

(e) *Specialisation in nuclear physics:* Physics 105, 107, 107C, 108B, 108C, 112, 113, 113C, 114A, 116A, 116C, 121, 124A, 124B, 124C.

(f) *Specialisation in atmospheric physics:* Physics 105, 107, 107C, 108B, 108C, 110, 112, 113, 114A, 116A, 116C, 121, 124A; Meteorology 104. Meteorology 131A is recommended as an elective.

An average grade of C or higher must be maintained in the above courses. Also required: Mathematics 110AB or 110C. Recommended: a reading knowledge of German and French. This major leads to a degree of Bachelor of Science in the College of Letters and Science. The College of Letters and Science requires for the Bachelor of Science degree in applied physics 6, not 12, upper division units outside of physics.

#### LOWER DIVISION COURSES

Physics 1A, 1B, 1C, and 1D form a sequence of courses in general physics for major students in physics and applied physics. All, or part, of the sequence is also required or recommended as first choice for major students in: astronomy, chemistry, engineering, meteorology, and certain interdepartmental fields of concentration. Students in departments other than those listed and with correct prerequisites may elect course 1A and any other courses in the sequence. (Course 1A is prerequisite to any of the other courses in the sequence.)

† A mimeographed brochure, giving more detailed information than is contained in this bulletin, is obtainable from the office of the Department of Physics.

Physics 2A and 2B form a one-year sequence of courses in general physics which is required of students specializing in the following fields: agriculture, bacteriology, geology, medical technology, pre dentistry, pre medicine, pre-optometry, pre public health, and zoology. It is an alternate sequence (but only on approval of the appropriate departmental adviser) for major students in physics, applied physics, astronomy, chemistry, and meteorology. Students in other departments and with correct prerequisites may elect 2A or 2A and 2B. (Course 2A, or 1A, is always prerequisite to course 2B.)

Physics 10 is a one-semester, nonlaboratory course which surveys the whole field of general elementary physics. It is designed primarily for the liberal arts student.

In general, not more than 15 units of credit will be given for any amount of lower division work. Credit in excess of 15 units will be given only in exceptional cases, when approved by the department.

**1A. General Physics: Mechanics of Solids.** (3) I, II. Mr. Baños, Mr. Ellis

Lecture and demonstration, three hours; laboratory, two hours. Prerequisite: section 1: high school physics or chemistry; Mathematics 3A or 5A taken concurrently with Physics 1A. Section 2: high school physics or chemistry; Mathematics 5A. Students who have credit for Physics 2A will be limited to one unit of credit for Physics 1A.

**1B. General Physics: Mechanics of Fluids, Heat, and Sound.** (3) I, II.

Mr. Paul

Lecture and demonstration, three hours; laboratory, two hours. Prerequisite: course 1A (or 2A on approval of an adviser); Mathematics 3A or 5A completed; Mathematics 3B or 5B taken concurrently with Physics 1B. Students who have credit for Physics 2A will be limited to one unit of credit for Physics 1B.

**1C. General Physics: Electricity and Magnetism.** (3) I, II. Mr. MacKenzie

Lecture and demonstration, three hours; laboratory, two hours. Prerequisite: course 1A (or 2A on approval of an adviser); Mathematics 3B or 5B completed; Mathematics 4A or 6A taken concurrently with Physics 1C.

Upper division credit will be allowed to students who are not majors in physics, who take the course while in the upper division, and who do not have upper division credit for Physics 1D or are not taking Physics 1D for upper division credit. Students who have credit for Physics 2B will be limited to 2 units of credit for Physics 1C.

**1D. General Physics: Light and Modern Physics.** (3) I, II.

Mr. Ellis, Mr. Prowse

Lecture and demonstration, three hours; laboratory, two hours. Prerequisite: Physics 1A and 1C (or 2A-2B on approval of an adviser); Mathematics 4A or 6A completed; Mathematics 4B or 6B taken concurrently with Physics 1D.

Upper division credit will be allowed to students who are not majors in physics, who take the course while in the upper division, and who do not have upper division credit for Physics 1C or are not taking Physics 1C for upper division credit. Students who have credit for Physics 2B will be limited to 2 units of credit for Physics 1D.

**2A. General Physics: Mechanics, Heat, and Sound.** (4) I, II. Mr. Watson

Lecture and demonstrations, four hours; laboratory, two hours. Prerequisite: three years of high school mathematics, or two years of high school mathematics and one 2- or 3-unit college course in algebra or trigonometry. Students who have credit for Physics 1A or 1B will be limited to 2 units of credit for Physics 2A. Physics 2A is not open for credit to students who have credit for Physics 1A and 1B.

**2B. General Physics: Electricity, Magnetism, and Light. (4) I, II.**

Mr. Haddock, Mr. Prowse

Lecture and demonstrations, four hours; laboratory, two hours. Prerequisite: course 2A or 1A. Students who have credit for Physics 1C or 1D will be limited to 2 units of credit for Physics 2B. Physics 2B is not open for credit to students who have credit for Physics 1C and 1D.

**10. General Physics. (3) I, II.**

Mr. Kaplan

Prerequisite: high school algebra and plane geometry.

An introductory survey course in classical and modern physics designed primarily for liberal arts students.

Students enrolled in this course who desire laboratory work in lower division physics are referred to course 21 (10).

**11. Introduction to Physics. (3) I.**

Mr. Teller

Prerequisite: none.

A course given primarily to enable students to understand and to appreciate the current and future impacts of physics and related sciences.

**21. Supplementary Laboratory Courses in General Physics. (1)**

Lower Division Staff (Mr. Watson in charge)

These courses, except 21 (10), are intended for students entering the University with partial credit in general physics and are part of the regular work of courses 1A, 1B, 1C, 1D, 2A, and 2B. 21 (10) is intended for students who wish a laboratory supplement to Physics 10. Students should enroll under the appropriate one of the following numbers:

21 (1A). Mechanics of Solids. I, II.

21 (1B). Mechanics of Fluids and Sound. I, II.

21 (1C). Electricity and Magnetism. I, II.

21 (1D). Light and Modern Physics. I, II.

21 (2A). Mechanics, Heat, and Sound. I, II.

21 (2B). Electricity, Magnetism, and Light. I, II.

21 (10). General Physics. I, II.

**41B. General Physics: Heat. (1) I, II.**

Mr. Paul

Prerequisite: Physics 4A (Berkeley) or equivalent; Mathematics 3A or 5A or equivalent; Mathematics 3B or 5B taken concurrently with Physics 41B.

Equivalent to a part of 1B. Students enrolled under 41B will attend lectures and laboratories of 1B which deal with heat, and will take examinations only on those portions of the course.

**UPPER DIVISION COURSES**

Prerequisite for all upper division courses: Physics 1A, 1B, 1C, 1D, or 2A, 1C, 1D, or 2A-2B; Mathematics 5A, 5B, 6A, 6B; or 3A, 3B, 4A, 4B; or the equivalents.

**105. Analytical Mechanics. (3) I, II.**

———, Mr. Watson

The kinematics and dynamics (statics and kinetics) of particles, systems of particles, and rigid bodies.

**107. Electrical Theory and Measurements. (2) I, II.**

Mr. Stork

Lectures on direct and alternating current theory and measurements, and on introductory electronics.

**107C. Electrical Measurements Laboratory. (2) I, II.**

Mr. Stork, Mr. Ticho

Lecture-discussion and laboratory to accompany course 107.

- 108B. Physical Optics. (3) I.** Mr. Ellis  
Prerequisite: at least one semester of upper division study.  
Wave motion. Interference, diffraction, absorption, scattering and polarization of light. Crystal optics. Relativity effects in optics.
- 108C. Physical Optics Laboratory. (1) I.** Mr. Satten  
Laboratory to accompany 108B.
- 110. Electricity and Magnetism. (3) II.** Mr. Ticho  
Prerequisite: courses 105 and 107, or consent of the instructor.  
A survey of field theory, to include systems of charged conductors and of linear circuits, simple dielectric and magnetic media, and the formulation of Maxwell's equations.
- 112. Thermodynamics and Introduction to Kinetic Theory. (3) I, II.** ———
- 113. Atomic Spectroscopy. (3) II.** Mr. Ellis  
Prerequisite: senior standing or consent of the instructor.  
Black body radiation and the origin of the quantum theory. Atomic spectra and quantum theoretical interpretations. Effects of electron and nuclear spins. X-ray spectra. Zeeman and Stark effects.
- 113C. Spectroscopy Laboratory. (1) II.** Mr. Satten  
Prerequisite or concurrent: course 113.
- 114A. Mechanics of Wave Motion and Sound. (3) I, II.**  
Prerequisite: course 105. Mr. Rudnick, Mr. Paul  
Vibration of particles and elastic bodies; mechanical sound sources; propagation in elastic media.
- 114B. Mechanics of Wave Motion and Sound. (3) II.** Mr. Leonard  
Prerequisite: course 114A or the equivalent.  
Propagation of sound in gases; reflection, refraction, interference, and diffraction of sound; acoustic impedance; applications.
- 114C. Mechanics of Wave Motion and Sound Laboratory. (2) II.**  
Prerequisite: courses 107 and 107C completed, and 114B completed or taken concurrently, or consent of the instructor.
- 115. Elementary Quantum Mechanics. (3) I.** Mr. Saxon  
Prerequisite: courses 105, 114A, 121; Mathematics 110A or 110C or 119A.  
The classical background, basic ideas and methods of quantum mechanics.
- 116A. Electronics. (3) II.** ———  
Prerequisite: course 107 or the equivalent.  
Thermionic and photoelectric emission. Physics and characteristics of electronic devices, including vacuum tubes, gas tubes, and semiconductors; and associated circuits.
- 116B. Electronics. (3) I.** Mr. Leonard  
Prerequisite: course 116A or the equivalent.  
Wave filters, lines, and wave guides; ultra high frequency generators and measuring equipment.
- 116C. Electronics Laboratory. (2) II.** Mr. Stork, ———  
Laboratory to accompany 116A.
- 116D. Electronics Laboratory. (2) I.** Mr. Leonard  
Laboratory to accompany 116B.

**\*117. Hydrodynamics. (3) I.****119. Kinetic Theory of Matter. (3) II.**

Mr. Richardson

Prerequisite: course 112 or the equivalent.

An introduction to the elementary classical and quantum mechanical theories of statistical mechanics. Emphasis is placed on the application to various fields in modern physics such as fluctuation phenomena, low temperature physics, and the theory of metals.

**121. Atomic Physics. (3) I, II.**

Mr. Prowse

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.

**124A. Nuclear Physics. (3) I.**

Mr. Wright

Prerequisite: course 121 or consent of the instructor.

Basic nuclear concepts. The origin and interaction with matter of alpha, beta, and gamma rays. Nuclear forces. Neutrons. Nuclear disintegration. Detection equipment. Particle accelerators. Fission.

**124B. Nuclear Physics. (3) II.**

Mr. Wright

Prerequisite: course 124A or consent of the instructor.

Elements of wave mechanics, two nucleon systems, theory of alpha decay, nuclear forces, nuclear spin and magnetism, nuclear models, cosmic rays and subnuclear particles.

**124C. Atomic and Nuclear Physics Laboratory. (1) I.**

Mr. Wright

Prerequisite: course 121. Laboratory to accompany course 124A.

Electron diffraction. X-ray diffraction. Beta-ray spectroscopy. Neutron absorption. Artificial radioactivity. Rutherford scattering of alpha-particles and other experiments.

**198. Special Courses in Physics. (1-6) I, II.**

The Staff (Mr. Delsasso in charge)

**199. Special Studies in Physics. (1-5) I, II.**

The Staff (Mr. Wright in charge)

Prerequisite: senior standing and consent of the instructor.

## GRADUATE COURSES

**208. Advanced Classical Optics. (3) I.**

Mr. Satten

Recommended: course 210A or its equivalent.

Propagation of light waves in isotropic and anisotropic media on the basis of electromagnetic theory. Macroscopic and microscopic crystal and molecular optics.

**210A. Electromagnetic Theory. (3) II.**

Mr. MacKenzie

An advanced course on electromagnetic theory based on the vector treatment of Maxwell's equations. The vector and scalar potentials, the Hertz polarization potentials, energy considerations, the electrostatic and magneto-static fields, and a general discussion of plane homogenous waves in unbounded, isotropic media. Boundary value problems.

**210B. Electromagnetic Theory. (3) I.**

Mr. Baños

Theory of wave propagation in cylindrical structures, with particular applications to wave guides and coaxial lines. The general theory of electro-

\* Not to be given, 1960-1961.

magnetic cavity resonators from the point of view of the Lagrangian formulation. Spherical waves and applications to the general problem of radiation. Introduction to relativistic electrodynamics.

212. Thermodynamics. (3) I. Mr. Finkelstein
- \*213. Molecular Spectroscopy. (3) I. Mr. Satten  
Prerequisite: a course in quantum mechanics.  
The theory of molecular structure and spectra. Applications to optical, infrared, Raman, and microwave spectroscopy.
214. Advanced Acoustics. (3) I. Mr. Delsasso
215. Statistical Mechanics. (3) II. Mr. Finkelstein
217. Hydrodynamics. (3) II. Mr. Baños  
Not open for credit to students who have credit for Meteorology 217.
- \*218. Magnetohydrodynamics. (3) II. Mr. Baños  
An advanced course in hydromagnetics and plasma dynamics, starting, respectively, from conservation laws and from the Boltzmann equation. Stability considerations, force-free configurations, plasma oscillations, magnetohydrodynamic waves, hydromagnetic shock, and hydromagnetic turbulence.
- 220A. Theoretical Mechanics. (3) I. Mr. Kinsey
- 220B. Theoretical Mechanics. (3) II. Mr. Kinsey
- 221A. Quantum Mechanics. (3) II. Mr. Saxon  
(Numbered 220C prior to 1960-1961.)
- 221B. Quantum Mechanics. (3) I. Mr. Ticho  
(Numbered 220D prior to 1960-1961.)
- 224A. Nuclear Physics. (3) I. Mr. Richardson  
An introduction to our present knowledge of the nucleus with particular emphasis on a critical evaluation of the evidence on the two-nucleon interaction. The properties of pi mesons are discussed and correlated with possible theories of nuclear forces.
- 224B. Nuclear Physics. (3) II. Mr. Moszkowski  
An advanced course in the structure of complex nuclei and nuclear radiation.
230. Relativistic Quantum Mechanics. (3) II. Mr. Moszkowski  
An advanced course in the application of quantum mechanics to relativistic particles. A detailed discussion is given of the quantum theory of radiation, the Dirac equation, the interaction between charged particles and photons, scattering of charged particles, Feynman diagrams and renormalization problems.
- \*231. Methods of Theoretical Physics. (3) I. Mr. Baños  
An advanced course in which the general mathematical methods employed in the solution of boundary value problems arising in all chapters of theoretical physics are systematically developed and coordinated. A detailed discussion is given of the use of Green's functions, characteristic functions, variational methods, conformal mapping, and of integral equations the solution of which is based on the theory of the Fourier and Laplace transforms.

\* Not to be given, 1960-1961.

**\*232. Relativity. (3) II.**

The special and general theories of relativity with application to elementary particle physics and cosmology.

**261. Seminar in Special Problems in Theoretical Physics. (1-3) I, II.**

Mr. Moszkowski, \_\_\_\_\_

**262. Seminar in Physics of the Solid State. (1-3) I.**

Mr. Paul

**264. Seminar in Advanced Acoustics. (1-3) II.**

Mr. Delsasso

**266. Seminar in Propagation of Waves in Fluids. (1-3) II.**

Mr. Rudnick

**\*268. Seminar in Atomic Physics. (1-3) II.**

Mr. Satten

**269. Seminar in Nuclear Physics. (1-3) I, II.****281. Experimental Techniques in Modern Physics. (3) II. Mr. Richardson**

Essentially a laboratory course with some lectures on the theory of the techniques used. An effort is made to develop a critical research attitude on the part of the student and considerable freedom is allowed in the choice of problems to be attacked. High-vacuum technique, atomic magnetic resonance, magnetic spectrograph, electron diffraction, cloud chamber, electrical counting of particles, conduction of electricity through gases, etc.

**284. Experimental Techniques in Acoustics. (2) II.**

Mr. Rudnick

A laboratory course in experimental acoustics designed to train the student in the techniques and instrumentation used in modern acoustic research.

**290A-290B. Research. (1-6; 1-6) Yr. The Staff (Mr. Delsasso in charge)****RELATED COURSES AND CURRICULUM****GEOFYSICS**

See page 10 for an interdepartmental curriculum in geophysics involving physics and geology.

**GRADUATE COURSES****240. Theoretical Seismology. (3) I.**

Mr. Knopoff

An advanced course treating problems of transient wave motions in elastic solids. The mathematical analysis of wave propagation, boundary value problems, interaction of compression and shear waves, surface waves, plane boundaries, elastic and imperfectly elastic materials.

**250. Seminar in Geophysics. (3) I, II.**

Mr. Slichter

Seismology, geophysical prospecting, electromagnetic prospecting. Selected topics in earth physics. The content will vary from year to year.

**255. Seminar in Atmospheric Physics. (3) I.**

Mr. Holzer

Selected problems in physics of the high atmosphere, electromagnetic waves in ionized media; magnetic noise; atmospheric electrical currents. The content will vary from year to year.

**290. Research in Geophysics. (1-6) I, II.**

The Staff

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 (Mr. Slichter); theo-

\* Not to be given, 1960-1961.

retical 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); physics of the earth's interior (Mr. MacDonald).

#### PHYSICAL SCIENCES

##### PROFESSIONAL COURSE IN METHODS

#### 370. Methods and Materials for Teaching Physical Sciences. (3) II.

Prerequisite: graduate or senior standing. Mr. Toon, Mr. Watson

Methods and materials for teaching physical sciences in secondary schools. Solution of special problems which arise in secondary school physical science courses.

## PHYSICS

### La Jolla Campus†

Keith A. Brueckner, Ph.D., *Professor of Physics (Chairman of the Department)*.

Walter M. Elsasser, Ph.D., *Professor of Physics*.

George Feher, Ph.D., *Professor of Physics*.

Walter Kohn, Ph.D., *Professor of Physics*.

Maria Goeppert-Mayer, Ph.D., *Professor of Physics*.

Leonard N. Liebermann, Ph.D., *Professor of Physics*.

Bernd T. Matthias, Ph.D., *Professor of Physics*.

Oreste Piccioni, Ph.D., *Professor of Physics*.



Carl Eckart, Ph.D., *Professor of Geophysics*.

The Department of Physics in the School of Science and Engineering will offer, in the fall of 1960, a graduate program leading to the M.S. and the Ph.D. in Physics.

The entering graduate student will be required to have a sound knowledge of undergraduate mechanics, electricity, magnetism, and optics and also to have had a senior course or its equivalent in nuclear physics and atomic physics. Provision will be made in exceptional cases to allow the graduate student to take without graduate credit courses in these subjects to supply deficiencies.

#### *Requirements for the Master's Degree*

Students who wish to be candidates for the degree of Master of Science may have the option of either Plan I or Plan II. Course requirements may be fulfilled by any of the courses offered by the Department and courses in other departments may be approved by the student's Guidance Committee. Under Plan II the comprehensive examination will be arranged by, but not necessarily conducted by, the student's Guidance Committee. A reading knowledge of one language, German, French, or Russian, will be required.

#### *Requirements for the Doctor's Degree*

The curriculum for the doctor's degree is divided into two parts.

During the first two years the student will prepare himself for the qualifying examinations both written and oral, which will normally be completed by the end of the second year. Those examinations will test the student's knowledge of basic fields of physics at the graduate level, particularly the following:

† For general information about the School of Science and Engineering on the La Jolla campus, see page 71.



Mathematical Methods of Theoretical Physics  
 Hamilton and Lagrangian Mechanics  
 Electricity and Magnetism  
 Statistical Mechanics  
 Quantum Mechanics  
 Nuclear Physics

Prior to this, however, he must have passed reading examinations in two foreign languages, German, French, or Russian.

After satisfactory completion of the written examination a doctoral committee will be appointed, which will conduct the student's oral qualifying examination.

Following the qualifying examinations, a number of courses in the 230 series will be available to the student which will be taught primarily as research courses and will provide the student with specific knowledge in his research field and acquaint him with current techniques in experiment and theory.

#### UPPER DIVISION COURSES

Students will be admitted to these courses to make up minor deficiencies in undergraduate training only if they are substantially able to meet graduate entrance requirements, and have had the equivalent of upper division undergraduate courses in mechanics, electricity, and magnetism.

190A-190B. Atomic and Nuclear Physics. (3-3) I, II. Mr. Brueckner

Prerequisite: introductory physics and intermediate courses in mechanics, electricity, and magnetism.

Atomic structure, spectra, the periodic table, X rays, electron optics, nuclear systematics, radioactivity, experimental procedures, nuclear energy.

191A-191B. Thermodynamics, Kinetic Theory, Statistical Mechanics. (3-3) I, II. Mr. Kohn

Prerequisite: introductory physics and intermediate courses in mechanics, electricity, and magnetism.

Laws of classical thermodynamics, entropy, thermodynamic potentials; applications to thermomechanical, electric and magnetic phenomena; phase equilibria; kinetic theory of gases; introduction to statistical mechanics; applications to physical properties of solids.

#### GRADUATE COURSES

200A-200B. Methods of Theoretical Physics. (3-3) I, II. Mr. Eckart

Prerequisite: elementary complex variables, ordinary differential equations, vector analysis.

Develops the mathematical procedures useful in physics, including vector and tensor analysis, partial differential equations and boundary value problems, complex variables, Fourier series and transforms, matrices, integral equations. Numerical and approximate methods of solution are also discussed.

201. Analytical Mechanics. (3) I. Mr. Elasser

Prerequisite: undergraduate mechanics, partial differential equations or advanced calculus.

Lagrangian and Hamiltonian mechanics, canonical transformations.

202. Introductory Quantum Mechanics. (3) II. Mrs. Goepfert-Mayer

Prerequisite: courses 200A and 201.

Experimental and theoretical basis of quantum mechanics, operator formalism, application of Schrodinger equation, scattering theory.

- 203A-203B. Electricity and Magnetism; Classical Electron Theory.**  
 (3-3) Yr. Mr. Liebermann  
 Prerequisites: course 200A-200B; may be taken concurrently.  
 Potential theory, magnetostatics, electromagnetic induction, Maxwell's equations, electromagnetic waves, special theory of relativity, motion of charged particles in electromagnetic fields; classical electron theory.
- \*210. Statistical Mechanics. (3) I.** The Staff  
 Prerequisite: course 202.  
 Systems of weakly interacting elements; general ensemble theory; applications to systems with interactions such as imperfect gases, plasmas, liquids, order-disorder transitions; fluctuations; irreversible processes.
- \*211. Introduction to Solid-State Physics. (3)** The Staff  
 Prerequisite: courses 202, and 203A-203B.  
 Principles of the dynamics of ions and electrons in solids; applications to electric, magnetic and thermal properties; point defects and dislocations.
- \*212A-212B. Quantum Mechanics. (3-3) Yr.** The Staff  
 Prerequisite: course 202.  
 Operators and transformation theory, matrix mechanics, perturbation theory, angular momentum, Dirac electron theory; elements of second quantization and field theory.
- \*213. Theoretical Nuclear Physics. (3) I.** The Staff  
 Prerequisite: course 202.  
 Nuclear systematics, nuclear forces, two-nucleon system, statistical theory of nuclei, nuclear reactions.
- \*214. Theoretical Nuclear Physics. (3) II.** The Staff  
 Prerequisite: course 213.  
 Shell and collective nuclear models, beta decay, electromagnetic properties, nuclear reactions at high energy.
- \*215. Advanced Mechanics. (3) II.** The Staff  
 Prerequisite: course 201.  
 Elasticity, hydrodynamics, shock waves, elements of magnetohydrodynamics.
- 230. Advanced Solid-State Physics. (3) I.** The Staff  
 A selection of advanced topics such as: electrical and thermal transport phenomena; cooperative magnetic phenomena; nuclear and electron magnetic resonance; many-body theory.
- 231. Advanced Nuclear Theory. (3) I.** The Staff  
 Topics in nuclear structure and reactions.
- 232. Advanced Classical Physics. (3) II.** The Staff  
 Boltzmann equation, plasma physics, magnetohydrodynamics, and topics in statistical mechanics.
- 233. Quantum Field Theory. (3) I, II.** The Staff  
 Quantum electrodynamics, pion and strange particle physics, dispersion relations.
- 234. High Energy Experimental Physics. (3) I, II.** The Staff  
 Topics in experimental techniques and current research.

\* Not to be given, 1960-1961.

## PHYSIOLOGICAL CHEMISTRY

(Department Office, 33-257 Medical Center)

Wendell H. Griffith, Ph.D., *Professor of Physiological Chemistry (Chairman of the Department).*

Ralph W. McKee, Ph.D., *Professor of Physiological Chemistry.*

James F. Mead, Ph.D., *Professor of Physiological Chemistry in Residence.*

Sidney Roberts, Ph.D., *Professor of Physiological Chemistry.*

Robert M. Fink, Ph.D., *Associate Professor of Physiological Chemistry.*

David B. Howton, Ph.D., *Associate Professor of Physiological Chemistry in Residence.*

Joseph F. Nye, Ph.D., *Associate Professor of Physiological Chemistry.*

John G. Pierce, Ph.D., *Associate Professor of Physiological Chemistry.*

John E. Snoke, Ph.D., *Associate Professor of Physiological Chemistry.*

Irving Zabin, Ph.D., *Associate Professor of Physiological Chemistry.*

Isaac Harary, Ph.D., *Assistant Professor of Physiological Chemistry in Residence.*

### Requirements for Admission to Graduate Status

1. For general requirements, see pages 12-15 of the ANNOUNCEMENT OF THE GRADUATE DIVISION, SOUTHERN SECTION.
2. Minimum departmental requirements:
  - A. Bachelor's degree in agriculture, biochemistry, botany, chemistry, microbiology, physical-biological science, or zoology.
  - B. Courses, or their equivalent, as follows: General Chemistry (Chemistry 1A-1B); Quantitative Analysis (Chemistry 5A); Physical Chemistry (Chemistry 109A-109B), with at least 2 additional units of laboratory; Organic Chemistry (Chemistry 112A-112B); Analytic Geometry and Calculus (at least equivalent to Mathematics 37); General Physics (Physics 2A-2B); General Biology (Zoology 1A-1B, or Bacteriology 1 and Botany 1).
  - C. In the admission of students, preference will be given those whose curricula include the following courses, or their equivalent: Advanced Quantitative Analysis (Chemistry 5B); Qualitative Organic Analysis (Chemistry 103); General Biochemistry (Chemistry 108A-B-C-D); Physical Chemistry (Chemistry 110A-110B, Chemistry 111); Analytical Geometry and Calculus (Mathematics 3A-3B, Mathematics 4A); Statistics (Statistics 1); General Zoology (Zoology 1A-1B).

### Requirements for the Master of Science Degree

1. For general requirements, see pages 66-68 and ANNOUNCEMENT OF THE GRADUATE DIVISION, SOUTHERN SECTION.
2. Departmental requirements:
  - A. A reading knowledge of German is required (see page 67). *The requirement must be satisfied during the first semester of graduate registration.*
  - B. *Thesis Plan I* must be completed. Under this plan 20 units are required in upper division and graduate courses, including 6 to 10 units of Physiological Chemistry 290 (research) and a minimum of 6 units in graduate courses other than Physiological Chemistry 290. Physiological Chemistry 101A-B-C, or the equivalent, may not be counted as part of the required 20 units.
  - C. Candidates for the master's degree may be required to pass written and oral examinations.

*Requirements for the Doctor of Philosophy Degree*

1. For general requirements, see pages 68-70 and ANNOUNCEMENT OF THE GRADUATE DIVISION, SOUTHERN SECTION.

2. Departmental requirements:

A. A reading knowledge of French and German is required. *The requirement must be satisfied before the end of the third semester in residence*

B. Course of study: The course of study for an advanced degree will be arranged according to the needs of the individual student. Normally, all candidates will be expected to register for departmental courses 220, 242, 251, and 290. Additional courses in the major and other fields will be taken in accordance with the recommendations of the guidance committee.

## UPPER DIVISION COURSES

101A. Physiological Chemistry. (4) I. The Staff  
Required in the medical curriculum; consent of the instructor is required for nonmedical students.

101B. Physiological Chemistry. (3) II. The Staff  
Required in the medical curriculum; consent of the instructor is required for nonmedical students.

101C. Physiological Chemistry Laboratory. (3) II. The Staff  
Required in the medical curriculum; consent of the instructor is required for nonmedical students.

## GRADUATE COURSES

210. Hormones and Metabolism. (3) I. Mr. Roberts

212. Chemistry of Hormones. (2) I. Mr. Pierce

220A-220B. Biochemical Preparations and Techniques. (3-3) I, II.  
Mr. Nyc and the Staff

221. Neurobiochemistry. (3) II. Mr. Roberts and the Staff

230. Cytochemistry. (4) I. Mr. McKee

232. Biochemistry of Nutrition. (2) I. Mr. Griffith

234. Problems in Human Nutrition. (2) II. Mr. Griffith

235. Physical Biochemistry. (3) II. Mr. Snoko

242. Advanced Metabolism. (3) II. Mr. Zabin

245. Biochemistry of Lipides. (2) II. Mr. Mead, Mr. Howton

248. Biochemistry of Nucleoproteins. (2) II. Mr. Fink

251A-251B. Seminar in Physiological Chemistry. (1-1) I, II. The Staff

290. Research in Physiological Chemistry. (2-6) I, II. The Staff

## PHYSIOLOGY

(Department Office, 23-250 Medical Center)

W. Ross Adey, M.D., *Professor of Physiology and Anatomy.*  
John Field, Ph.D., *Professor of Physiology (Chairman of the Department),  
Lecturer in Medical History, and Associate Dean of the School of Medicine.*

Victor E. Hall, M.D., *Professor of Physiology (Vice-Chairman of the Department)*.

Allan Hemingway, Ph.D., *Professor of Physiology*.

Donald B. Lindsley, Ph.D., *Professor of Physiology and Psychology*.

Wilfried F. H. M. Mommaerts, Ph.D., *Professor of Physiology and Medicine, and Director of the Los Angeles County Heart Association Cardiovascular Research Laboratory*.

Robert D. Tschirgi, M.D., Ph.D., *Professor of Physiology and Anatomy*.

Robert E. Smith, Ph.D., *Associate Professor of Physiology*.

Ralph R. Sonnenschein, M.D., Ph.D., *Associate Professor of Physiology*.

Bernett J. Cohen, D.V.M., Ph.D., *Assistant Professor of Physiology*.

Bernice M. Wenzel (Bernice Wenzel Jeffrey), Ph.D., *Assistant Professor of Physiology*.

### *Admission to Graduate Status*

Candidates for admission to graduate status in the Department of Physiology must conform to the general requirements set by the Graduate Division for admission to such status. In addition to meeting the requirements of the Graduate Division, the students must have received the bachelor's degree in a biological or physical science or in the premedical curriculum, provided that 6 semester units of college mathematics, 8 units of physics, 16 units of chemistry (including quantitative analysis and organic chemistry), and 12 units of zoology (including comparative vertebrate anatomy) have been completed. Students will be expected to have completed courses in mathematics through calculus and in physical chemistry, or must take these in their first year of graduate work. It is expected that candidates for an advanced degree in the department usually will have taken during their undergraduate years a substantial number of the courses listed below as required for an advanced degree. In certain cases, at the discretion of the department, students with less than the above requirements may be admitted to graduate status, provided that all deficiencies are removed by satisfactory completion of the appropriate courses within a specified time after admission.

All students admitted to graduate status in the Department of Physiology are required, during their first year of residence, to take such preliminary examinations as the department staff may deem advisable. Satisfactory performance in these examinations is prerequisite to continuation of graduate standing in the department. These examinations are designed to evaluate the scientific competence of the student and to facilitate the work of the staff in recommending a study program which will most effectively aid his development.

### *Requirements for the Master of Science Degree*

#### *1. General University Requirements.*

Candidates for the Master of Science degree in physiology must conform to the general requirements set by the Graduate Division for this degree (pages 66-68). The candidate may elect either Plan I or Plan II as set forth in the general section on "Requirements for the Master's Degree." Plan I will normally be followed by students preparing for advanced work in physiology, while Plan II is recommended for those working toward less specialized objectives.

#### *2. Departmental Requirements.*

Satisfactory completion of the following courses is required for the M.S. degree in physiology.

(a) Physiology 101. (Mammalian Physiology)

(b) Physiology 103. (Basic Neurology—identical with Anatomy 103)

(c) At least two of the following courses:

(1) Physiology 201. (Physiological Methods)

(2) Physiology 203. (Cellular Physiology)

- (3) Physiology 204. (Cardiovascular Physiology)
- (4) Physiology 205. (Physiology of Respiration)
- (5) Physiology 206. (Gastrointestinal Physiology)
- (6) Physiology 207. (Neurophysiology)
- (7) Zoology 118B. (Advanced Endocrinology)
- (8) Other courses approved by the department.
- (d) Physiology 251A-251B. (Seminar.)
- (e) Sufficient additional courses in physiology and related subjects to make a total of 20 units (Plan I) or 24 units (Plan II), including not less than 8 units (Plan I) or 12 units (Plan II) of graduate courses in physiology.
- (f) Mathematics to and including analytical geometry.
- (g) A thesis (Plan I) or a comprehensive final examination (Plan II).

Courses substantially similar in subject matter and scope may be substituted for the specific courses listed above at the discretion of the department.

Prospective candidates for the M.S. degree are responsible for completion of all technical requirements for this degree. They must not depend upon any staff member or upon the departmental secretary to remind them of these responsibilities, which include:

- (a) Application to the Graduate Division for advancement to candidacy during the first two weeks of the final semester in which the candidate hopes to qualify. The deadline date for this application is set each semester by the Graduate Division.
- (b) Under Plan II the candidate must request the department committee in charge of examinations to prepare the appropriate examinations. The student is required to take these examinations on the date specified by the department.

### *Requirements for the Doctor's Degree*

#### *1. General University Requirements.*

Candidates for the doctorate in physiology must conform to the general requirements set by the Graduate Division for this degree (pages 68-70). It should be noted that the student must pass a series of written and oral examinations before admission to candidacy. The qualifying oral examination is conducted by a doctoral committee appointed by the Graduate Council (see page 69).

#### *2. Departmental Requirements.*

##### *(a) Admission to Candidacy.*

The qualifying oral examination for admission to candidacy is administered only after the student has passed such written and oral examinations as the department may require. These examinations may not be taken more than twice. The student must also conform to any requirements set by the department staff and by his guidance committee. This committee will be appointed by the chairman of the department upon admission to the doctoral program of the department.

It should be noted that the doctorate in physiology 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 their ability to contribute to that field of knowledge by original and independent research.

##### *(b) Course Requirements.*

- (1) Physiology 101. (Mammalian Physiology)
- (2) Physiology 103. (Basic Neurology—to be taken concurrently with Anatomy 103)
- (3) Physiology 201. (Physiological Methods)

(4) At least four of the following courses:

- (1) Physiology 203. (Cellular Physiology)
- (2) Physiology 204. (Cardiovascular Physiology)
- (3) Physiology 205. (Physiology of Respiration)
- (4) Physiology 206. (Gastrointestinal Physiology)
- (5) Physiology 207. (Neurophysiology)
- (6) Zoology 118B. (Advanced Endocrinology)
- (7) Other courses approved by the department.
- (5) Physiology 251A-251B. (Seminar) for at least four semesters
- (6) Biophysics 101. (Elements of Medical Biophysics)
- (7) Physiological Chemistry 101A, 101B and 101C or Chemistry 108A, and 108B, 108C, and 108D (Biochemistry)
- (8) Anatomy 101. (Microscopic Anatomy)
- (9) Chemistry 109. (Physical Chemistry)
- (10) Courses in differential and integral calculus
- (11) A course in statistical methods
- (12) Such courses as the guidance committee may recommend as appropriate for the development of the student.

Courses substantially similar in subject matter and scope may be substituted for the specific courses listed above at the discretion of the department.

(c) *Foreign Languages.*

A reading knowledge of French and German normally is required. In certain instances, however, the department may permit substitution of a different language of scientific importance for one of these.

(d) *The Dissertation.*

The dissertation shall conform to the requirements set by the Graduate Division (page 70).

(e) The qualifying and final examinations are conducted as required by the Graduate Division (page 70).

Prospective candidates for the doctor's degree are responsible for completion of all technical requirements for this degree. Careful study of the requirements set by the Graduate Division will be necessary to accomplish this. Students must not depend upon any staff member or upon the departmental secretary to remind them of these responsibilities, which include:

- (1) Application to the major professor to take the qualifying examinations.
- (2) Application for departmental acceptance as a candidate for the doctorate after at least one semester in residence and after selection of the staff member who will direct research for the dissertation.
- (3) Filing Form 1 in duplicate, one copy with the Graduate Division and one copy with the department, preferably at the end of the first semester of residence.
- (4) Request to department chairman for appointment of a guidance committee.
- (5) Obtaining Form 2 from the Graduate Division and requesting the department chairman to nominate a doctoral committee (usually the members of the guidance committee). This should be done when the candidate is ready to take the oral qualifying examination and after the language examination. The oral qualifying examination cannot be set until the doctoral committee has been appointed by the Graduate Council.
- (6) Obtaining Form 3 from the Graduate Division. This form should be brought to the oral qualifying examination.
- (7) Filing Form 4 (application for advancement to candidacy) in accordance with the instructions of the Graduate Division.
- (8) Obtaining Form 5 from the Graduate Division and bringing this form to the final oral examination.

## UPPER DIVISION COURSES

**101. Mammalian Physiology. (8) II.** Mr. Field and the Staff

Lecture, three hours; laboratory and conference, nine hours; correlation clinic, one hour. Prerequisite: Chemistry 1A, 1B and 8; Physics 2A and 2B; Zoology 1A and 1B; a course in microscopic anatomy; a course in gross anatomy, human or comparative; and/or consent of the instructor.

Lectures, laboratory exercises, demonstrations, and conferences on the functional activities of the body as a whole and of lower levels of organization such as organ systems, organs, tissues, cells and subcellular structures, with emphasis on man. Topics include the circulation, blood, general and cellular metabolism, muscle function, respiration, digestion, kidney function, water and electrolyte balance, endocrine function, temperature regulation and an analysis of the physiological consequences of stress.

**103. Basic Neurology. (3) II.** Mr. Tschirgi and the Staff

Lectures, two hours; laboratory and conference, six hours. Prerequisite: Chemistry 1A, 1B and 8; Physics 2A and 2B; Zoology 1A and 1B; a course in microscopic anatomy; a course in gross anatomy, human or comparative; and/or consent of the instructor.

Lectures, laboratory exercises, demonstrations and conferences dealing with the structure and function of the receptors, peripheral and central nervous system. Given jointly with the Department of Anatomy. Concomitant registration in Anatomy 103 required.

**199. Special Studies. (1 to 6) I, II.** Mr. Field and the Staff

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.

## GRADUATE COURSES

**201. Physiological Methods. (2) I.** Mr. Hemingway

Lecture, one hour; laboratory, two hours. Prerequisite: Chemistry 1A, 1B and 5A.

Training in the special procedures used in physiological research.

**203. Cellular Physiology. (2) I.** Mr. Smith

Prerequisite: consent of the instructor.

Relationship of metabolism and function in mammalian cells and consideration of factors regulating cell metabolism.

**204. Cardiovascular Physiology. (2) I.** Mr. Hall

Prerequisite: Physiology 101 and consent of the instructor.

Advanced consideration of special topics in the physiology of the circulatory system.

**205. Physiology of Respiration. (2) I.** Mr. Hemingway

Prerequisite: Physiology 101 and consent of the instructor.

Analysis of physiological mechanisms involved in respiration and its control in normal and stress situations.

**206. Gastrointestinal Physiology. (2) I.** Mr. Sonnenschein

Prerequisite: Physiology 101; and either Physiological Chemistry 101A, 101B and 101C or Chemistry 108A and 108B; and consent of the instructor.

Selected topics in normal and abnormal function of the gastrointestinal tract including mechanisms of motility, secretion, absorption and activities of the liver.



- 207. Neurophysiology. (2) I.** Miss Wenzel  
Prerequisite: consent of the instructor.  
Seminar 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.
- 208. Theoretical Physiology. (2) I.** Mr. Tschirgi  
Prerequisite: consent of the instructor.  
A series of seminar-discussions concerning the homeostatic relationships between the organism and its environment.
- 210. Selected Topics in the History of Physiology. (1) I.** Mr. Field  
Lectures dealing with the historical development of scientific method and of scientific ideas in physiology.
- 211. Orientation in Biomedical Research. (1) I.** Mr. Hall  
Prerequisite: consent of the instructor.  
A course for graduate and postdoctoral students in biomedical sciences. Lectures deal with method and logic of science, scientific writing, use of library facilities, professional career planning, public relations and the like.
- 251A-251B. Seminar in Physiology. (1-1) I, II.** Mr. Field and the Staff  
Prerequisite: consent of the instructor.  
Review and discussion of current physiological literature, research in progress and special topics.
- 299A-299B. Research in Physiology. (1 to 6) I, II.** Mr. Field and the Staff  
Prerequisite: consent of the instructor.  
Research in mammalian and general physiology.

#### PROFESSIONAL COURSES

- 301. Methods and Techniques in the Use of Laboratory Animals. (1) I.** Mr. Cohen  
One hour per week of lecture, demonstration or laboratory. Prerequisite: consent of the instructor.  
An introductory course for graduate students in the medical and biological sciences, covering principles and practical problems in the handling and use of common laboratory animal species.

## PLANT PATHOLOGY

(Department Office, 288 Physics-Biology Building)

- Kenneth F. Baker, Ph.D., *Professor of Plant Pathology.*  
John G. Bald, Ph.D., *Professor of Plant Pathology.*  
John T. Middleton, Ph.D., *Professor of Plant Pathology (Chairman of the Department), Riverside.*  
Pierre A. Miller, *Professor of Plant Pathology, Emeritus.*  
Donald E. Munnecke, Ph.D., *Associate Professor of Plant Pathology.*  
Robert M. Endo, Ph.D., *Assistant Professor of Plant Pathology.*

*The Major.*—The major is offered on the Berkeley and Davis campuses. See the BULLETIN OF THE COLLEGE OF AGRICULTURE and consult the appropriate adviser for students in agriculture.

## UPPER DIVISION COURSES

- 120. Plant Diseases. (4) I.** Mr. Munnecke  
Lecture, two hours; laboratory, six hours.  
Prerequisite: Botany 1 or the equivalent. Recommended: Bacteriology 1.  
A general course treating on the nature, cause, and control of plant diseases. Insofar as practicable the illustrative materials will be drawn from subtropical fruit plants and ornamental plants.
- 140. Diseases of Floricultural Plants. (3) II.** Mr. Baker, Mr. Bald  
Laboratory, lecture, and discussion, nine hours. Several field trips.  
Prerequisite: Plant Pathology 120 or the equivalent.  
The pathology of floricultural plants in relation to cultural practices. Recognition, environmental relations, etiology, and control of important types of diseases.
- 199. Special Studies. (2-4) I, II.** The Staff  
Prerequisite: senior standing and consent of the instructor.

## GRADUATE COURSES

- 201. Seminar in Plant Pathology. (1) I, II.** The Staff
- 299. Research in Plant Pathology. (2-6) I, II.** The Staff

## POLITICAL SCIENCE

(Department Office, 160 Haines Hall)

- John C. Bollens, Ph.D., *Professor of Political Science.*  
James S. Coleman, Ph.D., *Professor of Political Science.*  
Winston W. Crouch, Ph.D., *Professor of Political Science.*  
Russell H. Fitzgibbon, Ph.D., LL.D., *Professor of Political Science.*  
\*Malbone W. Graham, Ph.D., *Professor of Political Science.*  
J. A. C. Grant, Ph.D., *Professor of Political Science.*  
Ivan H. Hinderaker, Ph.D., *Professor of Political Science.*  
Thomas P. Jenkin, Ph.D., *Professor of Political Science.*  
Dean E. McHenry, Ph.D., *Professor of Political Science.*  
Robert G. Neumann, Ph.D., *Professor of Political Science.*  
Louise Overacker, Ph.D., *Visiting Professor of Political Science.*  
Foster H. Sherwood, Ph.D., *Professor of Political Science (Chairman of the Department).*  
H. Arthur Steiner, Ph.D., *Professor of Political Science.*  
Frank M. Stewart, Ph.D., *Professor of Political Science.*  
Charles H. Titus, Ph.D., LL.D., *Professor of Political Science.*  
David T. Cattell, Ph.D., *Associate Professor of Political Science.*  
†Ernest A. Engelbert, Ph.D., *Associate Professor of Political Science.*  
David G. Farrelly, Ph.D., *Associate Professor of Political Science.*  
†Dwayne Marvick, Ph.D., *Associate Professor of Political Science.*  
†Charles R. Nixon, Ph.D., *Associate Professor of Political Science.*  
Vincent Ostrom, Ph.D., *Associate Professor of Political Science.*  
Douglas H. Mendel, Jr., Ph.D., *Assistant Professor of Political Science.*  
Leonard Binder, Ph.D., *Assistant Professor of Political Science.*  
Richard N. Rosecrance, Ph.D., *Assistant Professor of Political Science.*  
David A. Wilson, Ph.D., *Assistant Professor of Political Science.*  
Peter Woll, Ph.D., *Assistant Professor of Political Science.*  
L. F. E. Goldie, LL.M., *Lecturer in Political Science.*

† Absent on leave, 1960-1961.

‡ In residence spring semester only, 1960-1961.

*Letters and Science List.*—All undergraduate courses in political science, except 104, are included in the Letters and Science List of Courses. For regulations governing this list, see page 2.

*Preparation for the Major.*—Two courses from among courses 1, 2, and 103.

*The Major.*—Twenty-four units in upper division political science courses numbered from 110 to 199. The work in political science must be so distributed that at least three courses are taken in one of the groups and at least one course in each of three other groups in which the upper division courses of the department are divided: Group I (Courses 110–118), Group II (Courses 120–138), Group III (Courses 141–148), Group IV (Courses 150–159), Group V (Courses 161–168, 117, 133A–133B, 187), and Group VI (Courses 171–187, 166). For details the student should consult a departmental adviser. The student must maintain an average grade of C or higher in all upper division courses in political science.

*Related Curricula.*—For the curriculum in public service and the curriculum in international relations, students are referred to pages 13 and 18.

#### LOWER DIVISION COURSES

##### 1. Introduction to Government. (3) I, II.

Mr. Farrelly, Mr. Hinderaker, Mr. Marvick,  
Mr. McHenry, Mr. Rosecrance, Mr. Woll

An introduction to the principles and problems of government with particular emphasis on national government in the United States. This course fulfills in part the requirement of American History and Institutions. Students who have credit for American Institutions 101 will receive only one unit of credit for Political Science 1.

##### 2. Introduction to Government. (3) I, II.

Mr. Binder, Mr. Mendel, Mr. McHenry, Mr. Rosecrance

A comparative study of constitutional principles, governmental institutions, and political problems of selected governments abroad.

#### UPPER DIVISION COURSES

Prerequisite for all upper division courses: upper division standing, except as indicated below.

Courses 101, 102, 103, 104 may not be counted toward upper division requirements for the major.

##### 101. American Institutions. (2) I, II.

The Staff

This course counts toward satisfaction of the "Requirement of American History and Institutions." (See page 25 C of this bulletin.) It may not be applied toward the political science major, and is not open to students who have credit for Political Science 1 or Political Science 3A.

The fundamental nature of the American constitutional system and of the ideals upon which it is based.

##### 102. Contemporary World Politics. (3) I, II.

Mr. Graham, Mr. Mendel, Mr. Rosecrance

Current problems and issues in the foreign policies of the world powers since World War II, with particular attention to diplomatic, political, and security affairs. Open without prerequisite to both lower and upper division students, but not applicable to the requirements of the major in political science or international relations.

##### 103. Principles of Political Science. (2) I, II.

The Staff

Prerequisite: course 1 or 2, or the equivalent.

Principles of political organization; the major institutions and practices of government, such as political parties, legislatures, constitutions, etc., or the functions they perform.

**104. Parliamentary Organization and Procedure. (1) I.**

Prerequisite: upper division standing.

Mr. Marvick, Mr. Woll

Theory and practice of the parliamentary law and procedure of public and private bodies, with particular emphasis on its application to organized groups.



Majors in political science must distribute their upper division work so that they have at least three courses in one of the following groups, and at least one course in each of three other groups.

*Group I.—Political Theory*

**110. History of Political Ideas. (3) I, II.** Mr. Jenkin, Mr. Nixon, Mr. Shields  
An exposition and critical analysis of the ideas of the major political philosophers and schools from Plato to the seventeenth century.

**112. Modern Political Theory. (3) I, II.** Mr. Jenkin, Mr. Nixon, Mr. Shields  
An exposition and critical analysis of the ideas of the major political philosophers from the seventeenth century to the present.

**113. American Political Thought. (3) I, II.**

Mr. Jenkin, Mr. Nixon, Mr. Shields

A survey of the development of American ideas concerning political authority from Cotton and Williams to the present.

**117. Jurisprudence. (3) I.**

Mr. Sherwood

Development of law and legal systems; comparison of methods and procedure in making and enforcing law in Roman and common law systems; consideration of fundamental legal concepts; contributions and influence of modern schools of legal philosophy in relation to law and government. This course may be counted in either *Group I* or *Group V*.

**118. Nature of the State. (3) II.**

Mr. Jenkin, Mr. Shields

Prerequisite: course 110, 112, or 113.

A systematic analysis of modern concepts and problems of political association.

*Group II.—International Relations*

**125. Foreign Relations of the United States. (3) I, II.**

Mr. Coleman, Mr. Graham, Mr. Neumann, Mr. Steiner

A survey of the factors and forces entering into the formation and carrying out of American foreign policy, with special emphasis on contemporary problems.

**126. Latin-American International Relations. (3) I.**

Mr. Fitzgibbon

The major problems of Latin-American international relations and organization in recent decades.

**127. International Relations. (3) I, II.**

Mr. Coleman, Mr. Graham, Mr. Neumann, Mr. Steiner, Mr. Cattell

A general survey of the institutions and agencies of international government, including the United Nations, with major stress on outstanding issues in contemporary diplomacy.

**130. World Politics and National Policies: Atlantic Area. (3) I, II.**

Mr. Binder, Mr. Mendel, Mr. Rosecrance

(Replaces Political Science 130A.)

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.

**131. World Politics and National Policies: Soviet Sphere. (3) I. Mr. Cattell**

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. Replaces Political Science 130B.

**132. New States in World Politics. (2) I, II. Mr. Coleman, Mr. Wilson**

An analysis of the foreign policies and the role in world politics of new states.

**133A-133B. International Law. (3-3) Yr. Mr. Neumann, Mr. Sherwood**

A critical analysis of the general principles of the law of nations as demonstrated in the decisions of international and municipal tribunals and in the practices of nations. This course may be counted in either *Group II* or *Group V*.

**134. International Relations of the Middle East. (3) II. Mr. Binder**

A study of the relations among the countries of the Middle East with special reference to the policies of the Great Powers.

**136. Problems of the Pacific Area. (3) I. Mr. Mendel**

A survey of contemporary problems of special international interest, with particular reference to Japanese foreign affairs and the Western Pacific area.

**138. Far Eastern International Relations. (3) II. Mr. Steiner**

The relations of the countries of the East Asian seaboard, especially China, with their neighbors and the Western Powers, with emphasis on contemporary questions affecting the interests and policies of the United States.

*Group III.—Politics*

**141. Politics. (3) I, II. Mr. Titus**

Prerequisite: consent of the instructor.

An analysis of political activities, with emphasis on methods of operating, capturing, and creating organizations.

**142. Elections. (2) II. Mr. Titus, Mr. Marvick**

An analysis of the history, rules, procedures, techniques, and politics of the American system of elections.

**143. Legislatures and Legislation. (3) II. Mr. Farrelly, Mr. Hinderaker, Mr. Marvick**

The functions of legislatures, the organization and procedure of typical legislative bodies, and the problems and principles of law making.

**145. Political Parties. (2) I, II. Mr. Farrelly, Mr. Hinderaker, Mr. McHenry, Mr. Marvick**

Organization, functions, and practices of political parties primarily in the United States.

**146. Public Opinion and Propaganda. (2) I, II. Mr. Hinderaker, Mr. Marvick, Mr. Nixon**

Prerequisite: upper division standing only.

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.

**147. Political Behavior Analysis. (3) I.** Mr. Marvick  
An introduction to quantitative methods in the study of political behavior, especially in relation to voting patterns, political participation, and techniques of political action.

**148. Public Relations. (2) I, II.** Mr. Hinderaker, Mr. Marvick, Mr. Titus  
An analysis of principles, activities, problems, and distinctive types of organizations in the field of public relations.

*Group IV.—Comparative Government*

**150A. The Governments of Latin America. (3) I.** Mr. Fitzgibbon  
A comparative study of governmental and political development, organization and practices in the states of Middle America.

**150B. The Governments of Latin America. (3) II.** Mr. Fitzgibbon  
A comparative study of governmental and political development, organization and practices in the states of South America.

**151. The Governments of the Middle East. (3) I.** Mr. Binder  
A comparative study of government in the Arab States, Turkey and Iran.

**152. British Government. (3) I.** Mr. McHenry  
The government and politics of the United Kingdom; the British constitution, parliament, parties and elections, foreign policies, administrative problems, and local governments.

**153. The British Commonwealth of Nations. (2) II.** Mr. McHenry, Mr. Rosecrance  
The constitutional and political relations of the United Kingdom and dominion governments; the governments of Canada, Australia, New Zealand, and the Union of South Africa.

**154. The Governments of Central Europe. (3) II.** Mr. Neumann  
An intensive study of the political and constitutional organization of Germany and Danubian Europe, with special attention to contemporary political issues, parties, elections, and foreign relations.

**155A. The Government of the Soviet Union. (3) I.** Mr. Cattell  
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.

**155B. Governments of Eastern Europe. (3) II.** Mr. Cattell  
Prerequisite: course 155A, or the equivalent.  
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.

**156. The Governments of Tropical Africa. (3) I.** Mr. Coleman  
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.

**157. The Governments of Western Europe. (3) I.** Mr. Neumann  
The constitutional and political structure and development of the countries of western continental Europe, with special attention to contemporary problems.

**158. Japanese Government and Politics. (3) II.** Mr. Mendel  
The structure and operation of the contemporary Japanese political system, with special attention to domestic political forces and problems.

**159. Chinese Government and Politics. (3) II.** Mr. Steiner  
Organization and structure of Chinese government, with particular attention to the policies, doctrines, and institutions of Chinese communism; political problems of contemporary China.

*Group V.—Public Law*

**161. The Anglo-American Legal System. (3) I, II.** Mr. Grant  
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.

**166. Administrative Law. (3) II.** Mr. Sherwood  
The rights, duties, and liabilities of public officers; relief against administrative action; extraordinary legal remedies; jurisdiction, conclusiveness, and judicial control; legal principles and tendencies in the development of public administration. This course may be counted in either *Group V* or *Group VI*.

**167A. Constitutional Law. (3) I, II.** Mr. Farrelly, Mr. Grant, Mr. Sherwood  
General principles of constitutional law, federal and state; relations and powers of the federal government and the states.

**167B. Constitutional Law. (3) I, II.** Mr. Farrelly, Mr. Grant, Mr. Sherwood  
Limitations on the federal government and the protection accorded to individual rights under the American constitutional system.

**168. Government and Business. (3) II.** Mr. Farrelly, Mr. Woll  
Governmental activities in the preservation and regulation of competition, with special emphasis upon problems of administration and intergovernmental cooperation; regulation of trades and professions.

*Group VI.—Public Administration and Local Government*

**171. State and Local Government. (3) I, II.**  
Mr. Bollens, Mr. Crouch, Mr. McHenry, Mr. Stewart  
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.

**172. Municipal Government. (3) I, II.**  
Mr. Bollens, Mr. Crouch, Mr. Stewart  
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.

**181. Principles of Public Administration. (3) I, II.**  
Mr. Bollens, Mr. Ostrom, Mr. Stewart  
An introduction to modern theories of public administration; the relation of administration to the political process; and an analysis of special problems of public administration involving the regulation and control of resources, personnel, finance, organization, and public policy.

**183. Problems in Public Administration. (3) I.**

Mr. Bollens, Mr. Ostrom, Mr. Stewart

Problems of policy, organization and procedure in selected fields of public administration, with emphasis on administrative functions. It is anticipated that during 1960-1961, Semester I will be devoted to metropolitan problems, and Semester II to resources problems.

**184. Municipal Administration. (3) II.**

Mr. Bollens

A study of governmental functions performed at the municipal level, such as planning, zoning, water supply, housing, recreation and parks, public health, traffic, law enforcement, public works, and municipal finance; development of modern concepts of administration in local areas.

**185. Public Personnel Administration. (3) I.**

Mr. Crouch

Evolution of public employment policies; a study of the principles and practices of public service personnel, including recruitment, promotion, morale and discipline, retirement, classification, compensation, unions of employees, organization of the personnel agency, and training for public employment.

**186. National Policy and Administration. (3) I, II.**

Mr. Marvick, Mr. Woll

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.

**187. The Administrative Process. (3) I.**

Mr. Sherwood, Mr. Woll

An analysis of (1) judicial control of the way in which administrative agencies operate, and (2) within these limits, the most effective procedures as demonstrated by experience. This course may be counted in either *Group V* or *Group VI*.

*Ungrouped***198. Special Courses. (1-3) I, II**

Prerequisite: credit for 6 units of upper division courses in political science, and the special requirements necessary for the field selected for special study. Permission to register for this course is required of the instructor. These sections will be offered only to the extent justified by student demand. Each of them may take up in any given semester one or more special problems appropriate to the field.

Section 1. Techniques of Legal Research.

Mr. Farrelly, Mr. Sherwood

Section 2. Problems in International Relations.

Mr. Coleman, Mr. Graham

Section 3. Readings in Political Theory.

Mr. Jenkin, Mr. Nixon, Mr. Shields

Section 4. Methods of Administrative Management.

Mr. Bollens, Mr. Ostrom

Section 5. Problems in Comparative Government.

Mr. Graham, Mr. Neumann

Section 6. Problems in Politics and Legislation.

Mr. Hinderaker, Mr. Marvick, Mr. Titus

Section 7. Problems in Latin-American Political Institutions.

Mr. Fitzgibbon

Section 8. Problems of the Pacific Area.

Mr. Steiner

Section 9. Problems of the British Empire.

Mr. McHenry

Section 10. Problems in Public Administration.

Mr. Stewart



199. **Special Studies.** (1-5) I, II.

The Staff

Prerequisite: senior standing and consent of the instructor.

## GRADUATE COURSES

Prerequisite for graduate courses 211 through 228: satisfactory completion of at least two upper division courses in the field, or the equivalent.

203. **Scope and Methods.** (3) I, II.

Mr. Farrelly, Mr. Shields, Mr. Marvick, Mr. Ostrom

The scope, methods, techniques, interrelationships, and literature of political science as a whole. The course includes an examination of the historical development of political science, of its relation to other social sciences, of methods of dealing with problems of political science, and of techniques of research. Required of all candidates for a graduate degree.

211. **Political Theory.** (3) I, II.

Mr. Jenkin, Mr. Nixon

An analysis of the central problems of political theory and their relation to allied disciplines.

212. **International Relations.** (3) I, II.

Mr. Steiner, Mr. Coleman

An intensive analysis of the principles and practices of international organization, chiefly as illustrated in the operation of the United Nations and its specialized agencies.

214. **Politics.** (3) I, II.

Mr. Hinderaker, Mr. Marvick, Mr. Titus

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.

215. **Comparative Government.** (3) I, II.

Mr. McHenry, Mr. Neumann

An intensive and systematic analysis, employing the comparative approach, of the basic principles and problems of government of the major states and areas.

216. **Public Law.** (3) I.

Mr. Sherwood, Mr. Grant

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.

218. **Public Administration and Local Government.** (3) I.

Mr. Bollens, Mr. Crouch, Mr. Stewart

The nature and scope of public administration and its role in a democratic society; basic problems in the execution of public policies on all levels of government, such as organization, personnel, finance, internal management, administrative powers and responsibilities, intergovernment relationships, and the impact of public opinion, pressure groups, and political parties on administration.

228. **Administrative Management.** (3) II.

Mr. Crouch, Mr. Stewart

An intensive study of the role of the modern budget process and of the personnel program in government administration. This course is required for candidates for the M.P.A. degree; it may be elected by other qualified graduate students.

## GRADUATE SEMINARS

Prerequisite for all graduate seminars: advance consent of instructors.

250. **Seminars in Regional and Area Political Studies.**

- |   |                |
|---|----------------|
| 250A. Latin-American Studies. (3)               | Mr. Fitzgibbon |
| 250B. Russian and Slavic Studies. (3)           | Mr. Cattell    |
| 250C. Chinese and East Asian Studies. (3)       | Mr. Steiner    |
| 250D. Japanese and Western Pacific Studies. (3) | Mr. Mendel     |
| 250E. African Studies. (3)                      | Mr. Coleman    |
| 250F. Middle Eastern Studies. (3)               | Mr. Binder     |
| 250G. Commonwealth Studies. (3)                 | Mr. McHenry    |
| 250H. Western European Studies. (3)             | Mr. Neumann    |
| 250J. Southeast Asian Studies. (3)              | Mr. Wilson     |
252. Seminar in Public Law. (3) Mr. Farrelly, Mr. Grant, Mr. Sherwood
253. Seminar in International Relations. (3)  
Mr. Graham, Mr. Neumann, Mr. Steiner, Mr. Coleman
254. Seminar in Public Administration. (3) Mr. Crouch, Mr. Stewart
256. Seminar in Comparative Government. (3)  
Mr. Graham, Mr. McHenry, Mr. Neumann, Mr. Steiner
257. Seminar in Political Theory. (3) Mr. Jenkin, Mr. Nixon, Mr. Shields
259. Seminar in Political and Electoral Problems. (3)  
Mr. Hinderaker, Mr. Marvick, Mr. Titus
262. Seminar in Municipal Government. (3) Mr. Bollens, Mr. Crouch
263. Seminar in Political and Administrative Aspects of Planning. (3)  
Mr. Bollens, Mr. Ostrom
298. Special Study and Research for M.A. Degree Candidates. (1-3) I, II.  
The Staff
299. Special Study and Research for Ph.D. Degree Candidates. (2-6) I, II  
The Staff
- 401A-401B. Internship in Public Service. (1-3) I, II. Mr. Woll  
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.

**BUREAU OF GOVERNMENTAL RESEARCH**

The Bureau of Governmental Research conducts several programs of organized research and service. Included within it is a Program of Urban Studies, a Program of Public Policy Studies, and a large collection of documents, pamphlets, and periodicals relating to governmental administration and selected fields of public affairs. It administers the John Randolph Haynes and Dora Haynes Collection relating to California government and politics. It provides facilities for upper division and graduate students to pursue study and research in several fields relating to public administration, central and local governments, politics and elections, and public policy formulation. The work of the Bureau is conducted under a Director in consultation with a Faculty Advisory Committee appointed by the Chancellor.

The Bureau's central offices and document collection are located at Room 46, University Library.

## PORTUGUESE

For courses in Portuguese, see under Department of Spanish and Portuguese.

## PREVENTIVE MEDICINE

(Department Office, A7-268 Medical Center)

The Department of Preventive Medicine, in conjunction with the Department of Public Health, School of Public Health, offers a graduate program for certain qualified students. For information concerning courses and advanced degrees available, see the ANNOUNCEMENT OF THE SCHOOL OF PUBLIC HEALTH, the ANNOUNCEMENT OF THE SCHOOL OF MEDICINE, the ANNOUNCEMENT OF THE GRADUATE DIVISION, SOUTHERN SECTION, and pages 62-63 and 108-416 of this bulletin.

## PSYCHIATRY

### A Department of the School of Medicine

(Department Office, 104 Building 5F)

- Norman Q. Brill, M.D., *Professor of Psychiatry (Chairman of the Department)*.
- Ivan N. Mensh, Ph.D., *Professor of Medical Psychology (Head, Division of Medical Psychology)*.
- Frank F. Tallman, M.D., *Professor of Psychiatry (Head, Division of Preventive and Community Psychiatry)*.
- Charles W. Tidd, M.D., *Professor of Psychiatry (Head, Division of Adult Psychiatry)*.
- Eugene Pumpian-Mindlin, M.D., *Associate Professor of Psychiatry in Residence*.
- Arnold B. Scheibel, M.D., *Associate Professor of Psychiatry and Anatomy*.
- \*Frederic G. Worden, M.D., *Associate Professor of Psychiatry*.
- Henry H. Work, M.D., *Associate Professor of Psychiatry (Head, Division of Child Psychiatry)*.
- Justin D. Call, M.D., *Assistant Professor of Psychiatry*.
- Pietro Castelnuovo-Tedesco, M.D., *Assistant Professor of Psychiatry in Residence*.
- Keith S. Ditman, M.D., *Assistant Professor of Psychiatry in Residence*.
- Joaquin M. Fuster, M.D., *Assistant Professor of Psychiatry in Residence*.
- Harold Garfinkel, Ph.D., *Assistant Professor of Sociology in Residence*.
- Robert H. Geertsma, Ph.D., *Assistant Professor of Medical Psychology in Residence*.
- Ronald B. Koegler, M.D., *Assistant Professor of Psychiatry in Residence*.
- Edward J. Kollar, M.D., *Assistant Professor of Psychiatry*.
- Henry Lesse, M.D., *Assistant Professor of Psychiatry in Residence*.
- James T. Marsh, Ph.D., *Assistant Professor of Medical Psychology*.
- James O. Palmer, Ph.D., *Assistant Professor of Medical Psychology in Residence*.
- Alexander C. Rosen, Ph.D., *Assistant Professor of Medical Psychology in Residence*.
- Donald A. Schwartz, M.D., *Assistant Professor of Psychiatry in Residence*.
- Robert J. Stoller, M.D., *Assistant Professor of Psychiatry*.

\* Absent on leave, 1960-1961.

Lowell H. Storms, Ph.D., *Assistant Professor of Medical Psychology in Residence.*

Charles W. Wahl, M.D., *Assistant Professor of Psychiatry (Head, Division of Psychosomatic Medicine).*

Carol H. Broen, Ph.D., *Instructor in Medical Psychology in Residence.*

Alexander B. Caldwell, Jr., Ph.D., *Instructor in Medical Psychology in Residence.*

G. Craig MacAndrew, Ph.D., *Instructor in Medical Psychology in Residence.*

Morris J. Paulson, Ph.D., *Instructor in Medical Psychology in Residence.*

Donald G. Siegel, M.D., *Instructor in Psychiatry in Residence.*

Marvin Spanner, Ph.D., *Instructor in Medical Psychology in Residence.*

Norris H. Weinberg, Ph.D., *Instructor in Medical Psychology in Residence.*

#### *Admission to Graduate Status*

1. General requirements of the Graduate Division (see page 66).
2. Evidence of motivation, aptitude, and integrity.
3. Preliminary evaluation examinations.
4. The baccalaureate and the medical degrees.
5. A reading knowledge of one foreign language pertinent to the field of study.

#### *Requirements for the degree of Master of Science in Psychiatry*

General requirements of the Graduate Division (see pages 66-68). The candidate will ordinarily be required to follow Plan I as set forth in the general section on "Requirements for the Master's Degree." However, in exceptional cases the candidate may, with the permission of the chairman of the department, be allowed to follow Plan II.

#### GRADUATE COURSES

**252. Seminar in Medical Psychology.** (2) I. Dr. Mensch

Presentation of the history and foundation of psychological methods and techniques; basic concepts in psychology and their application to psychiatry.

**257A-257B. Psychiatric Seminar.** (2-2) Yr. Dr. Tidd

A presentation of the causes, nature and symptoms of mental and emotional disorders and the principles of their treatment.

**262A-262B. Research Seminar.** (1-1) Yr. Dr. Brill

This conference will include additional instruction and discussion on scientific methodology and experimental design and statistics. There will be reports by members of the staff and invited guests from other departments on research work in progress and discussions of work in prospect.

**264A-264B. Seminar in Child Psychiatry.** (1-1) Yr. Dr. Work

A study of the basic personality elements together with special problems encountered in work with children and the techniques of treatment.

**273A-273B. Advanced Psychiatric Seminar.** (2-2) Yr. The Staff

A study of the basic contributions in the field of mental illness, including the historical background and relation to allied fields.

**275A-275B. Research in Psychiatry.** (6-6) Yr. The Staff

Research in the field of psychiatry or allied fields under the supervision of the staff.

A group of elective courses are offered from which the candidate may choose, depending on the direction of his research interest, after consultation with the chairman.

## RELATED COURSES IN OTHER DEPARTMENTS

- Anatomy 255. Seminar in Endocrinology.** (2) II. Sawyer and Barraclough  
**Pharmacology 232. Fundamental Principles of Drug Action.** (2) I. Taylor  
**Pharmacology 251A-251B. Seminar in Pharmacology.** (1-1) I, II. The Staff  
**Physiological Chemistry 234. Problems in Human Nutrition.** (2) II. Griffith  
**Physiology 204. Cardiovascular Physiology.** (2) I. Hall  
**Physiology 205. Physiology of Respiration.** (2) I. Hemingway  
**Physiology 206. Gastrointestinal Physiology.** (2) I. Sonnenschein  
**Physiology 207. Neurophysiology.** (2) I. Tschirgi
- Special arrangements may be made for other elective courses.

## PSYCHOLOGY

(Department Office, 211 Franz Hall)

- Harry W. Case, Ph.D., *Professor of Engineering and Professor of Psychology.*  
 Roy M. Dorcus, Ph.D., *Professor of Psychology and Professor of Psychology in the School of Medicine.*  
 Joseph A. Gengerelli, Ph.D., *Professor of Psychology.*  
 Howard C. Gilhousen, Ph.D., *Professor of Psychology.*  
 Milton E. Hahn, Ph.D., *Professor of Psychology.*  
 F. Nowell Jones, Ph.D., *Professor of Psychology.*  
 †Bruno Klopfer, Ph.D., *Clinical Professor of Psychology.*  
 George F. J. Lehner, Ph.D., *Professor of Psychology.*  
 Donald B. Lindsley, Ph.D., *Professor of Psychology (Chairman of the Department) and Professor of Psychology in the School of Medicine (Physiology).*  
 John P. Seward, Ph.D., *Professor of Psychology.*  
 †Marion A. Wenger, Ph.D., *Professor of Psychology.*  
 Franklin Fearing, Ph.D., *Professor of Psychology, Emeritus.*  
 Kate Gordon Moore, Ph.D., *Professor of Psychology, Emeritus.*  
 Richard P. Barthol, Ph.D., *Associate Professor of Psychology (Vice-Chairman of the Department).*  
 Richard Centers, Ph.D., *Associate Professor of Psychology.*  
 James C. Coleman, Ph.D., *Associate Professor of Psychology.*  
 Andrew L. Comrey, Ph.D., *Associate Professor of Psychology.*  
 Wendell E. Jeffrey, Ph.D., *Associate Professor of Psychology.*  
 John H. Lyman, Ph.D., *Associate Professor of Engineering and Associate Professor of Psychology.*  
 Irving Maltzman, Ph.D., *Associate Professor of Psychology.*  
 †George E. Mount, Ph.D., *Associate Professor of Psychology and Associate Professor of Engineering.*  
 Jessie L. Ruhlman, Ed.D., *Associate Professor of Psychology.*  
 Joseph G. Sheehan, Ph.D., *Associate Professor of Psychology.*  
 S. Carolyn Fisher, Ph.D., *Associate Professor of Psychology, Emeritus.*  
 Norman H. Anderson, *Assistant Professor of Psychology.*  
 Richard C. Atkinson, Ph.D., *Assistant Professor of Psychology.*  
 William E. Broen, Ph.D., *Assistant Professor of Psychology.*

† Sabbatical leave in residence, 1960-1961.

‡ In residence fall semester only, 1960-1961.

- \*Edward C. Carterette, Ph.D., *Assistant Professor of Psychology.*  
 \*Michael J. Goldstein, Ph.D., *Assistant Professor of Psychology.*  
 Jaques W. Kaswan, Ph.D., *Assistant Professor of Psychology.*  
 Charles Y. Nakamura, Ph.D., *Assistant Professor of Psychology.*  
 Allen Parducei, Ph.D., *Assistant Professor of Psychology.*  
 Bertram H. Raven, Ph.D., *Assistant Professor of Psychology.*



- Harry M. Grayson, Ph.D., *Clinical Professor of Psychology.*  
 Frank J. Kirkner, Ph.D., *Clinical Professor of Psychology.*  
 Morse P. Manson, Ph.D., *Clinical Professor of Psychology.*  
 Myron Feld, M.D., *Associate Clinical Professor of Psychology.*  
 F. Harold Giedt, Ph.D., *Associate Clinical Professor of Psychology.*  
 Harrington V. Ingham, M.D., *Associate Clinical Professor of Psychology and Neuropsychiatrist, Student Health Service.*  
 John R. Schlosser, Ph.D., *Associate Clinical Professor of Psychology.*  
 Charlyne T. Seymour, Ph.D., *Associate Clinical Professor of Psychology.*  
 Barbara M. Stewart, Ph.D., *Associate Clinical Professor of Psychology.*  
 Leonard V. Wendlund, Ph.D., *Associate Clinical Professor of Psychology.*  
 Dorothy V. Anderson, Ph.D., *Assistant Clinical Professor of Psychology.*  
 George W. Hohmann, Ph.D., *Assistant Clinical Professor of Psychology.*  
 George F. Seacat, Ph.D., *Assistant Clinical Professor of Psychology.*  
 James L. Way, Ph.D., *Assistant Clinical Professor of Psychology.*  
 \*Laurence A. Petran, Ph.D., F.A.G.O., *Professor of Music and University Organist.*  
 Gladys M. Jewett, Ph.D., *Lecturer in Psychology and Manager, Student Counseling Center.*  
 Irving Weschler, Ph.D., *Associate Professor of Personnel Management, Associate Research Psychologist, Institute of Industrial Relations.*  
 Richard F. Docter, Ph.D., *Lecturer in Psychology.*  
 Edward Levonian, Ph.D., *Lecturer in Psychology.*  
 Lenore Rice Lore, Ph.D., *Lecturer in Psychology, Psychology Out-Patient Clinic.*  
 Phillip Oderberg, Ph.D., *Lecturer in Psychology, Psychology Out-Patient Clinic.*  
 James O. Palmer, Ph.D., *Lecturer in Psychology.*  
 Alexander Rosen, Ph.D., *Lecturer in Psychology.*  
 Frances B. Berres, M.A., *Supervisor in the Clinic School.*  
 Louise V. Centers, Ph.D., *Supervisor in the Clinic School.*  
 Elise S. Hahn, Ph.D., *Associate Professor of Speech and Associate in the Psychological Clinic.*  
 Benson H. Marsten, Ph.D., *Supervisor in the Clinic School.*  
 Chester Jensen, M.A., *Teaching Supervisor in the Clinic School.*  
 David Pablo Boder, Ph.D., *Research Associate in Psychology.*  
 Evelyn Gentry Hooker, Ph.D., *Research Associate in Psychology.*  
 Margaret Hubbard Jones, Ph.D., *Research Associate in Psychology.*  
 Gerhart R. Sommer, Ph.D., *Research Associate in Psychology.*

*Letters and Science List.*—All undergraduate courses in psychology are included in the Letters and Science List of Courses. For regulations governing this list, see page 2.

*Preparation for the Major.*—Required of all majors: Psychology 1A-1B. Students who have upper division status and who have had 6 or more units of credit in lower division psychology but have not had 1B, will be required to

\* Absent on leave, 1960-1961.

\* In residence spring semester only, 1960-1961.

take it if they are not eligible to take Psychology 108. Upper Division students changing to psychology should consult an adviser regarding lower division requirements. (For nonmajors, course 101 will be acceptable as prerequisite for certain upper division courses as specified on page 401.)

Recommended: courses from the following areas according to the student's interests: (a) natural science such as physics, chemistry, zoology, physiology; (b) social science such as anthropology, sociology, economics, political science, history; (c) mathematics, statistics; (d) humanities such as philosophy, languages, literature, art, music, drama.

Recommended for students who expect to do graduate study in psychology, at least 18 units, distributed among the following: (a) 6 units of cultural or social anthropology and/or sociology; (b) not less than 3 units of college chemistry; (c) one year of college physics, including laboratory; (d) college algebra and analytic geometry or mathematics for the social and life sciences; (e) not less than one year of work chosen from the following: general zoology, elementary physiology, elementary zoology and physiology, applied human physiology, general physiological biology, endocrinology, genetics. These students should also plan to take such courses as will give them the reading knowledge of two foreign languages required for the Ph.D. degree.

*The Major.*—Courses 105A, 106A, 126, 137, and 145A or 147, plus other upper division courses in psychology, to total not less than 24 upper division units. Upper division courses in other departments may not be substituted for this requirement. Courses 105A, 106A, 126, and 137 are to be taken in the junior year. Students coming to this campus in the second semester of the junior year or later, or who have changed to a psychology major late in their college career, will be asked to take these courses at the earliest opportunity. Normally, 105A and 126 will be taken in the first semester of the junior year, and 106A and 137 in the second semester.

*Requirements for the M.A. Degree.*—The department follows Plan II. (See page 67.) Detailed statements of the requirements and types of examinations may be obtained in the departmental office.

*Requirements for the Ph.D. Degree.*—In addition to the general requirements of the Graduate Division, students intending to become candidates for the Ph.D. degree must pass a series of examinations. The department will endorse petitions for candidacy, and will request the appointment of doctoral committees only for applicants who have passed the examinations with credit. Detailed statements of the requirements and a summary of graduate work in Psychology may be obtained from the departmental office.

#### LOWER DIVISION COURSES

##### 1A. Introductory Psychology. (3) I, II.

Mr. Atkinson, Mr. Parducci and Staff

Consideration of facts and principles pertaining to the topics of perception, imagination, thought, feeling, and emotion, leading to the problems of experimental psychology, and the topics of intelligence and personality.

##### 1B. Elementary Physiological Psychology. (3) I, II.

Prerequisite: course 1A.

Mr. Gengerelli and Staff

Study of the integrative relations of psychological processes to nervous, muscular, and glandular features of the response mechanism, including the structure and functions of the sense organs.

##### 33. Personal and Social Adjustment. (3) I, II.

Mr. Lehner, Miss Rhulman

Prerequisite: course 1A.

The principles of mental hygiene. Orientation in the practical use of psychological principles in problems and circumstances encountered in college and later life.

## UPPER DIVISION COURSES

Except as otherwise indicated, courses 1A and 1B are normally prerequisite to all upper division courses. Exceptions to the requirements are made for students who are not majoring in psychology, for the following courses: 120, 126, 142, 143, 145A-145B, 146, 147, 149, 167A-167B, 180, 185, 186. For these courses, 1A and 33 or the equivalent will be accepted as meeting the prerequisite.

**101. Principles of Psychology. (3) I, II.** Mr. Levonian

Open to upper division students who do not have credit for courses 1A and 1B. For non-majors, may be offered in substitution for courses 1A and 1B as the prerequisite for certain upper division courses.

A critical discussion of the basic topics in psychology. Elementary details, including essential information concerning nervous, muscular, and glandular mechanisms will be covered by examinations based on readings.

**105A. Mental Measurements. (3) I, II.** Mr. Comrey

Students who have credit for any other course in statistics will receive only 1 unit of credit for this course.

A study of the construction, techniques of application, and interpretation of tests and scales. Practice in statistical procedures applicable to data derived from tests.

**105B. Mental Measurements. (2) I, II.** Mr. Broen

Prerequisite: course 105A.

Further study of the principles of measurement, stressing basic concepts. Application to problems of test construction, administration, and interpretation.

**106A. Experimental Psychology. (3) I, II.** Mr. Jones

Lectures and demonstrations, two hours; laboratory, two hours; assigned readings. Prerequisite or concurrent: course 105A.

Methods, techniques, and typical results in experimental research in psychology.

**106B. Experimental Psychology. (3) II.** Mr. Parducci

Lectures, two hours; laboratory, two hours; assigned readings and reports. Prerequisite: course 106A.

Continuation of the study of methods, techniques, and typical results in experimental research. Emphasis is placed on the conditions and requirements of representative laboratory experiments and evaluation of associated experimental literature.

**107. Advanced Psychometric Methods. (3) I, II.** Mr. Gengerelli

Recommended: course 105B; Mathematics 3B or 37. The application of higher statistical methods to psychological data.

**108. Physiological Psychology. (3) I.** Mr. Wenger

Prerequisite: course 1A-1B.

Integrative activities, consciousness, intelligent behavior, receptor and effector processes in relation to neuromuscular structure and function. Facts, problems, and methods.

**109. Research Methods in Human Dynamics. (3) I.** \_\_\_\_\_

Lectures, two hours; laboratory two hours.

Application of experimental techniques to problems in human adjustment. Group and individual projects will give experience in planning research treating and interpreting data, and describing experiments.



- 110. Educational Psychology.** (3) I, II. Miss Rhulman  
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.
- 112. Child Psychology.** (3) I, II. Mr. Jeffrey  
An elaboration of the developmental aspects of physical, mental, social, and emotional growth from birth to adolescence.
- 113. Psychology of Adolescence.** (2) II. Miss Rhulman  
Prerequisite: course 112.  
The physical, psychological, and social development of the adolescent. Essentially a continuation of child psychology, but with relatively greater emphasis on personality formation and problems of social adjustment.
- 120. History of Psychology.** (3) II. Mr. Maltzman  
The development of psychological theories and research to the end of the nineteenth century.
- 126. Contemporary Psychology.** (2) I, II. Mr. Maltzman, Mr. Carterette  
Recommended: course 120.  
The variant tendencies in current psychology, including a critical examination of the more important so-called "schools" of psychology.
- 131. Sensation and Perception.** (2) I. Mr. Jones  
Intensive study of sense perception, with reference to the structure and functions of sense mechanisms, and experimental findings.
- 134. Motivation.** (2) II. Mr. Gilhousen  
Theories and experimentally determined facts concerning drives, needs, preferences, and desires.
- 135. Imagination and Thought.** (2) I. Mr. Maltzman  
An analysis of experimental studies of problem solving, reasoning, insight, concept formation, and related topics.
- 137. Learning: Simple Processes.** (2) I, II. Mr. Seward  
Prerequisite: course 105A; recommended, course 126.  
An experimental approach to the primary problems of how learning is related to what an individual perceives, wants, and does. Basic facts of conditioning and other elementary forms of learning provide an introduction to the major contemporary theories.
- 138. Feeling and Emotion.** (2) II. Mr. Wenger  
The nature and basis of the affective factor in life, with particular emphasis on the critical evaluation of affective theory. This is not a course in personality and emotional adjustment.
- 139. Learning: Complex Processes.** (3) II. Mr. Seward  
Prerequisite: course 137.  
Integration of verbal and motor skills; conditions of remembering, forgetting, and transfer of training. Emphasis is on the theoretical significance of experimental findings. Students may conduct their own experiments.
- 142. Human Communication.** (2) I.  
Prerequisite: courses 145A-145B or 147, or consent of the instructor.  
Role of communication in human social organization; psychological factors involved in the creation and manipulation of symbols; art, drama, and science as forms of communication. Particular attention will be given to the social and psychological aspects of the mass media of communication, radio, and motion pictures.

**143. Propaganda and Public Opinion. (2) II.** Mr. Centers  
Prerequisite: course 145A-145B or 147, or consent of the instructor.

Propaganda as a form of communication. The detection, analysis, and effects of propaganda. The creation, manipulation, and measurement of public opinion; the relation between public opinion and propaganda; the relation between the mass media of communication and public opinion and propaganda.

**144. Psychological Interviewing and Case History Methods. (3) II.**

Lectures, two hours; laboratory, two hours. Prerequisite: senior or graduate standing and permission of the instructor.

Procedures, methods, and problems in the collection of personal data in the interview situation.

**145A-145B. Social Psychology, General Course. (2-2) Yr.** Mr. Centers  
Course 145A is prerequisite to course 145B.

Interaction between the individual and the group; the individual in the group. Critical analysis of concepts of group mind, imitation and suggestion; rational and irrational motives in group living. Social motivation, attitudes, values, opinions, and beliefs, in relation to group personality structure. Adjustments and maladjustments as conditioned by cultural and subcultural group pressures.

**146. Attitude and Opinion Measurement. (3) I.** Mr. Centers

Prerequisite: two semesters of social psychology or consent of the instructor.

The nature of attitudes and opinions, and their measurement by means of various types of attitude scales and public opinion surveys. Study design, formulation of questionnaires and interview schedules, sampling methods, techniques of interviewing, analysis of results, and applications to various psychological problems. Class projects and field work.

**147. The Psychological Method in the Social Sciences. (3) II.** Mr. Raven

Psychological factors in major social problems, including social control, propaganda, group conflict, cultural determination, etc.

**148. Personality Structure and Development. (3) I.** Mr. Kaswan

The psychological, 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, such as those of Freud, Fromm, Horney, Sullivan, Miller and Dollard, Lewin, and others.

**149. Group Dynamics. (3) I.** Mr. Raven

Prerequisite: course 145A or 147.

The theory and phenomena of group behavior; effects of group membership on the individual; relations between groups; methods of group observation; role of groups in society.

**150A. Animal Psychology. (3) I.** Mr. Gilhausen

General survey of the behavior of the higher forms of animal life.

**150B. Animal Psychology. (3) II.** Mr. Gilhausen

Prerequisite: course 150A or consent of the instructor.

A more intensive study of facts and theories concerning motivation, learning, and problem solving. Lectures and laboratory demonstration.

**\*160. Mental Deficiency. (2) I.**

Lectures, readings, discussions, demonstrations. Prerequisite: course 112 or the equivalent.

A study of mental retardation and related abnormalities in children and adults, including a consideration of causes, classifications, special traits, and educational, vocational, and social problems and needs.

**161. The Psychology of Exceptional Children. (3) II.**

Prerequisite: course 112 or the equivalent.

A study of the nature, diagnosis, and treatment of exceptional disabilities and problem behavior in individual children or special groups.

**162. Speech Pathology. (2) II.**

Mr. Sheehan

Recommended: courses 108, 168.

A clinical approach to speech problems with emphasis on stuttering and neurological disorders and their treatment.

**167A. Remedial Techniques in Basic School Subjects. (2) I, II.**

Mr. Coleman

The diagnosis and treatment of reading, spelling, and other school disabilities in children and adults. Clinical demonstration, testing, and training of typical cases.

**167B. Laboratory in Remedial Techniques. (2-4) I, II.**

Mr. Coleman

Lecture, one hour; laboratory, five hours. Laboratory course for course 167A.

**168. Abnormal Psychology. (3) I, II.**

Mr. Kaswan, \_\_\_\_\_

Study of the dynamics and prevention of abnormal behavior, including neuroses, psychoses, character disorders, psychosomatic reactions and other abnormal personality patterns.

**169. Psychology of the Physically Handicapped. (2) II.**

A study of the basic facts, principles, and methods of understanding the personality and behavior of individuals who possess physical handicaps, with particular reference to methods of reeducation and adjustment. Psychological disabilities resulting from sensory and motor disorders, illness and disease, and injury will be discussed.

**172A-172B. Psychology of Music. (3-3) Yr.**

Mr. Petran

A study of the psychological factors and problems in music from the points of view of the listener, performer, and composer.

**180. Psychology of Advertising and Selling. (2) I.**

The relative strength of the desires in buying; attention value of form, size, color, and typographical layout and methods of measuring the effectiveness of advertisements; characteristics of salesmen.

**181. Problems in Human Relations. (3) I.**

Mr. Barthol

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. Does not carry credit toward major in psychology.

**185. Personnel Psychology. (2) II.**

Mr. Comrey

The methods of selection, classification, and training of employees.

\* Not to be given, 1960-1961.

- 186. Occupational Counseling and Job Classification.** (2) I. Mr. Case  
Prerequisite: courses 105A, 185.  
Principles of occupational counseling; nature and sources of occupational information; methods of job analysis and creation of job families.
- 187. Industrial Psychology.** (2) II. Mr. Barthol  
Description of factors such as illumination, noise, and temperature as they affect production.
- 188A-188B. Psychological Bases of Counseling.** (2-2) Yr. Mr. Hahn  
Prerequisite: open to senior and graduate students who have preparation in educational psychology, statistics, tests and measurements, mental hygiene, or abnormal psychology. Permission of the instructor.  
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.
- 199. Special Studies in Psychology.** (1-3) I, II. The Staff  
Prerequisite: senior standing and consent of the instructor.

## GRADUATE COURSES

- 201A-201B. Proseminar in Psychology.** (2-2) Yr. Mr. Seward, ———, and the Staff  
Required of all regular graduate students in the first year of residence.  
An intensive survey of the major areas, problems, and methodologies in the field of psychology.
- 207A-207B. Advanced Psychometric Methods.** (2-2) Yr.  
Prerequisite: course 107 or the equivalent. Mr. Atkinson, Mr. Comrey
- 213. Experimental Design in Psychology.** (2) I, II. Mr. Anderson  
Prerequisite: courses 106B and 207A, or the equivalent.  
Experimental testing of hypotheses; sources of error and methods of control; statistics appropriate to various designs. Students will evaluate and construct designs in preparation for original research.
- 214. Quantitative Analysis in Psychology.** (2) II. Mr. Atkinson  
Prerequisite: course 207A, or the equivalent.  
Nonstatistical mathematical analysis of psychological data. The theoretical and experimental implications of an analytic approach to psychology with emphasis upon applications of probability theory, Markov processes, linear operators, and set-theoretical methods.
- 215A-215B. Commercial and Industrial Psychology.** (2-2) Yr. Mr. Barthol  
Prerequisite to 215B: course 107 or the equivalent.  
Selection and training of employees; factors influencing efficiency of work.
- 216. Critical Problems in Psychology.** (2) I, II. Mr. Mount  
Some critical problems in the field of psychology will be discussed, depending on the interests of the instructor and the class. This course may be repeated without duplication of credit.
- 217A-217B. Clinical Psychology.** (2-2) Yr. Mr. Broen, Mr. Kaswan  
Prerequisite: course 161 or 168, or the equivalent.  
Discussion and integration of basic concepts in clinical psychology.

**218. Communication, Propaganda, and Public Opinion. (2) I.**

Problems, methods, and theories in communications research. Particular attention is given to the analysis of communications content, the theory and role of propaganda, and the dynamics of public opinion.

**219A-219B. Clinical Measurement Techniques. (2-2) Yr. Mr. Sheehan**

Advanced study of tests in clinical diagnostic study, including the special application of individual and group tests of intelligence, personality, diagnosis and projective techniques. Emphasis will be placed upon application in the clinical situation.

**\*220. Clinical Neurology. (2) II.**

Prerequisite: courses 108 and 217A, or their equivalents.

Presentation of selected neurological cases. This course is designed to integrate the student's knowledge of mental and motor dysfunction with the neurological bases of such dysfunction.

**\*221. Experimental Psychology. (3) I.**

Mr. Mount

Prerequisite: course 106B and consent of the instructor.

Methods, techniques, and apparatus applicable to research problems of various types. Attention will be given to sources of error, difficulties in operation, and limitations on interpretations.

**222. Personality Dynamics. (2) II.**

Mr. Lehner

A survey of the theoretical views of Freud, Jung, Adler, Rank, and various modern writers, including Allport, Lewin, Murray, and Murphy.

**223. Hypnosis and Its Therapeutic Applications. (2) II.**

Mr. Dorcus

Prerequisite: course 257A, or the equivalent.

This course will acquaint the student with theories, techniques of induction, and its applications in therapy.

**†224A-224B. Theory and Practice in Projective Methods. (2-2) Yr.**

Mr. Klopfer

Prerequisite: courses 217A, and 217B or 219A or 252A; consent of the instructor. Recommended: courses 144, 219B.

Survey of theories and fields of application of projective methods, and supervised practice in techniques.

**225. Rationale and Methods of Research in Projective Techniques. (3) I.**

Prerequisite: course 224A-224B. Recommended: course 213. Mr. Klopfer  
Advanced Rorschach interpretation.

**226. Experimental Approaches to Clinical Psychology. (2) I. Mr. Lindsley**

A survey of techniques and procedures employed in experimental and physiological psychology as they relate to problems in clinical psychology. Emphasis will be placed upon research in, and the development of, new psychodiagnostic measures, using the classical experimental literature on perception, attention, emotion, action, etc., as a guide.

**227A-227B. Tools and Techniques of Diagnosis in Psychological**

Counseling. (3-3) Yr.

Mr. Nakamura, Mr. Hahn

Prerequisite: courses 105A-105B, 148, or the equivalents, recommendation of adviser, and consent of the instructor.

Study of the theoretical and practical problems arising from the use of psychological methods and instruments on case work material.

\* Not to be given, 1960-1961.

† Both 224A and 224B to be given fall semester only.

- 223. Psychophysiology of Brain Function. (2) II.** Mr. Lindsley  
 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.
- 251. Seminar in Learning. (3) II.** Mr. Seward  
 A consideration of typical models in current learning theory and their implications for research.
- 252A-252B. Seminar in Mental Measurements. (3-3) Yr.** Mr. Comrey
- 253A-253B. Seminar in Physiological Psychology. (3-3) Yr.** Mr. Wenger  
 Prerequisite: course 108 or the equivalent.
- 254. Seminar in Experimental Child Psychology. (3) I.** Mr. Jeffrey
- 255A-255B. Seminar in Social Psychology. (3-3) Yr.** \_\_\_\_\_
- 256A-256B. Seminar in Group Behavior. (3-3) Yr.** Mr. Raven  
 Prerequisite: Psychology 149 or Sociology 161, or consent of the instructor.  
 Consideration of the psychological theories, methods of study, and dynamics of the various forms of collective behavior.
- 257A. Introduction to Psychotherapy. (3) I.** Mr. Nakamura  
 Open to students enrolled in Psychology 279A-279B or 401A-401B, or upon consent of the instructor.
- 257B. Individual Psychotherapy. (3) II.** Mr. Ingham  
 Open to students enrolled in Psychology 279A-279B or 401A-401B, or upon consent of the instructor.
- 257C. Group Psychotherapy. (3) I.** Mr. Lehner
- 258A-258B. Seminar in Abnormal Psychology. (3-3) Yr.** Mr. Doreus
- 259. Seminar in Motivation. (3) II.** Mr. Gilhausen
- 260. Seminar in Comparative Psychology. (3) I.** Mr. Gilhausen
- 261A\*-261B\*-261C. Seminar in Sensation. (3 units each) II.** Mr. Jones  
 Prerequisite: consent of the instructor.  
 Consideration of the problems, methods, and research literature in the psychology of sensation.
- 262. Seminar in Advanced Speech Pathology. (2) I.** Mr. Sheehan
- \*266. Seminar in Opinion and Attitude Research. (3) I.** Mr. Centers
- 267. Mass Communication as a Social Force. (2) II.** \_\_\_\_\_  
 Prerequisite: open to graduate students in journalism and theater arts; open to graduate students in psychology with consent of the instructor.  
 The social implications of motion pictures, newspaper, radio, theater, and television in the integration of human society.

\* Not to be given, 1960-1961.

**268. Individual Dynamics and Their Social and Cultural Determinants.**

(3) II.

Mr. Centers

Consideration of the facts, problems and theories concerning the interdependence between motivation systems, value patterns, attitudes, beliefs, and other personality characteristics of the individual and the cultural and social environment.

**277A-277B. Field Work in Personnel Psychology. (3-6; 3-6) Yr.**

Mrs. Jewett and the Counseling Staff

Prerequisite: regular graduate standing and upper division or graduate work in tests and measurements, statistics, mental hygiene or abnormal psychology, and counseling methods; recommendation of the adviser and 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 to two hours of staff meetings and conferences.

**278A-278B. Research in Psychology. (1-6; 1-6) Yr.**

The Staff

Required each semester of all graduate students, beginning with the first semester of the second year (except for terminal M.A. candidates).

**279A-279B. Field Work in Clinical Psychology. (3-6; 3-6) Yr.**

Prerequisite: consent of the adviser.

Students in the Veterans Administration Clinical Training Program are required to register for this course each semester.

Section 1. General Clinical Psychology. Mr. Lehner and the Clinical Staff

Practical work in hospitals and clinics in clinical diagnostic testing and psychotherapy.

Section 2. Speech Pathology.

Mr. Sheehan

Practical work in hospitals and clinics in diagnostic testing and psychotherapy with speech disorders.

Section 3. Counseling Psychology.

Mr. Case

**401A-401B. Internship in Applied Psychology. (3-6; 3-6) Yr.**

Prerequisite: consent of the adviser.

Section 1. Clinical Psychology.

Mr. Lehner and the Clinical Staff

Section 2. Psychological Counseling.

Mr. Hahn and the Staff

Section 3. Industrial Psychology.

Mr. Barthol

**PUBLIC HEALTH**

(Department Office, 100A Building 3T)

John M. Chapman, M.D., M.P.H., *Professor of Epidemiology, Professor of Preventive Medicine and Public Health and Professor of Infectious Diseases.*

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.*

Wilfrid J. Dixon, Ph.D., *Professor of Biostatistics and Professor of Preventive Medicine and Public Health.*

Jean S. Felton, M.D., *Professor of Preventive Medicine and Public Health and Professor of Occupational Health.*

Lenor S. Goerke, M.D., M.S.P.H., *Professor of Public Health (Chairman of the Department) and Professor of Preventive Medicine and Public Health (Chairman of the Department)*

- Edward B. Johns, Ed.D., *Professor of School Health Education and Professor of Physical Education.*
- Paul A. Lembcke, M.D., M.P.H., *Professor of Public Health and Professor of Preventive Medicine and Public Health.*
- Charles E. Smith, M.D., D.P.H., *Professor of Public Health (Berkeley).*
- Wilton L. Halverson, M.D., Dr.P.H., *Professor of Public Health and Professor of Preventive Medicine and Public Health, Emeritus.*
- John Beeston, M.B., D.P.H., *Associate Professor of Public Health and Associate Professor of Preventive Medicine and Public Health.*
- Frank J. Massey, Ph.D., *Associate Professor of Biostatistics and Associate Professor of Preventive Medicine and Public Health (Vice-Chairman of the Department).*
- Wilfred Sutton, Ed.D., *Associate Professor of School Health Education and Associate Professor of Physical Education.*
- Daniel M. Wilner, Ph.D., *Associate Professor of Behavioral Studies in Public Health.*
- , *Associate Professor of Public Health Engineering.*
- , *Associate Professor of Public Health Psychiatry.*
- Olive Jean Dunn, Ph.D., *Assistant Professor of Biostatistics and Assistant Professor of Preventive Medicine and Public Health.*
- Frederick J. Post, Ph.D., *Assistant Professor of Sanitary Science.*
- Leo G. Reeder, Ph.D., *Assistant Professor of Public Health, Assistant Professor of Preventive Medicine and Public Health, and Lecturer in Sociology.*
- Miriam G. Wilson, M.D., *Assistant Professor of Pediatrics.*
- John N. Belkin, Ph.D., *Lecturer in Public Health and Professor of Entomology.*
- Kenneth M. Eastman, B.S., *Lecturer in Hospital Administration.*
- Herbert L. Herschensohn, Sc.B., M.D., *Lecturer in Public Health, Associate Clinical Professor of Preventive Medicine and Public Health, and Associate Clinical Professor of Medicine.*
- Gerald A. Heidbreder, M.D., M.P.H., *Lecturer in Public Health and Assistant Clinical Professor of Infectious Diseases.*
- Rutherford T. Johnstone, A.B., M.D., *Lecturer in Public Health, Clinical Professor of Preventive Medicine and Public Health, and Clinical Professor of Medicine.*
- Paul LeVan, M.D., *Lecturer in Venereal Disease Control and Associate Clinical Professor of Medicine.*
- Edward P. Luongo, M.D., *Lecturer in Public Health, Associate Clinical Professor of Preventive Medicine and Public Health, and Associate Clinical Professor of Medicine.*
- Harold Mazur, M.D., M.P.H., *Lecturer in Public Health.*
- Byron O. Mork, M.D., M.P.H., *Lecturer in Public Health and Associate Clinical Professor of Preventive Medicine and Public Health.*
- Agnes A. O'Leary, R.N., M.P.H., *Lecturer in Public Health and Associate Professor of Public Health Nursing.*
- Ralph E. Sachs, M.D., *Lecturer in Public Health.*
- Charles Senn, B.S. (C.E.), M.S. (P.A.), *Lecturer in Public Health.*
- George W. Stevenson, M.D., *Lecturer in Public Health and Assistant Professor of Pharmacology.*
- Leo Tepper, M.D., *Lecturer in Tuberculosis Control.*
- 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.*



Edward J. Zaik, M.S., M.D., *Lecturer in Public Health, Associate Clinical Professor of Preventive Medicine and Public Health, and Associate Clinical Professor of Medicine.*

*Letters and Science List.*—Courses 5, 100, 110, 147, 160A are included in the Letters and Science List of Courses. For regulations governing this list, see page 2.

### School of Public Health

Curriculum requirements for the Bachelor of Science degree and the Master of Science degree are described in the ANNOUNCEMENT OF THE SCHOOL OF PUBLIC HEALTH and on pages 60–62 of this bulletin.

#### LOWER DIVISION COURSE

- 5. Individual and Community Health.** (3) I, II. Mr. Beeston  
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.

#### UPPER DIVISION COURSES

- 100. Principles of Public Health.** (3) I, II. Mr. Goerke  
The identification of health service needs and the philosophy, principles and methods of community organization concerned with meeting these needs.

- 102A–102B. Medical Record Library Science.** (3–3) Yr. Mr. Lembecke and the Staff  
Lectures, two hours; laboratory, three hours. Prerequisite: enrollment as a major in public health.

Nosology; principles of coding, indexing and filing systems in medical records libraries, and their use in research and education.

- 110. Environmental Health.** (3) I, II. Mr. Post  
Prerequisite: Bacteriology 1, Chemistry 1A.  
The fundamentals of environmental sanitation, including an introduction to the relationship of the physical environment to preventive medicine.

- 112. Public Health Engineering.** (3) I. Mr. Senn  
Prerequisite: course 110, and consent of the instructor.  
Public Health engineering principles for nonengineers, relating to surveys, reviews and sanitary control of water supplies, waste disposal, ventilation and air pollution, drainage and building design and equipment.

- 134. Community Health Education.** (3) I, II. Mr. Beeston, Mr. Torribio  
Lectures, two hours; laboratory, three hours.  
The theory, principles, and practices of education and community organization involved in promoting health. Consideration of health facts and fallacies, communication, and motivation of individuals, groups, and communities.

- 147. Principles of Epidemiology.** (3) I, II. Mr. Heidbreder, Mr. Chapman  
Lectures, two hours; laboratory, three hours. Prerequisite: Bacteriology 1, Zoology 1A–1B, course 160A  
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.

- 153. Public Health Microbiology. (4) I.** Mr. Post  
Lectures, three hours; laboratory, three hours. Prerequisite: Bacteriology 1, Chemistry 1A-1B; primarily for seniors or graduate students.  
Principles of microbiology relevant to sanitation of water, sewage, soil, refuse, milk and foods.
- 160A. Introduction to Biostatistics. (3) I, II.** Mr. Massey, Mrs. Dunn  
Lectures, two 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.
- 160B. Introduction to Biostatistics. (3) I, II.** Mr. Massey, Mrs. Dunn  
Lectures, two hours; laboratory, three hours. Prerequisite: course 160A, or consent of the instructor.  
Introduction to analysis of variance, regression, correlation, sequential analysis, distribution-free methods, bioassay.
- 160C. Introduction to Biostatistics. (3) I.** Mrs. Dunn, Mr. Massey  
Lectures, two hours; laboratory, three hours. Prerequisite: courses 160A, 160B, or consent of the instructor.  
Experimental design and analysis of variance as applied in modern research; linear and multiple regression, complete and incomplete block design, factorial experiments, Latin squares, analysis of covariance, multiple comparisons, and related topics.
- 161. Demography. (3) II.** Mrs. Dunn, Mr. Massey  
Lectures, two hours; laboratory, three hours. Prerequisite: course 160A, or consent of the instructor.  
The description of human populations including elements of vital statistics, demography and life tables. Methods of sampling from human populations with appropriate procedures for estimating parameters and for testing hypotheses.
- 170. Occupational Health. (2) I, II.** Mr. Bryan, Mr. Felton  
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.
- 180. Survey of Public Health. (5) I, II.** Mr. Lembecke and the Staff  
Lectures, five hours. Prerequisite: R.N., senior standing in the School of Nursing, or consent of the instructor.  
Principles of epidemiology, preventive medicine, and public health administration.
- 198. Special Courses. (1-5) I, II.** The Staff
- 199. Special Studies. (1-5) I, II.** The Staff  
Prerequisite: senior standing and consent of the Chairman of the Department.

## GRADUATE COURSES

- 200A-200B. Principles of Health Administration and Organization. (3-3)**  
Yr. Mr. Goerke

Lectures, two hours; laboratory, three hours. Prerequisite: consent of the instructor.

The study of administrative theory, principles and practice in providing health services. Special consideration is given to the use of managerial techniques and procedures by social institutions organized to integrate medical programs of prevention, therapy, and rehabilitation.

**201A. Hospital Administration. (3) I.**

Mr. Lembecke

Lectures, two hours; laboratory, three hours. Prerequisite: consent of the instructor. On completion of course 201A, students will take 201B or 201C according to their particular interest and background.

Principles of the organization and administration of general hospitals and medical care agencies.

**201B. Hospital Administration. (3) II.**

Mr. Lembecke

Lectures, two hours; laboratory, three hours. Prerequisite: course 201A.

Principles of the organization and administration of general hospitals and medical care agencies.

**201C. Mental Hospital and Health Program Administration. (3) II.**

Mr. Thomas, Mr. Lembecke

Lectures, two hours; laboratory, three hours. Prerequisite: course 201A.

Study of the principles involved in planning, organizing, and administering institutional, outpatient, and preventive programs in the mental health field. Lectures, discussion, case studies, and field observation.

**202A-202B. Medical Care Administration. (2-2) Yr.**

Mr. Lembecke

Prerequisite: consent of the instructor.

Medical economics, private, and governmental medical care programs, and education in medicine and the allied professions are studied, together with methods and results of evaluating the quality of medical care.

**203A-203B. Maternal and Child Health. (2-2) Yr.** Mrs. Wilson and the Staff

Prerequisite: consent of the instructor.

Study of medical and social programs affecting the life and health of mothers and children; problems of fertility, conception, and pregnancy wastage, and the association of abnormal maternal factors with premature birth; and with later abnormalities in children.

**210. Environmental Health. (3) II.**

Mr. Senn

Prerequisite: course 110, or equivalent.

Theoretical considerations of the complex relationship of the physical environment to preventive medicine and public health.

**213A. Environmental Science. (2) I.**

Mr. Bush

Prerequisite: course 112, or equivalent, or consent of the instructor.

Advanced study of relationship of the physical environment to man.

**213B. Environmental Science. (2) II.**

Mr. Post

Prerequisite: course 153, or equivalent, or consent of the instructor.

Advanced study of the relationship of the biological environment to man.

**220A-220B. Occupational Health Administration. (2-2) Yr.**

Prerequisite: consent of the instructor.

Mr. Felton and the Staff

Detailed consideration of the philosophy, organization, and operation of an occupational health program in various types of manufacturing industry, distributive trades, commerce, public utilities, and research installations.

**221A-221B. Occupational Environmental Control. (2-2) Yr.**

Prerequisite: consent of the instructor. Mr. Bryan and the Staff

The identification, measurement, evaluation, and control of physical and chemical environmental factors affecting the health of industrial workers. Development and use of control measures and devices providing a safe occupational environment.

**222. Air Pollution. (2) II.**

Mr. Bryan and the Staff

Lecture, one hour; laboratory, three hours. Prerequisite: consent of the instructor.

Consideration of air pollution in cities as a health and control problem. The effects of exposure of the population to air pollutants produced by industrial wastes or manufacturing methods.

**223. Occupational Radiologic Safety. (2) I.**

Mr. Bryan

Prerequisite: consent of the instructor.

Uses of radioisotopes and various radiation-producing devices in industry. Types of radiation, their sources, detection, measurement, and monitoring. Biologic effects and methods of protection against typical radioactive materials and sources.

**224. Industrial Toxicology. (3) I.** Mr. Stevenson, Mr. Bryan, Mr. Felton

Lectures, two hours; laboratory, three hours. Prerequisite: consent of the instructor.

The use of chemical and clinical laboratory techniques in the investigation of toxic manifestations of industrial hazards.

**225. Occupational Psychiatry. (2) II.** Mr. Felton, Mr. Tidd, Mr. Tallman

Prerequisite: Psychology 1A and 33 or equivalent, or Sociology 131, and consent of the instructor.

A consideration of the emotional problems of the worker as a factor in his ability to produce satisfactorily. The recognition, control, referral, and emergency treatment of the emotional and psychiatric problems of the industrial worker.

**234. Community Health Education. (2) I.**

Mr. Beeston

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.

**235. Health Education in Clinical Settings. (2) II.**

Mr. Beeston

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.

**240A-240B. Biostatistics. (3-3) Yr.**

Mr. Dixon, Mr. Massey

Prerequisite: courses 160A, 160B, 160C, Mathematics 4A, or consent of the instructor.

Quantitative methods in public health, medicine, and the biological sciences, statistical theory and application of problems in the design and analysis of experiments and surveys.

- 241. Advanced Biostatistics. (3) I.** Mrs. Dunn  
Prerequisite: Statistics 131A-131B, Mathematics 108, plus the equivalent of 6 units of statistical methods.  
Topics in probability and distribution theory leading toward multivariate analysis as it is used in biological and medical situations.
- 242. Multivariate Biostatistics. (3) II.** Mrs. Dunn  
Prerequisite: course 241 or equivalent.  
Multivariate analysis including topics from: component analysis, factor analysis, discriminant functions, analysis of dispersion, canonical analysis.
- 243. Mathematical Theory of Epidemics. (3) I.** Mr. Massey  
Prerequisite: courses in upper division mathematics including statistics and probability.  
Mathematical theory used in epidemic situations. Deterministic and stochastic models. Problems involved in applying the theory.
- 245. Research Methods in Community Health. (2) I.**  
Prerequisite: course 160A, or equivalent. Mr. Reeder and the Staff  
Preparation for planning and conducting research projects; methods and techniques of community health research including discussion of current research projects and presentation of students' own research plans.
- 246. Introduction to Epidemiology. (3) I.** Mr. Chapman and the Staff  
Lectures, two hours; laboratory, three hours. Prerequisite: D.V.M., D.D.S., or M.D. degree; consent of the instructor.
- 247. Advanced Epidemiology. (3) II.** Mr. Chapman  
Lectures, two hours; laboratory, three hours. Prerequisite: course 246 or 147, or equivalent; consent of the instructor.  
Advanced study of epidemiology of acute and chronic disease including epidemiologic research methods and appraisal of current knowledge.
- 248A. Advanced Problems in Epidemiology; Chronic Disease. (2) I.** Mr. Chapman and the Staff  
Prerequisite: course 247; consent of the instructor.  
Detailed study of selected epidemiologic problems with critical evaluation of current research; emphasis on chronic disease epidemiology including cancer, cardiovascular disease, mental illness, and injury.
- 248B. Advanced Problems in Epidemiology; Infectious Disease. (2) II.** Mr. Chapman and the Staff  
Prerequisite: course 247; consent of the instructor.
- 249. Society, Culture, and Health. (2) I.** Mr. Reeder  
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.
- 252A-252B. Seminar in Public Health Psychiatry. (2-2) Yr.**  
Prerequisite: consent of the instructor. Mr. Thomas and the Staff  
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.

- 253A-253B. Seminar in Medical Care Administration. (2-2) Yr.**  
 Prerequisite: enrollment in course 202A-202B. Mr. Lembcke and the Staff  
 Advanced study, by the seminar method, of the areas of medical care described for course 202A-202B.
- 256A-256B. Seminar in International Health. (2-2) Yr.**  
 Prerequisite: consent of the instructor. Mr. Halverson and the Staff  
 A survey and analysis of the problems and implications, and current research in the field of world health and population levels, and a study of the origin, orientation and purpose of the multilateral and bilateral agencies functioning in this field.
- 257A-257B. Seminar in Health Administration and Organization. (2-2) Yr.**  
 Mr. Goerke, Mr. Lembcke and the Staff  
 (Numbered course 259A-259B prior to 1960-1961.)  
 Prerequisite: consent of the instructor, and enrollment in course 200A-200B.  
 Advanced study of the areas of health administration and organization described for course 200A-200B.
- 261A-261B. Seminar in Community Health Education. (1-1) Yr.**  
 Prerequisite: consent of the instructor. Mr. Beeston and the Staff
- 265A-265B. Seminar in Epidemiology. (2-2) Yr.**  
 (Numbered course 249 prior to 1960-1961.) Mr. Chapman and the Staff  
 Prerequisite: consent of the instructor.
- 269A-269B. Seminar in Biostatistics. (1-1) Yr.**  
 Mr. Dixon, Mrs. Dunn, Mr. Massey  
 Prerequisite: consent of the instructor.
- 274A-274B. Seminar in Occupational Health. (1-1) Yr.** Mr. Felton  
 Prerequisite: consent of the instructor.  
 A consideration of the problems, methodology, and research literature of occupational health as they relate to contemporary clinical findings, research needs, and control measures. A study of the interrelationships of current professional literature and the work scene in surrounding industries.
- 280A-280B. Seminar in Environmental Health. (1-1) Yr.** Mr. Post  
 Prerequisite: consent of the instructor.
- 290. Special Group Studies. (1-5) I, II.** The Staff  
 Prerequisite: consent of the instructor.  
 A. Community and Institutions.  
 B. Environmental Health.  
 C. Epidemiology of Specific Diseases.  
 D. Hospital Administration.  
 E. International Health.  
 F. Maternal and Child Health.  
 G. Medical Care Administration.  
 H. Occupational Health.  
 J. Public Health Psychiatry.
- 297. Individual Studies for Graduate Students. (1-5) I, II.** The Staff  
 Prerequisite: consent of the instructor.
- 299. Research for Thesis or Dissertation. (1-5) I, II.** The Staff  
 Prerequisite: consent of the instructor.

**402A-402B. Medical Records Analysis and Research. (3-3) Yr.**

Mr. Lembcke and the Staff  
Lectures, two hours; laboratory, three hours. Prerequisite: consent of the instructor.

Medical and administrative research, using clinical records. Design and use of special records for anterospective studies. Analysis of hospital services. Introduction to the principles of medical auditing.

**RADIOLOGY**

(Department Office, B5-117 Medical Center)

Leslie R. Bennett, M.D., *Professor of Radiology.*

Andrew H. Dowdy, M.D., D.Sc., *Professor of Radiology (Chairman of the Department).*

Moses A. Greenfield, Ph.D., *Professor of Radiology.*

Raymond L. Libby, Ph.D., *Professor of Radiology.*

Bernard J. O'Loughlin, M.D., Ph.D., *Professor of Radiology.*

Justin J. Stein, M.D., *Professor of Radiology.*

Ross Golden, M.D., D.Sc., *Visiting Professor of Radiology.*

Leo G. Rigler, M.D., *Visiting Professor of Radiology.*

Gerald M. McDonnell, M.D., *Associate Professor of Radiology.*

Amos Norman, Ph.D., *Associate Professor of Radiology.*

Richard E. Ottoman, M.D., *Associate Professor of Radiology and Anatomy.*

Richard F. Ritley, Ph.D., *Associate Professor of Radiology and Physiological Chemistry.*

William N. Hanafee, M.D., *Assistant Professor of Radiology.*

Edward A. Langdon, M.D., *Assistant Professor of Radiology.*

Joseph L. Westover, M.D., *Assistant Professor of Radiology.*

**Requirements for Admission to Graduate Status**

Candidates for admission to graduate status in the Department of Radiology must conform to the general requirements set by the Graduate Division for admission to such status. In addition to meeting the requirements of the Graduate Division, the student must have received the bachelor's degree from one of the colleges of this University, based on a curriculum that includes the requirements for full graduate status in a department of his major subject, or must have pursued successfully an equivalent course of study elsewhere.

All students admitted to graduate status in the Department of Radiology are required, during their first semester in residence, to take a preliminary examination in the physical, chemical, and biological foundations of medical physics and the radiological sciences. Satisfactory performance in these examinations is prerequisite to continuation of graduate standing in the department. These examinations are designed to evaluate the scientific competence of the student and to facilitate the work of the staff in recommending a study program which will most effectively aid his development.

*Areas of Study.*—Study in the fields of radiation physics, radiation biology and radiation chemistry will be open to qualified candidates.

**Requirements for the Degree of Master of Science in Radiology**

1. General University Requirements. Candidates for the Master of Science degree in the radiological sciences must conform to the general requirements set by the Graduate Division for this degree. The candidate may elect either Plan I (thesis) or Plan II (comprehensive final examination) as set forth in the general section on pages 66 and 68.

## 2. Departmental Requirements.

- (a) Satisfactory completion of requisite departmental courses.
- (b) Satisfactory completion of work in a minor field.
- (c) Reading knowledge of one foreign language pertaining to the field of study.
- (d) A thesis (Plan I) or a comprehensive final examination (Plan II).

*Requirements for the Doctor's Degree in Medical Physics (Radiology)*

1. General University Requirements. Candidates for the doctorate in Medical Physics (Radiology) must conform to the general requirements set by the Graduate Division for this degree. It should be noted that the student must pass a series of written and oral examinations before admission to candidacy. The qualifying oral examination is conducted by a doctoral committee appointed by the Graduate Council.

## 2. Departmental Requirements.

- (a) Admission to Candidacy. Admission to candidacy is granted only after the student has passed 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.
- (b) Course Requirements.
  - (1) Satisfactory completion of requisite departmental courses.
  - (2) Satisfactory completion of such courses as the guidance committee may recommend as appropriate for the development of the student.
- (c) Foreign Languages. A reading knowledge of French and German normally is required. In certain instances, however, the department may permit substitution of a different language of scientific importance for one of these. A student must have met one language requirement by the beginning of his second graduate year; all language requirements must have been met by the close of his fourth semester of graduate work.
- (d) The Dissertation. The dissertation shall conform to the requirements set by the Graduate Division.
- (e) General. Prospective candidates for the doctor's degree are responsible for completion of all technical requirements for this degree.

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 their ability to contribute to that field of knowledge by original and independent research.

## GRADUATE COURSES

## 200. Radioactivity—Principles and Measurements. (2) I.

(Numbered 250 prior to 1960-1961.) Mr. Greenfield and the Staff

This course gives the necessary physical and mathematical background for the use of radiation techniques and isotopes in biological research and measurements of nuclear radiations.

## 201. Applied Nuclear Physics. (2) II.

Mr. Libby and the Staff

(Numbered 251 prior to 1960-1961.)

Isotope methodology in biological research; instrumentation, detection and the quantitative determination of radioactivity.



**202A-202B. Clinical Radioisotopes.** (1-5) I, II. Mr. Bennett and the Staff  
(Numbered 252A-252B prior to 1960-1961.)

Application of radioisotopes to clinical problems. Course intended for physicians and radiation physicists.

**204A-204B. Introduction to Foundations of Radiobiology.** (2) I, II

(Numbered 210 prior to 1960-1961.)

Mr. Riley

Effects on chemical and biological systems; this course is intended primarily for residents in radiology and graduate students. Moderately advanced courses in physics, mathematics and chemistry will be required. Consent of instructor needed.

**206A-206B. Radiological Physics.** (2) I, II. Mr. Greenfield and the Staff  
(Numbered 256A-256B prior to 1960-1961.)

Production of X rays, interaction of X rays and X rays with matter, and so forth. Laboratory includes instruction in necessary mathematical techniques, measurement of quality and quantity of X rays, study of electrical components used in X-ray generators.

**206C-206D. Radiological Physics Laboratory.** (2) I, II.

(Numbered 299A, 299B prior to 1960-1961.) Mr. Greenfield and the Staff

Isodose determination in phantoms, X-ray and isotope dosimetry, calibration of instruments, radiation surveys, problems in scanning.

**209. The Quantitative Culture of Mammalian Cells.** (2) I or II. Mr. Norman

Techniques for quantitative studies on mammalian cells in vitro with applications to radiation biology, genetics and virology. By permission of instructor.

**211. Roentgenoscopy.** (2-6) I or II.

Mr. O'Loughlin and the Staff

(Numbered 220 prior to 1960-1961.)

A survey of the mobility and density characteristics of various fluids, fat protein and mineral solids naturally occurring in the body, with more intensive study of their interrelationships and their similar tissues will also be explored. Dynamic physiological and pathological changes will be studied.

**212. Radiation Therapy.** (2-6) I or II.

Mr. Stein

(Numbered 222 prior to 1960-1961.)

A survey of basic principles of radiobiology, with special attention to reactions of neoplastic and inflammatory processes to 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 systemic effects of radiation, radiation sickness, and the pharmacological problems posed will be of particular interest.

**213. Roentgen Diagnosis.** (2-6) I or II.

Mr. O'Loughlin and the Staff

(Numbered 224 prior to 1960-1961.)

Deliberate analysis of the graphically recorded changes noted roentgenoscopically as well as the tissue changes apparent with various disease entities. An attempt is made to understand the pathogenesis of these processes and to arrive at diagnostic and prognostic conclusions in each instance. Anatomical development is also studied, and differentiation between normal and abnormal growth is estimated.

**214A-214B. Pediatric Radiology.** (1) I, II.

Mr. O'Loughlin

(Numbered 248A-248B prior to 1960-1961.)

Special methods in diseases in children.

**218A-218B. Analytic Roentgenology.** (2) I, II. Mr. Dowdy and the Staff  
(Numbered 236A-236B prior to 1960-1961.)

Analytic studies of current autopsy and surgical material and the related roentgenograms.

**220A-220B. Forensic Radiology, History and Ethics.** (1) I, II.  
(Numbered 249A-249B prior to 1960-1961.) Mr. Golden and Mr. Rigler

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.

**260A-260B. Radiology Seminar.** (1-3) I, II. Mr. Dowdy and the Staff

Joint critical study by students and instructors of the fields of organized knowledge pertaining to radiology. Periodic contributions are made by visiting professors. Research in progress is discussed.

**297A-297B. Research for Individual Graduate Students.** (1-6) I, II.  
The Staff

**299. Research on Dissertation.** (1-6) I, II.  
The Staff  
(Numbered 280A-280B and 297A-297B prior to 1960-1961.)

#### PROFESSIONAL COURSES

**403A-403B. Combined Diagnostic Conference.** (5) I, II.  
(Numbered 221A-221B prior to 1960-1961.) Mr. O'Loughlin and the Staff  
Group analysis of diagnostic problems found in hospital and clinical practice.

**404A-404B. Radiation Therapy Conference.** (1) I, II.  
(Numbered 223A-223B prior to 1960-1961.) Mr. Stein and the Staff  
Presentation of selected current therapeutic problem cases of general interest.

**405. Consultative Tumor Board.** (1-3) I or II. Mr. Dowdy and Mr. Stein  
(Numbered 225 prior to 1960-1961.)

Presentation of tumor cases for diagnosis and appropriate therapy with discussion of differential diagnosis and combinations of therapy such as surgery, X ray, radium therapy, and isotopes.

**413. Radiation Safety.** (0) I or II. Mr. Libby and the Staff  
This course is designed to instruct graduate students, residents, technicians and others in methods of safely handling and confining radioactive materials.

**451A, 451B, 451S. Seminar in Radiology.** (10) I, II.  
Mr. Dowdy and the Staff  
The Seminar in Radiology will consist of daily clinical teaching exercises.

#### RESIDENCY TRAINING AND POSTDOCTORAL GRADUATE WORK

A four-year residency training program is offered in the Department of Radiology. This program, which covers all the divisions of Radiology and the Seminar in Radiology (Radiology 451A, 451B, 451S), leads 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 24, California.

#### 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.

## SANSKRIT

For courses in Sanskrit, see under Department of Classics.

## SCANDINAVIAN LANGUAGES

For courses in Scandinavian Languages, see under Department of Germanic Languages.

## SLAVIC LANGUAGES

(Department Office, 332 Royce Hall)

Kiril Taranovski, Ph.D., *Professor of Slavic Languages.*

———, *Visiting Professor of Slavic Languages.*

Kenneth E. Harper, Ph.D., *Associate Professor of Slavic Languages.*

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

Dean S. Worth, Ph.D., *Assistant Professor of Slavic Languages (Chairman of the Department).*

Gerta H. Worth, Ph.D., *Assistant Professor of Germanic and Slavic Languages.*

———, *Instructor in Slavic Languages.*

Nina M. Wiren, *Associate in Slavic Languages.*

*Letters and Science List.*—All courses in Slavic Languages are included in the Letters and Science List of Courses. For regulations governing this list, see page 2.

*Preparation for the Major.*—Courses 1, 2, 3A-3B, 18A-18B, and History 146A-146B (to be taken in the sophomore year).

*The Major.*—(1) Requirement in language: courses 103A-103B (or, with permission of the chairman, 104A-104B), 122A-122B, and four units chosen from courses 104A-104B, 111A-111B, 112A-112B, 124A-124B. (2) Requirement in literature: course 130 and 9 units chosen from courses 132, 137, 143A-143B, 145, 147, 149.

### LOWER DIVISION COURSES

**1. Beginning Russian.** (4) I, II. The Staff  
The first course in the Russian language. To meet five times a week.

**1G. Elementary Russian—Reading course for graduate students.** (No credit) I, II. The Staff  
Four hours a week.

**2. Elementary Russian.** (4) I, II. The Staff  
Prerequisite: course 1.  
Continuation of course 1. To meet five times a week.

**3A-3B. Second-Year Russian.** (3-3) Yr. Beginning either semester. The Staff  
Prerequisite: courses 1, 2. Upper division students who are not majors in Slavic languages may receive upper division credit for this course.

**\*6. Readings in Russian.** (3) I. Mr. Harper  
Prerequisite: course 2. To be taken in conjunction with course 3A or 3B.

**18A-18B. Elementary Russian Conversation.** (1-1) Yr. The Staff  
A course in Russian conversation designed to accompany the lectures and recitations of courses 2 or 3A. Open only to students who are taking 2 or 3A.

\* Not to be given, 1960-1961.

## UPPER DIVISION COURSES

- 103A-103B. Third-Year Russian.** (3-3) Yr. Mr. Worth  
Prerequisite: course 3A-3B.
- 104A-104B. Fourth-Year Russian.** (3-3) Yr. Mr. Worth  
Prerequisite: course 103A-103B.
- \*111A-111B. Elementary Polish.** (3-3) Yr. Mr. Taranovski  
Prerequisite: course 3B or consent of the instructor.  
Basic course in the Polish language.
- 112A-112B. Elementary Serbocroatian.** (3-3) Yr. Mr. Taranovski  
Prerequisite: course 3B or consent of the instructor.  
Basic course in the Serbocroatian language.
- 119A-119B. Intermediate Russian Conversation.** (2-2) Yr. Mrs. Wiren  
Prerequisite: courses 1, 2, and 18A-18B, or the equivalent.
- 120A-120B. Advanced Russian Conversation.** (2-2) Yr. Mrs. Wiren  
Prerequisite: course 119A-119B.
- 122A-122B. The Russian Language.** (3-3) Yr. Mr. Taranovski, Mr. Worth  
Prerequisite: course 3A-3B.  
Structure and Development.
- 124A-124B. Advanced Russian Composition.** (2-2) Yr. Mr. Markov  
Prerequisite: course 103A-103B.
- 130. Survey of Russian Literature to 1917.** (3) I. Mr. Harper  
Lectures and reading in English. Required of all majors. Open to all upper division students, and to sophomores with the permission of the instructor.
- 132. Russian Literature since 1917.** (3) II. Mr. Harper, Mr. Markov  
A survey of Soviet literature. Lectures and reading in English. Open to all upper division students.
- \*137. The Russian Drama.** (3) II. Mr. Harper  
A survey of Russian drama from the seventeenth century to the twentieth. Lectures and reading in English.
- 143A-143B. Russian Novelists of the Nineteenth Century.** (2-2) Yr. Mr. Markov  
Lectures and reading in English. Open to all upper division students.  
Course 143A is not prerequisite to 143B.
- 145. Tolstoy.** (3) II. Mr. Harper  
A study of Tolstoy's principal novels, short stories, plays, and essays, in English. Open to all upper division students.
- 147. History of Russian Poetry.** (3) I. Mr. Markov  
The development of epic, lyric, and dramatic poetry.
- 149. Readings in Russian Poetry.** (3) II. Mr. Markov  
Prerequisite: courses 3B and 147, or consent of the instructor.  
Analysis of representative Russian lyric poetry in the original; versification, imagery, style. Conducted in Russian.

\* Not to be given, 1960-1961.

199. **Special Studies.** (1-3) I, II. The Staff  
Prerequisite: senior standing and consent of the instructor.
220. **Old Church Slavic.** (3) I. Mr. Worth
221. **Old Russian.** (3) II. Mr. Taranovski  
Prerequisite: course 220.
222. **Comparative Slavic Linguistics.** (3) II. Mr. Taranovski  
Prerequisite: course 220. Recommended: Linguistics 150.  
The development of Common Slavic from Indo-European and its divergence into the separate Slavic languages.
- 225A, B, C. **The Structure of Modern Russian.** Mr. Taranovski, Mr. Worth  
225A. **Phonetics and Phonology.** (2) I. Mr. Taranovski  
225B. **Morphology.** (2) II. Mr. Taranovski  
225C. **Syntax.** (2) II. Mr. Worth
- \*227. **Eastern Slavic Languages.** (3) I. Mr. Taranovski  
(Formerly titled History of the Russian Language.)  
Historical dialectology and synchronic comparison of the three Eastern Slavic languages (Russian, Ukrainian, Belorussian).
229. **History of the Russian Language.** (3) I. Mr. Taranovski, Mrs. Worth  
Selected topics in the historical phonology, morphology, syntax, and lexicology of Russian, with emphasis on the development of the literary language.
240. **Old Russian Literature.** (3) I. \_\_\_\_\_  
Translated and original literature of the Kievan period.
- \*241. **Russian Literature of the XIV-XVII Centuries.** (3) I. \_\_\_\_\_  
Literature of the feudal period and the rise of Muscovite literature.
242. **Eighteenth-Century Russian Literature.** (3) II. Mr. Harper, Mr. Markov  
Prose, poetry, and drama of the Classical period.
243. **Pushkin.** (3) II. Mr. Harper, Mr. Markov
246. **Symbolism and Post-Symbolism.** (3) II. Mr. Harper, Mr. Markov
- \*265. **Seminar in the Russian Novel.** (3) I. Mr. Harper
- \*266. **Seminar in Russian Poetry.** (3) II. Mr. Markov
267. **Seminar in Russian Criticism.** (3) I. Mr. Harper
- \*270. **Seminar in Structural Analysis.** (3) II. Mr. Worth  
Selected problems in the structural analysis of Russian and/or other modern Slavic languages.
- \*271. **Seminar in Historical Linguistics.** (3) I. Mr. Taranovski, Mrs. Worth  
Prerequisite: course 220.  
Selected problems in the historical development of Russian and/or other Slavic languages.

\* Not to be given, 1960-1961.

273. Seminar in Russian Epic Tradition. (3) II. Mr. Worth  
 Prerequisite: course 220. Recommended: course 240.  
 Textual analysis, reconstruction, and literary significance of the *Igor' Tale*, *Zadonščina*, *Skazanie o Mamaevom Pobojšče* and connected works.
297. Individual Studies for Graduate Students. (2-6) I, II. The Staff

## SOCIAL WELFARE

(Department Office, 12 Building 1A)

- Donald S. Howard, Ph.D., L.H.D., *Professor of Social Welfare*.  
 Karl de Schweinitz, L.H.D., *Professor of Social Welfare, Emeritus*.  
 Mary E. Duren, M.S., *Assistant Dean of the School of Social Welfare and Associate Professor of Social Welfare (Acting Chairman of the Department)*.  
 Olive M. Stone, Ph.D., *Associate Professor of Social Welfare*.  
 Harry H. L. Kitano, Ph.D., *Assistant Professor of Social Welfare*.  
 Herman Piven, M.A., *Acting Assistant Professor of Social Welfare*.  
 Jean A. Shores, M.A., *Assistant Professor of Social Welfare*.  
 Walter C. Bailey, Ph.D., *Lecturer in Social Welfare*.  
 Roger O. Egeberg, M.D., *Lecturer in Social Welfare and Clinical Professor of Medicine*.  
 Mildred T. Faris, M.A., *Lecturer in Social Welfare*.  
 Ralph L. Goff, M.S.W., *Lecturer in Social Welfare*.  
 Martin B. Loeb, Ph.D., *Lecturer in Social Welfare*.  
 Judd Marmor, M.D., *Lecturer in Social Welfare and Clinical Professor of Psychiatry*.  
 Robert Brockman, M.S.W., *Associate in Social Welfare*.  
 Mary Alice Kahne, M.S.W., *Associate and Field Work Supervisor*.  
 Katherine M. Kolodziejcki, M.S.W., *Associate in Social Welfare*.  
 Peter M. Sandi, M.S.W., Jur.D., *Associate in Social Welfare*.  
 Shirley J. Hook, M.S.W., *Associate in Social Welfare*.  
 Edith Shapiro, M.S.W., *Associate in Social Welfare*.

For information concerning courses and curricula, see the ANNOUNCEMENT OF THE SCHOOL OF SOCIAL WELFARE, LOS ANGELES.

## SOCIOLOGY

For courses in sociology, see under Department of Anthropology and Sociology, page 87.

## SPANISH AND PORTUGUESE

(Department Office, 5303 Humanities Building)

- William E. Bull, Ph.D., *Professor of Spanish*.  
 Americo Castro, Ph.D., *Visiting Professor of Spanish*.  
 Carlos Claveria, Doctor en Letras, *Professor of Spanish*.  
 John A. Crow, Ph.D., *Professor of Spanish*.  
 John E. Englekirk, Ph.D., *Professor of Spanish (Chairman of the Department)*.  
 Ernest H. Templin, Ph.D., *Professor of Spanish*.  
 Marion Albert Zeitlin, Ph.D., *Professor of Spanish and Portuguese*.  
 Hermenegildo Corbató, Ph.D., *Professor of Spanish, Emeritus*.

Manuel Pedro González, Ph.D., *Professor of Spanish-American Literature, Emeritus.*

Anna Krause, Ph.D., *Professor of Spanish, Emeritus.*

José R. Barcia, Licenciado en Filosofía y Letras, *Associate Professor of Spanish.*

Donald F. Fogelquist, Ph.D., *Associate Professor of Spanish.*

Stanley L. Robe, Ph.D., *Associate Professor of Spanish.*

†Anibal Sánchez-Reulet, Ph.D., *Associate Professor of Spanish.*

‡James Richard Andrews, Ph.D., *Assistant Professor of Spanish.*

Samuel G. Armistead, Ph.D., *Assistant Professor of Spanish.*

Claude L. Hulet, Ph.D., *Assistant Professor of Spanish.*

Carlos Otero, Ph.D., *Assistant Professor of Spanish.*

‡ Joseph H. Silverman, Ph.D., *Assistant Professor of Spanish.*

Maria L. de Lowther, M.A., *Assistant Professor of Spanish, Emeritus.*

Leonor Montau, A.B., *Associate in Spanish.*

Charles M. Vance, M.A., *Associate in Spanish.*



Virginia G. Baños, Ph.D., *Lecturer in Spanish.*

#### SPANISH

*Letters and Science List.*—All undergraduate courses in Spanish and Portuguese except Spanish 370 are included in the Letters and Science List of Courses. For regulations governing this list, see page 2.

*Preparation for the Major.*—(1) Spanish 1, 2, 3, 4, 25A–25B or 100, and 42, 44, or the equivalent, to be tested by examination. (2) English 1A–1B. (3) A minimum of two years of a second foreign language in high school, or of two semesters at the college level, or English 46A–46B, or History 8A–8B.

Students who wish to make Spanish their major subject must have maintained at least an average grade of C in the college courses in Spanish taken prior to admission to the upper division.

*The Major.*—Required: 102A–102B, 146, and 15 additional units elected from courses 104A–104B through 149. Students entering upper division without credit for 25A–25B may offer 101A–101B instead. Spanish 108 may not be counted on the 15 elective units. Although such specialization is not required, students desiring to specialize in Spanish literature may choose the elective units from courses 105 to 120; those desiring to specialize in Spanish-American literature, from courses 120 to 136. With the permission of the department a maximum of 4 units of upper division work in literature in French, Italian, or Portuguese, in folklore, or in linguistics and general philology, may be included among the elective units.

All Spanish majors preparing for the general secondary credential are required to take Spanish 100 before the end of the junior year and will normally take Spanish 147 and 148 in the senior year. Other requirements for the general secondary credential are courses 104A–104B, 108, and 149 or 256.

Students planning to obtain the Master of Arts degree in Spanish may find it advisable to elect Spanish 115 before graduation.

As general electives the department recommends courses in (1) philosophy; (2) English literature; (3) French, German, Greek, Italian, Latin, and Portuguese language and literature; (4) the history, anthropology, geography, political institutions, and international relations of Spain or Spanish-American countries.

‡ Sabbatical leave in residence, fall semester, 1960–1961.

† In residence fall semester only, 1960–1961.

‡ In residence spring semester only, 1960–1961.

Students who fail to maintain at least an average grade of C in the Spanish courses taken in the upper division will, upon approval of the Dean of the College of Letters and Science, be excluded from the major in Spanish.

#### *Requirements for Admission to Graduate Courses*

The requirement is ordinarily the undergraduate major in Spanish, or its equivalent, with a minimum grade-point average of 2.75. This requirement is prerequisite to the 24 units demanded for the M.A. degree. If the candidate is deficient in this prerequisite, he must fulfill it by undergraduate work which is not counted toward his graduate residence.

#### *Requirements for the General Secondary Credential*

Consult the ANNOUNCEMENT OF THE SCHOOL OF EDUCATION, LOS ANGELES.

#### *Requirements for the Master's Degree*

1. For the general requirements, see page 66. The department normally operates under Plan II, but in exceptional cases, and with the approval of the chairman of the department, Plan I may be followed as described on page 67. The Master's Comprehensive Examination consists of two three-hour written examinations, which are given in the next-to-the-last week preceding the final examination period of each semester. The student will be expected to show (1) a fair knowledge of the history of the Spanish language and a general acquaintance with the history of Spanish literature; (2) a more thorough acquaintance with the authors, works, and movements of either (a) Spanish literature or (b) Spanish-American literature. A list of suggested readings in the literature of the student's choice will be provided and will constitute the basis for part of the examination.

2. Departmental requirements: (a) All students must complete courses 115, 119, and either 149 or 256. (b) Students specializing in Spanish literature must complete at least 8 units chosen from courses 201A-201B, 203A-203B, 209A-209B, 210A-210B, 215A-215B, and 220. (c) Those specializing in Spanish-American literature must complete at least 8 units chosen from courses 220, 240, 241, 242, 243A-243B, 245, 246, 247, 248, 249. (d) The remaining units of the required 24 may include, with the approval of the graduate adviser, a maximum of 6 units of upper division or graduate courses in the history, geography, anthropology, political institutions, or international relations of Spain or the Spanish-American countries, in Portuguese and Brazilian literature and language, in other literatures, or in philosophy.

#### *Requirements for the Ph.D. Degree*

For the general requirements see page 68. Course 256 is required of all candidates for the Ph.D. degree. Graduate work with concentration in Spanish is offered leading to the degrees of Ph.D. in Hispanic Languages and Literature and Ph.D. in Romance Languages and Literature. For specific requirements for these degrees, see the ANNOUNCEMENT OF THE GRADUATE DIVISION, SOUTHERN SECTION, or consult the departmental adviser.

### LOWER DIVISION COURSES

The prerequisites for the various lower division courses are given in each case.

All entering or transfer students who, because of speaking the Spanish language natively, of travel or residence in Spanish-speaking countries, or because of any other reason, consider themselves able to take a more advanced course than that for which they have formal prerequisites should consult the chairman of the department for assignment to a course of the proper level.

#### 1. Elementary Spanish—Beginning. (4) I, II.

The Staff

This course corresponds to the first two years of high school Spanish. Sections meet five hours weekly, including one hour of oral practice.



- 1G. Elementary Spanish—Reading Course for Graduate Students.**  
(No credit) I, II. The Staff  
Four hours a week.
- 2. Elementary Spanish—Continued.** (4) I, II. The Staff  
Prerequisite: course 1, two years of high school Spanish, or the equivalent.  
Sections meet five hours weekly, including one hour of oral practice.
- 3. Intermediate Spanish.** (4) I, II. The Staff  
Prerequisite: course 2, three years of high school Spanish, or the equivalent.  
Sections meet five hours weekly, including one hour of oral practice.
- 4. Intermediate Spanish—Continued.** (4) I, II. The Staff  
Prerequisite: course 3, four years of high school Spanish, or the equivalent.
- 8A–8B. Elementary Spanish Conversation.** (1–1) Yr. Beginning each semester. The Staff  
Classes meet two hours weekly. Open to students who have completed Spanish 3 or its equivalent. Those with grade A or B in Spanish 2 may be admitted.
- 8C. Advanced Spanish Conversation.** (1) I, II. The Staff  
Classes meet two hours weekly. Open to students who have completed course 8B.
- 25A–25B. Composition and Prose Reading.** (2–2) Beginning either semester. Mr. Crow  
Prerequisite: course 4 or the equivalent. Designed especially for freshmen and sophomores who propose to make Spanish their major subject.
- 42. Spanish Civilization.** (3) I. Mr. Bull, Mr. Armistead  
Prerequisite: sophomore standing. Conducted in English. No knowledge of Spanish required. Required of major students in Spanish.  
A study of the growth and development of Spanish culture in its most important manifestations.
- 44. Latin-American Civilization.** (3) II. Mr. Crow, Mr. Fogelquist  
Prerequisite: sophomore standing. Conducted in English. No knowledge of Spanish required. Required of major students in Spanish.  
Origins and main currents of Latin American culture.

#### UPPER DIVISION COURSES

Prerequisite: 16 units of lower division Spanish or the equivalent.

- 100. Advanced Grammar.** (3) I, II. Mr. Robe, Mr. Armistead  
Prerequisite: course 4 or the equivalent. Required of students working for the general secondary credential.
- 101A–101B. Intermediate Composition and Conversation.** (2–2) Yr.  
Beginning either semester. Mrs. Baños, Mr. Otero  
May not be taken concurrently with or following 146. May not be counted on the 15 elective upper division units required for the major.
- 102A–102B. Introduction to Spanish Literature. From the Middle Ages to the Present.** (3–3) Beginning either semester.  
Mr. Barcia, Mr. Silverman, Mr. Zeitlin, Mr. Clavería  
Prerequisite: course 42. Required of all major students in Spanish.

- 104A-104B. Introduction to Spanish American Literature. From the Beginnings to the Present. (3-3).** Beginning either semester.  
Mr. Crow, Mr. Fogelquist, Mr. Englekirk  
Prerequisite: course 44 or the equivalent. Required of all credential majors.
- 105. Spanish Literature from 1850-1900. Realism and Naturalism. (3) I.**  
Prerequisite: course 102B. Mr. Clavería
- 106. Spanish Literature from 1700-1850. Neo-Classicism and Romanticism. (3) II.**  
Prerequisite: course 102B. Mr. Clavería
- 108. The Folk Song in Spain and Spanish America. (1) II.** Mr. Crow  
Class meets two hours weekly. Required of credential candidates. May not be counted on the 15 elective upper division units required for the major.  
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.
- 110. Contemporary Spanish Literature. (3) II.** Mr. Barcia  
Prerequisite: course 102B.
- 115. Don Quijote. (3) II.** Mr. Andrews, Mr. Templin  
Prerequisite: course 102A. Students planning to get the M.A. in Spanish are expected to take this course or offer an equivalent.
- 117. Spanish Literature of the Siglo de Oro. (3) I.**  
Prerequisite: course 102A. Mr. Andrews, Mr. Templin
- 119. Readings in Spanish Literature of the Middle Ages. (3) I.**  
Prerequisite: course 102A. Mr. Zeitlin, Mr. Andrews, Mr. Armistead
- 120. Literary Criticism in Spain and Spanish America. (3) II.** Mr. Andrews
- \*130. Main Literary Currents in Spanish America. (3) II.** Mr. Fogelquist
- 132. The Spanish American Novel. (3) I.** Mr. Fogelquist
- 134. The Spanish American Short Story. (2) I.** Mr. Sánchez-Reulet
- 136. The Spanish American Essay. (2) II.** Mr. Sánchez-Reulet
- 146. Advanced Composition and Style. (3) I, II.** Mr. Silverman  
Prerequisite: courses 25A-25B, 100, or 101A-101B.
- 147. Grammar for Teachers. (2) I, II.** Mr. Bull, Mr. Robe  
Prerequisite: course 100.
- 148. Phonetics. (1) I, II.** Mr. Robe  
Class meets two hours weekly.
- 149. Introduction to the History of the Spanish Language. (1) I.** Mr. Silverman, Mr. Armistead  
Meets requirement in philology for the general secondary credential and the master's degree.
- 150A-150B. Spanish and Spanish American Literature in English Translation. (2-2) Yr.** Mr. Silverman, Mr. Englekirk

199. **Special Studies in Spanish.** (1-3) I, II. The Staff  
Prerequisite: senior standing and consent of the instructor.

## GRADUATE COURSES

- 201A. **Studies in Spanish Poetry.** (2) I. Mr. Castro  
The *Cancioneros* and the *Romancero*.
- 201B. **Studies in Spanish Poetry.** (2) II. Mr. Templin  
The *Siglo de Oro*, especially in relation to the Baroque.
- 203A-203B. **Studies in Spanish Literature of the Nineteenth Century.**  
(2-2) Yr. Mr. Clavería, \_\_\_\_\_
- \*209A-209B. **The Spanish Drama of the Golden Age.** (2-2) Yr. Mr. Templin
- 210A-210B. **Studies in Contemporary Spanish Literature.** (2-2) Yr. Mr. Barcia
- \*215A-215B. **Studies in Spanish Prose Writers of the Golden Age.** (2-2) Yr. Mr. Barcia, \_\_\_\_\_
220. **The Spanish Chroniclers of the Americas.** (2) II. Mr. Robe
240. **Studies in the Contemporary Novelists of Spanish America.** (2) II. Mr. Crow
241. **Studies in the Spanish-American Short Story.** (2) I. Mr. Crow, Mr. Fogelquist
242. **Studies in the Contemporary Poets of Spanish America.** (2) II. Mr. Fogelquist
- \*243A-243B. **The Modernista Movement in Spanish America.** (2-2) Yr. \_\_\_\_\_
245. **The Contemporary Mexican Novel.** (2) II. Mr. Englekirk
246. **Argentine Literature.** (2) I. Mr. Sánchez-Reulet
- \*247. **The Gaucho Epic.** (2) I. Mr. Sánchez-Reulet
- \*248. **Studies in Major Figures of Spanish American Literature.** (2) II. \_\_\_\_\_
- \*249. **Mexican Literature.** (2) II. Mr. Englekirk
255. **Contemporary Spanish Linguistics.** (2) II. Mr. Bull
256. **Spanish Historical Grammar.** (3) II. Mr. Zeitlin  
A knowledge of Latin is indispensable. Meets requirement in philology for the general secondary credential and for the master's degree. Required of all doctoral candidates.
- 290A-290B. **Special Study and Research.** (2-6; 2-6) Yr. The Staff

## PROFESSIONAL COURSE IN METHOD

370. **The Teaching of Spanish.** (3) I. Mr. Bull  
Prerequisite: course 147 or consent of instructor.  
Required of all candidates for the general secondary credential whose major subject is Spanish. Should be taken concurrently with student teaching in Spanish.

\* Not to be given, 1960-1961.

## PORTUGUESE

## LOWER DIVISION COURSES

- |  |             |
|--|-------------|
| 1. Elementary Portuguese—Beginning. (4) I.   | Mr. Zeitlin |
| 2. Elementary Portuguese—Continued. (4) II.<br>Prerequisite: course 1 or the equivalent.                                       | Mr. Zeitlin |
| 3. Intermediate Portuguese. (4) I.<br>Prerequisite: course 2 or the equivalent.<br>Grammar, composition, and reading of texts. | Mr. Zeitlin |

## UPPER DIVISION COURSES

- |  |             |
|--|-------------|
| 122. Survey of Portuguese Literature (3) I.<br>Prerequisite: course 3 or the equivalent.   | Mr. Zeitlin |
| 123. Survey of Brazilian Literature. (3) II.<br>Prerequisite: course 3 or the equivalent. It is advisable that students also offer course 122 as a prerequisite: | Mr. Zeitlin |
| 199. Special Studies in Portuguese. (1-3) I, II.<br>Prerequisite: senior standing and consent of the instructor.   | Mr. Zeitlin |

## RELATED COURSES (See page 229)

- |  |              |
|--|--------------|
| French 201. History of the French Language. (3) I, II. | Mr. Williams |
| French 202. Old French. (3) I, II.                     | Mr. Williams |

## SPEECH

For courses in Speech, see under Department of English.

## SUBJECT A: ENGLISH COMPOSITION

(Department Office, 302 Royce Hall)

———, *Chairman, Committee on Subject A.*

Everett L. Jones, M.A., *Supervisor of Instruction in Subject A.*

Ella O. Hutchins, M.A., *Associate in Subject A.*

Gretchen G. Martin, M.A., *Associate in Subject A.*

Cathleen H. Wheat, Ph.D., *Associate in Subject A.*

Hortense H. Williams, M.A., *Associate in Subject A.*

Subject A. (No credit) I, II.

Fee, \$35.

The Staff

Three hours weekly for one semester. Although this course yields no credit, it displaces 2 units on the student's program. Every student who does not pass the examination in Subject A is required to take, in the semester immediately following this failure, the course in Subject A. Sections are limited to thirty students. For further details see page 24 C of this bulletin.

Training in correct writing, including drill in sentence and paragraph construction, diction, punctuation, grammar, and spelling. Weekly compositions and written tests on the text.

## THEATER ARTS

(Department Office, 107 Building 3U)

- †Walden Boyle, Ph.D., *Professor of Theater Arts.*  
 Ralph Freud, *Professor of Theater Arts.*  
 Edward Hearn, M.A., *Professor of Theater Arts.*  
 Walter Kingson, Ed.D., *Professor of Theater Arts.*  
 William Melnitz, Ph.D., *Professor of Theater Arts.*  
 Arthur Ripley, *Professor of Theater Arts.*  
 George M. Savage, Ph.D., *Professor of Theater Arts.*  
 Samuel Selden, Litt.D., *Professor of Theater Arts (Chairman of the Department).*  
 Kenneth Macgowan, LL.D., *Professor of Theater Arts, Emeritus.*  
 Arthur Friedman, Ph.D., *Associate Professor of Theater Arts.*  
 †John Jones, M.A., *Associate Professor of Theater Arts.*  
 John P. Driscoll, Ph.D., *Assistant Professor of Theater Arts.*  
 Henry Goodman, Ph.D., *Assistant Professor of Theater Arts.*  
 Hugh Gray, *Assistant Professor of Theater Arts.*  
 James V. Hatch, Ph.D., *Assistant Professor of Theater Arts.*  
 Richard C. Hawkins, M.A., *Assistant Professor of Theater Arts.*  
 Melvyn Helstien, M.F.A., *Assistant Professor of Theater Arts.*  
 Patricia Hungerland, M.A., *Assistant Professor of Theater Arts.*  
 Charles Lown, Jr., Ph.D., *Assistant Professor of Theater Arts.*  
 Ernest Rose, M.A., *Assistant Professor of Theater Arts.*  
 Francis W. Sturcken, Ph.D., *Assistant Professor of Theater Arts.*  
 A. N. Wollock, Ph.D., *Assistant Professor of Theater Arts.*  
 Colin Young, M.A., *Assistant Professor of Theater Arts.*  
 John W. Young, M.A., *Assistant Professor of Theater Arts.*  
 Dorothy Arzner, *Lecturer in Theater Arts.*  
 Rudolf Bretz, *Lecturer in Theater Arts.*  
 Burdette Fitzgerald, M.A., *Lecturer in Theater Arts.*  
 Morton B. Miller, M.A., *Lecturer in Theater Arts.*  
 Jack Morrison, M.A., *Lecturer in Theater Arts.*  
 Charlotte Motter, M.A., *Lecturer in Theater Arts.*  
 Ted Post, *Lecturer in Theater Arts.*  
 J. Palmer Schoppe, *Lecturer in Theater Arts.*  
 George Seaton, Ph.D., *Lecturer in Theater Arts.*  
 William Shull, B.S., *Lecturer in Theater Arts.*  
 L. S. Trimble, M.S., *Lecturer in Theater Arts.*  
 Raymond Fielding, M.A., *Associate in Theater Arts.*  
 Dorothy Foulger, B.A., *Associate in Theater Arts.*

### College of Applied Arts

The Department of Theater Arts bases its work in theater, motion pictures, and television-radio on a solid two-year preparation of general education and specific courses of theater arts fundamentals. The purpose of the curriculum is to develop in its students a scholarly, creative, and professional approach to disciplines of theater art. The aim of the department is to train graduates capable of thinking and working in the several areas of theater arts—people so oriented that they are fully aware of the problems of audiences and dramaturgy, people who may eventually be in the first rank of contributors in the field, rather than in the ranks of the repeaters and imitators—people who will one day be fitted by the impetus they were given by the University to do much

† Absent on leave, spring semester, 1961.

<sup>1</sup> In residence fall semester, 1960-1961.

of the creative thinking concerning the content, form, and the intent of the material which is to be presented to our theater, motion picture, and television audiences.

The student majoring in theater arts must complete the courses required by the College of Applied Arts (page 39) and a common core of theater arts courses which forms the basis for more specialized work in the three fields of theater, motion picture, and television-radio:

*The Lower Division Courses.*—5A, 5B, 20A, 30, seven units from 40A to 40G; and, Humanities 1A-1B.

*The Upper Division Courses.*—105A or B or C, 130, 147, 149A, 149B, 149C, 149D, 150, 170A or B or C; English 113A, 113B, 117J, Classics 113; and, 10 units of controlled upper division electives in theater arts.

The major requires 43 units in theater arts courses, but in no case may more than 50 units apply on the 120 unit total required for the bachelor's degree.\*

A maximum of 18 units from the following courses may apply on the 120 unit total: 40A, 40B, 40C, 40D, 40E, 40F, 40G, 140A, 140B, 140C, 140E, 140F, 141, 142A, 142B, 143, 144, 146, and 149A, 149B, 149C, 149D.

The department also provides a major for those students seeking a general secondary credential. In addition to pursuing the following major, the student must be interviewed by a credential advisor in the School of Education concerning required courses in education.

#### *Language Arts (Theater Arts-English)*

*Preparation for the Major.*—Courses 5A, 5B, 20A, 30, 40A, 40B, 40E, 40F; English 1A, 1B, 46A, 46B, Journalism 2.

*The Major.*—Courses 103, 105A, 105C, 130, 149A, 149B, 149C, 149D, 150, 160, 170A; English 106L, 113A, 113B, 117J, and 3 units from 131, 132, or 190A, 190B; Education 130.

*Graduate Studies.*—At least 6 units completed in graduate status including Theater Arts 200, 231 and 2 units chosen from 270, 272, and 299. Students completing a field major in language arts (Theater Arts-English) may not offer a minor in English.

### **College of Letters and Science**

*Letters and Science List.*—Courses 5A, 5B, 101, 102, 104, 105A, 105B, 105C are included in the Letters and Science List of Courses. For regulations governing this list, see page 2.

### **Graduate Division**

#### *Admission to Graduate Status*

In addition to the general requirements of the Graduate Division, the applicant must:

1. Have completed the undergraduate theater arts major or its equivalent.
2. Provide the department with the results of certain diagnostic tests and letters of reference. Information regarding this requirement should be obtained from the chairman of the department at least three months prior to the beginning of the semester in which the student plans to enroll.
3. In the case of a motion picture major, provide the department with a plan for production or research project, which the candidate intends to complete during his program for the master's degree. The candidate must secure approval for his project before being admitted to graduate status.

#### *Requirements for the Master's Degree*

The Department of Theater Arts follows Plan I or Plan II. (See page 67.) The program requires at least one year (two semesters) of intensive study

\* Not applicable to students graduating during academic year, 1960-1961.

and laboratory exercises. In addition to the minimum courses for completion of the master's degree, the chairman of the department, in consultation with the other members of the student's advisory committee, may prescribe such additional courses as he believes are necessary to satisfy the educational needs of the student. All students are 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 candidate will place his emphasis upon the theater, motion pictures, television, or radio. Any extensive concentration in one area of study, such as theatrical and dramatic history and literature or playwriting, ordinarily extends the candidate's residency. Candidates who wish to place their major emphasis on playwriting must submit a long play or a number of short plays for admission to the program.

#### LOWER DIVISION COURSES

##### 5A-5B. History of Theater Arts. (2-2) I, II.

Lecture, two hours; laboratory, two hours.

The history of the development of theater, motion pictures, radio, and television as composite arts and social institutions. A study of the evolution of these arts as influenced by different cultures, traditions, and technologies.

**5A. Development of the stage from the primitive theater to the present day.** Mr. Goodman

(Replaces the former 24.)

**5B. Development of motion pictures and broadcasting from their beginnings to the present day.** Mr. Fielding

(Replaces the former 27.)

##### 20A. Acting Fundamentals. (2) I, II.

Mr. Morrison

(Replaces the former 2A.)

Lecture, two hours; laboratory, three hours.

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.

##### 20B. Acting Fundamentals. (2) I, II.

Mrs. Foulger

(Replaces the former 2B.)

Lecture, two hours; laboratory, three hours. Prerequisite: 20A or the consent of the instructor.

Intensive application of acting techniques through study and performance of selected scenes from stage, motion picture, and television scripts, involving problems of style in a wide range of dramatic materials.

##### 30. Fundamentals of Dramaturgy. (2) I, II.

Mr. Ripley

A course designed to stimulate the student's critical and creative faculties through the analysis of basic dramatic forms and the preparation of original material.

##### 40A-B-C-D-E-F-G. Theater Arts Techniques.

The following courses are concerned with the specific technical means used in the theater arts for communicating idea and emotion to an audience.

The student is required to take 7 units from the following list of courses.

##### 40A. Scenery. (2) I, II.

Mr. Lown, Mr. Schoppe

(Replaces former course 28A.)

Lecture, two hours; laboratory, two hours, plus assignments.

The analysis, planning and execution of staging concepts; the consideration of materials, construction methods, shop procedures and budget.

- 40B. Sound.** (1) I, II. Mr. Stureken, Mr. Driscoll  
 (Replaces former course 28E.)  
 Lecture, one hour; laboratory, two hours, plus assignments.  
 Procedures and techniques related to audio recording and reproduction.  
 The integration of sound with other elements of production.
- 40C. Camera.** (2) I, II. Mr. Fielding  
 (Replaces former course 181A.)  
 Lecture, two hours; laboratory, three hours.  
 Principles of lighting, pictorial composition, and camera operation.
- 40D. Editing.** (2) I, II. Mr. Driscoll  
 (Replaces former course 165A.)  
 Lecture, two hours; laboratory, three hours, plus additional hours to be arranged.  
 Editing principles and techniques. Laboratory practice in the creative and mechanical aspects of editing.
- 40E. Stage Lighting.** (2) I, II. Mr. Stureken  
 (Replaces former course 28C.)  
 Lecture, two hours; laboratory, two hours, plus assignments.  
 The design and application of stage lighting, including the study of instruments, control, color, and procedure.
- 40F. Costuming.** (2) I, II. Mrs. Hungerland  
 (Replaces former course 28B.)  
 Lecture, two hours; laboratory, two hours, plus assignments.  
 Costume analysis and construction techniques. Laboratory practice in the making of a costume from design to performance.
- 40G. Studio Operations.** (2) I, II. Mr. Kingson  
 (Replaces former course 125B.)  
 Lecture, two hours; laboratory, three hours.  
 Practice in the use of equipment and techniques necessary for studio and remote broadcasting.

## UPPER DIVISION COURSES

- 101. Introduction to Theater Arts.** (2) I, II. Mr. Freud  
 Lecture, two hours; laboratory, two hours.  
 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 nontechnical presentation for the general student. Not open for credit in the theater arts major.
- 102. History of the European Theater.** (2) I. Mr. Melnitz  
 (Replaces former course 102.)  
 A one-semester survey of the development of the theater, with emphasis on the contributions of Europe from the Greeks to the twentieth century, based upon the most authoritative critical studies in the field.
- 103. Theater Arts in the Secondary Schools.** (3) Miss Motter  
 Prerequisite: 30, 105A or 105B or 105C, 130 and 150.  
 Sec. 1. Limited to language arts (theater arts-English) majors. I.  
 Sec. 2. Limited to majors other than language arts (theater arts-English) majors. II.  
 Critical examination of the theater arts in the secondary field; study and discussion of production, direction and acting in the secondary school.



- 104. History of the American Theater.** (3) II. Mr. Freud  
(Replaces former course 104.)  
The history of the American theater from the Revolutionary War to the present.
- 105A-B-C. Main Currents in Theater Arts.** (2-2-2) I, II.  
The student is required to take one of the following three courses.
- 105A. Main Currents in Theater.** Mr. Goodman  
(Replaces former course 105.)  
Lecture, two hours.  
Critical examination of the leading theories of theater from 1887 to the present; study and discussion of modern styles of production. Required of theater majors only.
- 105B. Main Currents in Motion Pictures.** Mr. Gray  
(Replaces former course 169.)  
Lecture, two hours; laboratory, two hours.  
An historical and critical survey, with examples, of the motion picture to date both as a medium of mass communication and entertainment and as a developing art form. Required of motion picture majors only.
- 105C. Main Currents in Television-Radio.** Mr. Kingson  
(Replaces former course 135A.)  
Lecture, two hours; laboratory, two hours.  
Critical survey of radio and television here and abroad. Consideration of the social responsibilities and educational implications of broadcasting. Required of television-radio majors only.
- 108. Documentary and Educational Film.** (2) I, II. Mr. Rose  
(Replaces former course 180.)  
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 for child and adult audiences.
- 117A-117B. Marionettes and Puppetry.** (2-2) Yr. beginning either semester. Mr. Helstien  
(Replaces former courses 107A-107B.)  
Lecture, two hours; laboratory, four hours. Prerequisite: courses 40A and 40E; 117A to precede 117B; 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.
- 118A-118B. Creative Dramatics.** (2-2) I, II. Mrs. Fitzgerald  
(Replaces former course 108.)  
Lecture, two hours; laboratory, one hour. Prerequisite: 118A to precede 118B.  
Studies of the principles and procedures of the informal approach to children's drama through creative interpretations of literature.
- 119. Children's Theater.** (2) I, II. Mrs. Fitzgerald, Mr. Helstien  
(Replaces former course 109.)  
Theories and principles of production in the formal theater arts for children. Analysis and evaluation of appropriate theatrical forms.
- 120. Advanced Acting.** (3) I, II. Mr. Freud  
(Replaces former course 151.)  
Lecture, two hours; laboratory, six hours. Prerequisite: course 20A and the consent of the instructor.  
Advanced study and practice in the art of acting.

**121A. C. Problems of Acting in the Theater Arts. (3-3) I, II.**

Lecture, two hours; laboratory, four hours. Prerequisite: courses 20A, 120 and consent of the instructor.

**121A. Advanced Problems in Acting for the Stage.**

Mr. Boyle

(Replaces former course 159B.)

**121C. Advanced Problems in Acting for Television and Radio.**

Mr. Wollock

(Replaces former course 111A.)

**122. Broadcast Speech. (2) I, II.**

Mr. Kingson

(Replaces former course 112.)

Lecture, two hours; laboratory, two hours.

Study and practice of techniques used in announcing, news commentation, and discussion in television and radio programs.

**130. Problems of Writing for Theater Arts. (3) I, II.**

Mr. Hatch, Mr. Friedman, Miss Arzner, Mr. Savage

(Replaces former course 106.)

Prerequisite: course 30 or the equivalent.

Application of dramaturgic principles to the preparation of material for production in theater arts.

**132. Writing for Motion Pictures. (3) I, II.**

Mr. Gray

(Replaces former course 166B.)

Prerequisite: courses 30, 130 and consent of the instructor.

Advanced course in the preparation of screenplays under supervision.

**133. Writing for Television-Radio. (3) I, II.**

Mr. Hatch

(Replaces former course 116B.)

Prerequisite: courses 30, 130 and consent of the instructor.

An advanced course in the preparation of original television plays under supervision.

**134A-134B. Manuscript Evaluation for Production. (2-2) Yr. Mr. Savage**

(Replaces former course 190A-190B.)

Prerequisite: courses 30, 130 and consent of the instructor.

Principles and practices in the evaluation of manuscripts for theater, motion pictures, television, or radio production.

**140A. Advanced Scenery. (2) II.**

Mr. Lown

(Replaces former course 140.)

Lecture, two hours; laboratory, two hours. Prerequisite: course 40A.

Study of technical methods of staging theater productions, including design analysis related to production rigging, shifting, and construction techniques.

**140B. Advanced Motion Picture Sound. (2) I, II.**

Mr. Ripley

Lecture, three hours; laboratory, three hours. Prerequisite: course 40B or consent of the instructor.

An advanced study of the creative use of sound, including the technical procedures of motion picture sound recording and reproduction.

**140C. Advanced Motion Picture Photography. (2) I, II.**

Mr. Fielding

(Replaces former course 181B.)

Lecture, three hours; laboratory, three hours, plus additional hours to be arranged. Prerequisite: course 40C.

The theories and disciplines of the cinematographic process. Control of photographic image through studio lighting, pictorial composition, camera movement and sensitometry.

- 140D. Motion Picture Editing.** (3) I, II. Mr. C. Young  
(Replaces former course 165B.)  
Lecture, two hours; laboratory, three hours, plus additional hours to be arranged. Prerequisite: course 40D and consent of the instructor.  
A study of the role of editing in the creation of the motion picture. Laboratory practice in the creative aspects of film editing.
- 140E. Advanced Stage Lighting.** (2) I. Mr. Hearn  
(Replaces former course 141.)  
Prerequisite: course 40E or consent of the instructor.  
The study of stage lighting as an art; the interpretation of a script through the control of light and color in relation to design, actor, and audience.
- 140F. Advanced Costuming.** (2) I, II. Mrs. Hungerland  
(Replaces former course 142.)  
Lecture, two hours; laboratory, two hours. Prerequisite: course 40F or consent of the instructor.  
Advanced study of historical costume and the interpretation of theatrical costume design through the use of patterns, fabrics, and related costume techniques.
- 141. Costume Design for Theater.** (2) I, II. Mr. Jones  
(Replaces former course, Art 166.)  
Lecture, one hour; laboratory, three hours.  
Design of costumes for theatrical presentations. The study of the use of silhouette, fabrics, color, and decoration as related to theatrical characterization.
- 142A. Color Cinematography.** (2) I, II. Mr. Trimble  
(Replaces former course 182A.)  
Prerequisite: course 40C or consent of the 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.
- 142B. Color Cinematography.** (2) II. Mr. Fielding  
(Replaces former course 182B.)  
Lecture, two hours; laboratory, three hours. Prerequisite: courses 40C, 140C, 142A and consent of the instructor.  
A laboratory course in the creative applications of color cinematography. The use of contemporary color film stocks, optical systems, single and multi-film color cameras, and studio production techniques to enhance the visualization of dramatic statements.
- 143. Scene Painting.** (1) I, II. Mr. Jones  
(Replaces former course 143.)  
Lecture, one hour; laboratory, one hour.  
The study of scenic painting techniques and materials and their relation to the interpretation of scenic design.
- 144. Make-Up for Theater, Television and Motion Pictures.** (1) I, II. Mr. Jones  
(Replaces former course 163.)  
Lecture, one hour; laboratory, one hour.  
The art of make-up and its relation to the production as a whole. History, aesthetics, materials, and procedures of make-up.
- 145. Motion Picture Techniques for Research and Instruction.** (3) I, II. Mr. Driscoll  
(Replaces former course 185.)

Lecture, two hours; laboratory, three hours.

An elementary course in the making of educational, scientific, and documentary films intended to serve workers in the professions. Class projects in the writing, planning, photography, editing, and recording of research and instructional films. Not open for credit in the Theater Arts major.

**146. Cinematic Effects.** (2) I. Mr. Fielding

Lecture, two hours; laboratory, three hours. Prerequisite: consent of the instructor.

A study of the theory and literature of special processes in contemporary cinematography. Evaluation and experimental use of these processes.

**147. Design for Theater Arts.** (3) I, II. Mr. Schoppe

(Replaces former course 167A.)

Lecture, two hours; laboratory, three hours. Prerequisite: course 40A or consent of the instructor.

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. Translation of ideas into visual form.

**148A-148B. Problems in Design for Theater Arts.** (3-3) I, II.

Lecture, two hours; laboratory, three hours. Prerequisite: courses 40A, 147 and consent of the instructor.

**148A. Advanced study in design for theater.** Mr. Jones

(Replaces former course 148B.)

**148B. Advanced study in design for motion pictures and television.**

(Replaces former course 167B.)

Mr. Schoppe

**149A, B, C, D. Production Operation in Theater Arts.** (1-1-1-1) I, II.

The student is required to take all units of this course. Mr. Lown

Supervised assignment in scenery, property, costume construction, lighting, sound recording, scene-changing, and management related to the production programs of the department.

**150. Direction for Theater Arts.** (3) I, II. Mr. Hearn, Mr. Hawkins,

Mr. Post, Mr. Selden, Mr. Goodman, Mr. Helstien

(Replaces former course 156A.)

Lecture, two hours; laboratory, three hours. Prerequisite: courses 30 and 130.

A basic study of the director's function in the interpretation of dramatic material for an audience.

**152A. Advanced Theater Direction.** (3) I, II. Mr. Hatch

(Replaces former course 156B.)

Lecture, two hours; laboratory, to be arranged. Prerequisite: courses 30, 130, 150, and 170A.

Special problems in the direction of the one-act play for the stage.

**152B. Advanced Motion Picture Direction.** (3) I, II.

(Replaces former course 164C.)

Mr. J. Young, Miss Arzner

Lecture, two hours; laboratory, to be arranged. Prerequisite: courses 30, 40C, 40D, 130, 150, and 170B.

A study of the director's use of the motion picture medium in the interpretation of dramatic material.

**152C. Advanced Television Direction.** (3) I, II. Mr. Bretz

(Replaces former course 139A.)

Lecture, two hours; laboratory, to be arranged. Prerequisite: courses 30, 130, 150, and 170C.

A study of the director's use of the television medium in the interpretation of dramatic material.

**160. Principles of Administration in Theater Arts.** (3) I, II.

(Replaces former courses 128A and 154.)

Mr. Kingdon, Mr. Morrison

Lecture, two hours; quiz section, one hour.

A study of the artistic, social, and economic criteria for decision-making in the administration of the theater arts and the processes for carrying out those decisions. Considerations governing decisions affecting management of the various producing bodies in the theater arts.

**170A, B, C. Workshop in Theater Arts.** (3-3-3) I, II.

The student is required to take one of the following three courses.

Lecture, two hours; laboratory, six hours. Prerequisites: courses 30, 130 and 150; to 170B add courses 40C and 40D.

Production in the theater arts. The translation of ideas and concepts into their ultimate dramatic form.

**170A. Workshop in Theater.**

Mr. Sturcken, Mr. Jones

(Replaces former course 159A.)

**170B. Workshop in Motion Pictures.**

(Replaces former course 179A.)

Mr. Rose, Mr. Fielding, Mr. Driscoll

**170C. Workshop in Television.**

Mr. Miller

(Replaces former course 139B.)

**171. Advanced Theater Arts Workshop.** (3) I, II.

(Replaces former course 179B.)

Mr. Ripley, Mr. Post, Mr. Morrison

Lecture, two hours; laboratory, six hours. Prerequisite: consent of the staff.

Advanced production in theater arts.

**172. Radio Workshop.** (3) I, II.

Mr. Miller

(Replaces former course 129A.)

Lecture, two hours; laboratory, four hours. Prerequisite: consent of the instructor.

A basic laboratory course offering practice in the preparation of radio programs.

**173. Workshop in Educational Television and Radio.** (3) I.

Mr. Bretz

(Replaces former course 123.)

Lecture, two hours; laboratory, four hours.

Script and production problems of school broadcasting. The use of radio in the classroom to stimulate creative self-expression. Demonstration of educational broadcast on tape and film and production practice under studio conditions. Not open for credit in the Theater Arts major.

**180. Motion Picture Animation.** (3) I, II.

Mr. Shull

(Replaces former course 170.)

Lecture, three hours; laboratory, three hours.

History and use of speech, rhythm, and graphic design to form effective communication on film.

**181. Advanced Motion Picture Animation.** (3) I, II.

Mr. Shull

(Replaces former course 171.)

Lecture, three hours; laboratory, three hours. Prerequisite: course 180 and consent of the instructor.

Research and practice in creative writing and planning for the animated film.

- 182. Motion Picture Animation Workshop.** (3) I, II. Mr. Shull  
(Replaces former course 172.)  
Lecture, three hours; laboratory, three hours. Prerequisite: course 180 and consent of the instructor.  
Organization and integration of the various creative arts used in animation to form a complete study of a selected topic.
- 199. Special Studies in Theater Arts.** (1-4) I, II. Mr. Selden and The Staff  
Prerequisite: senior standing and consent of the instructor.

## GRADUATE COURSES

- 200. Bibliography and Methods of Research in Theater Arts.** (2) I, II.  
Mr. Friedman, Mr. Goodman, Mr. Gray
- 201. The Background of Theatrical Art.** (3) I, II. Mr. Boyle  
An analysis of the aesthetic principles and content of the theater.
- 206A-206B. Advanced Playwriting.** (3-3) Yr. Mr. Savage, Mr. Selden  
Guided completion of a full-length play, or study and preparation for the writing of a thesis play.
- 220. Policies and Problems of Television and Radio Broadcasting.** (3) II.  
Mr. Kingson  
Advanced study in comparative radio and television broadcasting, with special emphasis upon British, Canadian, Continental, and Australian systems.
- 231. The Teaching of Secondary School Dramatics.** (2) II. Mr. Morrison  
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.
- 235. Advanced Motion Picture Editing.** (3) I, II. Mr. C. Young  
Prerequisite: courses 40D, 140D, and consent of the instructor.  
Study and analysis of the editor's creative contribution to the structure and final form of the picture. The basis of rhythmic and dynamic montage, and application of all types of special effects.
- 239. Film Aesthetics.** (3) I. Mr. Gray  
Study and analysis of the film in relation to other art forms.
- 240. Technical Methods and Practices in the Theater.** (3) I, II. Mr. Hearn  
Advanced studies in theater production planning and budgeting, theater architecture, stage design and lighting.
- 270. Seminar in the Documentary and Educational Film.** (3) I, II. Mr. Rose  
Analysis of the nonfiction film in relation to the development of documentary and educational film scripts.
- 271. Seminar in the Fiction Film.** (3) II. Mr. Gray  
Analysis of the technique employed in the fictional film; exercise in the preparation of story material and the development of fictional scripts.
- 272. Seminar in Theater History.** (3) I, II. Mr. Melnitz, Mr. Freud  
Exploration of a selected area of theatrical history. Guided reading in University, Clark, and Huntington libraries. Presentation of fully annotated written report of independent investigation.
- 290. Research Projects in Theater Arts.** (1) I, II.  
Section 1. In Theater. Mr. Melnitz, Mr. Morrison and Staff  
Section 2. In Motion Pictures.  
Section 3. In Television or Radio.

**291. Production Planning in Theater Arts.** (1) I, II. Mr. Hearn and Staff  
 Section 1. In Theater.  
 Section 2. In Motion Pictures.  
 Section 3. In Television or Radio.

**292. Advanced Problems in Nondramatic Television and Radio.** (3-5) I, II.  
 Mr. Miller

A lecture and projects course in the writing and production of documentary programs. The course is designed to explore the field of documentary radio programs from the standpoint of subject matter and develop new techniques in writing and production.

**299A-299B. Special Problems in Theater Arts.** (2-5; 2-5) I, II. The Staff

Practical creative work in the area of theater arts which the student has designated his area of emphasis. Study may be pursued in the following areas: theatrical production, motion picture production, audio-visual educational production, television production, radio writing and production, and original research in theater arts.

#### RELATED COURSES IN OTHER DEPARTMENTS

**Education 139. Audio-Visual Media of Instruction.** (2) I, II. \_\_\_\_\_

**Education 247A-247B. Audio-Visual Education. Advanced.** (2-2) Yr. \_\_\_\_\_

**Education 269A-269B. Audio-Visual Education. Seminar.** (2-2) Yr. \_\_\_\_\_

**English 106D-106E. Fundamentals of Dramatic Writing.** (3-3) Yr.  
 Mr. Savage

**English 113A. British and Continental Drama, 1500-1850.** (3) I, II.  
 Mr. Wadsworth, Mr. Smith

**English 113B. Modern Drama.** (3) I, II. Mr. Wadsworth, Mr. Smith

**English 118. Children's Literature.** (3) I, II. Mrs. Sayers

**English 262A-262B. Shakespeare.** (3-3) Mr. Phillips, Mr. Smith

**English 262D. Studies in Elizabethan Drama.** (3) Mr. Smith

**English 263C. Studies in Drama, 1660-1790.** (3) Mr. Smith

**Integrated Arts 1A-1B. Man's Creative Experience in the Arts.** (3-3) Yr.  
 Mr. With

**Psychology 267. Mass Communication as a Social Force.** (2) I. Mr. Fearing

## TURKISH

For courses in Turkish, see under Department of Near Eastern Languages.

## ZOOLOGY

(Department Office, 2203 Life Sciences Building)

Gordon H. Ball, Ph.D., *Professor of Zoology.*

George A. Bartholomew, Ph.D., *Professor of Zoology (Chairman of the Department).*

Theodore H. Bullock, Ph.D., *Professor of Zoology.*

- †Raymond B. Cowles, Ph.D., *Professor of Zoology.*  
 Frederick Creacitelli, Ph.D., *Professor of Zoology.*  
 †Waldo H. Furgason, Ph.D., *Professor of Zoology (Life Sciences).*  
 Theodore L. Jahn, Ph.D., *Professor of Zoology.*  
 Edgar L. Lazier, Ph.D., *Professor of Zoology.*  
 A. Mandel Schechtman, Ph.D., *Professor of Zoology.*  
 Fritiof S. Sjöstrand, M.D., Ph.D., *Professor of Zoology.*  
 Clara M. Szego (Clara Szego Roberts), Ph.D., *Professor of Zoology.*  
 Bennet M. Allen, Ph.D., *Professor of Zoology, Emeritus.*  
 Loye Holmes Miller, Ph.D., *Professor of Biology, Emeritus.*  
 Bernard C. Abbott, Ph.D., *Associate Professor of Zoology.*  
 Nicholas E. Collias, Ph.D., *Associate Professor of Zoology.*  
 Thomas R. Howell, Ph.D., *Associate Professor of Zoology and Curator of the Dickey Ornithological Collection.*  
 Blaine H. Levedahl, Ph.D., *Associate Professor of Zoology.*  
 Henry J. Thompson, Ph.D., *Associate Professor of Botany (Life Sciences).*  
 †Boyd W. Walker, Ph.D., *Associate Professor of Zoology.*  
 Sarah Rogers Atsatt, Ph.D., *Associate Professor of Zoology, Emeritus.*  
 David P. Bloch, Ph.D., *Assistant Professor of Zoology.*  
 Albert A. Barber, Ph.D., *Assistant Professor of Zoology.*  
 Richard A. Boolootian, Ph.D., *Assistant Professor of Zoology.*  
 Elof A. Carlson, Ph.D., *Assistant Professor of Zoology.*  
 Malcolm S. Gordon, Ph.D., *Assistant Professor of Zoology.*  
 †Donald Heyneman, Ph.D., *Assistant Professor of Zoology.*  
 Thomas W. James, Ph.D., *Assistant Professor of Zoology.*  
 J. Lee Kavanau, Ph.D., *Assistant Professor of Zoology.*  
 Otto H. Scherbaum, Ph.D., *Assistant Professor of Zoology.*  
 Richard W. Siegel, Ph.D., *Assistant Professor of Zoology.*  
 Frederick B. Turner, Ph.D., *Visiting Assistant Professor of Zoology.*  
 Peter Vaughn, Ph.D., *Assistant Professor of Zoology.*  
 Kenneth W. Allen, Ph.D., *Lecturer in Zoology.*  
 Kenneth S. Norris, Ph.D., *Lecturer in Zoology (Life Sciences).*



- Jowett C. Chao, Ph.D., *Assistant Research Zoologist.*  
 Lyle Herbst, M.A., *Lecturer in Life Sciences.*  
 John B. Loefer, Ph.D., *Research Associate.*

*Letters and Science List.*—All undergraduate courses in this department except 11H, 136, and 370 are included in the Letters and Science List of Courses. For regulations governing this list, see page 2.

*Preparation for the Major.*—Required: courses 1A, 1B, Chemistry 1A, 1B, Physics 2A, 2B, or 1A, 1B, 1C, 1D. Recommended: German, French, and English 1B, or English 106S.

*The Major.*—Twenty-two units of upper division work in zoology and 6 units of upper division work chosen from zoology or from approved related courses in anthropology, bacteriology, botany, chemistry, entomology, home economics, mathematics, paleontology, physics, or psychology. Of the 22 upper division units in zoology, at least one course must be taken in each of the following groups:

- Group 1: Courses 101A, 109, 142.
- Group 2: Courses 100A, 106.
- Group 3: Courses 112, 134.
- Group 4: Course 130A.

† Absent on leave, 1960–1961.

‡ Sabbatical in residence, 1960–1961.



**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 6 units of Honors Research (Zoology 190) during the senior year. At the discretion of the staff, Honors students may be exempted from certain courses otherwise required for the major. During their final term, Honors candidates are required to submit and to defend orally before a faculty committee a written thesis describing the results of their research. Prerequisites for admission to candidacy for Honors in Zoology are a cumulative grade-point average of 3.0 in Zoology courses and permission of the Departmental Honors Committee. Applications for admission to Honors work should be made during the second semester of the junior year.

**Curriculum for Medical Technologists.** For details, see pages 15 and 107.

**1A. General Zoology.** (4) I, II. Mr. Allen, Mr. Boolootian  
Lecture, two hours; laboratory, six hours; field trip.

Principles of animal biology, with emphasis on the invertebrates. Offered primarily for zoology majors, premedical, and pre dental students.

**1B. General Zoology.** (4) I, II. Mr. Howell, Mr. Gordon  
Lecture, two hours; laboratory, six hours. Prerequisite: course 1A.

Principles of animal biology, with emphasis on comparative gross and microscopic anatomy and physiology of the vertebrates.

**4. Histological Technique.** (2) I. Mr. Bloch  
Lecture and laboratory, six hours. Prerequisite: course 1B or the equivalent, or consent of the instructor.

**15. Elementary Zoology and Physiology.** (5) I, II. Mr. Levedahl, Mr. Scherbaum  
Lecture, three hours; laboratory, six hours. Not open to premedical, pre dental, or zoology majors.

**25. General Human Anatomy.** (3) I, II. Mr. Vaughn  
(Former number, 35.)

Lecture, two hours; laboratory, three hours. Prerequisite: course 15 and sophomore standing.

#### UPPER DIVISION COURSES

**100A. Vertebrate Embryology.** (4) I. Mr. Schechtman  
(Formerly numbered 100.)

Lecture, two hours; laboratory, six hours. Prerequisite: courses 1A, 1B, or the equivalent.

Study of embryologic development of the main classes of vertebrates, with emphasis in the laboratory on the amphibian, bird, and mammal.

**\*100B. Mammalian Embryology.** (3) II. Mr. Schechtman  
Lecture, two hours; laboratory, three hours. Prerequisite: course 100A.

The development of mammals, with emphasis on man and common laboratory mammals; selected topics on the physiology of the fetus and placental function.

**101A. Introduction to General Physiology.** (3) I, II. Mr. Crescitelli, Mr. Scherbaum

Prerequisite: courses 1A, 1B, or the equivalent. Chemistry 1A, 1B, 5A, 8; Physics 2A, 2B, or the equivalent are recommended.

Special emphasis on the physical and chemical properties of protoplasm; osmotic relations and permeability of living cells; physiological action of ions and principles of enzyme action.

\* Not to be given, 1960-1961.

- 101B. General Physiology.** (3) II. Mr. Crescitelli  
Prerequisite: course 101A.  
Continuation of course 101A with emphasis on oxidation-reduction systems, excitation, inhibition, respiration, and muscle contraction.
- 101C. Laboratory in General Physiology.** (3) II. Mr. Levedahl  
Laboratory, six hours; discussion, one hour. Prerequisite: course 101A, 101B. Course 101B may be taken concurrently.
- 102. Vertebrate Physiology.** (3) II. Mr. James  
Prerequisite: upper division standing.  
Physiology of those systems which are concerned with the integration of body functions and with determination of behavior, with special emphasis on reflexes, motor coordination, and visceral functions. Designed particularly for majors in psychology and related fields. Not open to premedical, pre dental, or zoology majors.
- 103. Experimental Embryology.** (3) II. Mr. Kavanau  
Prerequisite: courses 1A, 1B, or the equivalent.  
Principles governing histological and morphological differentiation; and analysis of the factors involved in growth and differentiation of cells and tissues.
- 103C. Experimental Embryology Laboratory.** (2) II. Mr. Kavanau  
Prerequisite or concurrent: course 103.
- 106. Comparative Anatomy of the Vertebrates.** (4) II. Mr. Vaughn  
Lecture, two hours; laboratory, six hours. Prerequisite: course 1B.  
A study of the major concepts of vertebrate morphology, with particulars drawn from embryonic and fossil materials, as well as recent adult forms. Laboratory study mainly of the shark and cat.
- 107. Microanatomy.** (4) I. Mr. Sjöstrand  
Lecture, two hours; laboratory, six hours. Prerequisite: course 1B.  
The structure and activities of cells and tissues, with emphasis on the mammals. Designed for zoology majors.
- 109. Comparative Vertebrate Physiology.** (4) I, II. Mr. Abbott, Mr. Gordon  
Prerequisite: course 1B, or equivalent. Chemistry 8, Physics 2A, 2B are recommended.  
A survey of the physiology of organ systems of the vertebrates.
- \*110. Protozoology.** (4) II. Mr. Ball  
Lecture, two hours; laboratory, six hours. Prerequisite: course 1A.
- 111. Parasitology.** (2) I. Mr. Ball  
Prerequisite: course 1A.
- 111C. Parasitology Laboratory.** (2) I. Mr. Ball  
Prerequisite or concurrent: course 111.
- 111H. Laboratory Aide Training in Parasitology.** (2) I. Mr. Ball  
Prerequisite or concurrent: course 111C.  
For persons intending to become laboratory technologists.
- 112. Invertebrate Zoology.** (4) I. Mr. Boolootian  
Lecture, two hours; laboratory and field, six hours. Prerequisite: upper division standing and general zoology.  
A survey of structure, classification, natural history, and ecology of invertebrates.

**115. Helminthology. (4) II.**

Mr. Allen

Lecture, two hours; laboratory, six hours. Prerequisite: upper division standing and general zoology.

A general course in the helminth parasites of animals.

**118A. Introductory Endocrinology. (3) I.**

Miss Szego

Prerequisite: course 1B or the equivalent. Chemistry 8 recommended.

A survey of the influences of hormonal mechanisms on body structure and function.

**118B. Advanced Endocrinology. (3) II.**

Miss Szego

Lecture, two hours; discussion and conference, one hour. Prerequisite: course 118A, Chemistry 8.

Continuation of course 118A. Detailed analysis of selected endocrine interrelationships and discussion of current research in the field.

**118C. Endocrinology Laboratory. (3) II.**

Miss Szego

Laboratory, six hours; discussion, one hour. Prerequisite or concurrent: course 118B and consent of the instructor.

**119. Isotopic Tracers in Biology. (3) I.**

Mr. Barber

Lecture, two hours; discussion or demonstration, one hour. Prerequisite: one of the following: courses 101A, 118A, and 118B; Botany 160A; Bacteriology 106; or Chemistry 108A.

The use of isotopic tracers in the study of biological processes, including methods, problems investigated, interpretation of data, and possible future developments. For majors in the biological sciences.

**122. Introduction to the Nervous System. (4) I.**

Mr. Bullock

Lecture, three hours; laboratory, three hours. Prerequisite: course 1B, 15 or 102.

Structural and functional principles of the nervous system as general biological phenomena.

**†123. Invertebrate Embryology. (3) I.**

Mr. Kavanau

Lecture, two hours; laboratory, three hours. Prerequisite: course 1A-1B or the equivalent.

Study of the embryonic development of various invertebrates.

**125. Heredity and Evolution. (2) II.**

Mr. Siegel

Lecture, two hours. Prerequisite: junior standing. Not open to students who have taken course 1A, or to majors in zoology, botany, or bacteriology, or to premedical and pre dental students.

A survey of the concepts and facts basic to an appreciation of biologic systems and their evolutionary development.

**†126. Chemical Embryology. (3) I.**

Mr. Kavanau

Lecture, two hours. Prerequisite: course 103.

Chemical aspects of sex determination, gametogenesis, fertilization and early embryonic development.

**127. Immunobiology. (3) II.**

Mr. Schechtman

Lecture, three hours. Prerequisite: one year of biological sciences, or consent of the instructor.

Principles of antibody production and action and the applications of immunological reactions to the solution of biological problems.

† Given in alternate years, beginning 1961-1962.

‡ Given in alternate years, beginning 1960-1961.

- 129. Application of Optical Instruments to Biological Problems. (2) I.** Mr. James  
Lecture and demonstration, two hours. Prerequisite: Physics 1D or 2B.  
A course designed for students in the biological sciences to acquaint them with the microscope, its potentialities and its limitations.
- 130A. Introductory Genetics. (2) I, II.** Mr. Siegel, Mr. Carlson  
Lecture and discussion, two hours. Prerequisite: course 1A or the equivalent.  
The principles of heredity and their bearings on reproduction and evolution. Intended primarily for majors in zoology and bacteriology, and pre-dental and medical students.
- 130C. Genetics Laboratory. (2) I.** Mr. Carlson  
Laboratory, six hours. Prerequisite or concurrent: course 130A.  
Breeding experiments to illustrate the principles of genetics.
- 131A. Developmental Genetics. (2) I.** Mr. Carlson  
Lecture, two hours. Prerequisite: course 130A or Botany 140.  
The interaction of genes, cytoplasm, and environment in the inheritance and determination of cellular characters and differentiation.
- \*131B. Physiological Genetics. (2) II.** \_\_\_\_\_  
Lecture, two hours. Prerequisite: course 130A or Botany 140.  
The roles of genes in the regulation of physiological processes, particularly at the molecular level.
- \*131C. Advanced Genetics Laboratory. (2) II.** \_\_\_\_\_  
Laboratory, six hours. Prerequisite or concurrent: course 130C or Botany 140 or the equivalent, 131A or 131B or Botany 142, and consent of the instructor.  
Experiments to familiarize the student with the materials and methods of modern genetical research.
- 132A. General Cytology. (2) I.** Mr. Bloch  
Lecture, two hours. Prerequisite: course 1B.  
The structure and function of cytoplasm and nucleus of animal cells.
- 132B. Nuclear Cytology. (2) II.** Mr. Bloch  
Lecture, two hours. Prerequisite: course 130A.  
The morphology, chemical nature, and functions of the nucleus of animal cells, with emphasis on chromosomal structure and relation to genetics.
- 132C. Cytology Laboratory. (2) I.** Mr. Bloch  
Laboratory, six hours. Prerequisite or concurrent: course 132A or 132B.
- \*133. Biology of the Cold-blooded Terrestrial Vertebrates. (4) II.** Mr. Cowles  
Lecture, two hours; laboratory, six hours; field trips. Prerequisite: course 134.  
The systematics, distribution, physiology, and ecology of amphibians and reptiles.
- 134. Biology of the Vertebrates. (4) I, II.** Mr. Bartholomew, Mr. Collias  
Lecture, three hours; laboratory, three hours; field trips. Prerequisite: course 1B.  
The adaptations behavior, ecology, and distribution of vertebrates. This course is prerequisite to courses 133, 135, 136, and 141.

- \*135. Ichthyology. (4) I.** Mr. Walker  
Lecture, two hours; laboratory, six hours; field trips. Prerequisite: course 134.  
The evolution, systematics, ecology, and biology of fishes, with special emphasis on local marine forms.
- \*136. Fisheries Biology. (4) II.** Mr. Walker  
Lecture, two hours; laboratory, six hours. Prerequisite: course 134.  
Review of commercial and sport fisheries; methods of study and management.
- 138. Biology and Human Welfare. (3) I.** Mr. Turner  
Prerequisite: upper division standing, but no prerequisite courses.  
History of major contributions of biology to human welfare, health, economics, and philosophy; and a survey of the resulting problems and aspects.
- 139. Biological Effects of Radiation. (3) II.** Mr. Levedahl  
Prerequisite: upper division standing.  
General biological responses following exposure of plants, animals, and man to ionizing radiations, especially those emanating from products of nuclear reactions.
- \*140. Development of Biological Ideas. (3) I.** Mr. Furgason  
Prerequisite: upper division standing and at least one year in the biological Sciences.  
History of the biological sciences.
- 141. Advanced Ornithology. (4) II.** Mr. Howell  
Lecture, two hours; laboratory and field trips, six hours. Prerequisite: course 134 or consent of the instructor.  
The systematics, distribution, evolution, and field biology of birds.
- 142. Comparative Invertebrate Physiology. (4) II.** Mr. Bullock  
Lecture, two hours; laboratory, six hours. Prerequisite: courses 1A, 1B; recommended: courses 101, 112.  
A survey of the differences in mechanism among animal groups of the several organ systems, nervous, endocrine, nutritive, respiratory, excretory, reproductive, circulatory, receptor, effector, etc.
- 159. Physical Ecology. (2) II.** Mr. Bartholomew, Mr. Walker  
Prerequisite: course 1B.  
A survey of the physical and chemical factors of the environment as they affect the distribution and mode of life of animals.
- 190. Honors Research in Zoology. (1-5) I, II.** The Staff  
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.
- 199. Special Studies. (1-3) I, II.** The Staff  
Prerequisite: senior standing and consent of the instructor.

## GRADUATE COURSES

- 201. Advanced Cellular Physiology. (3) II.** Mr. Jahn  
Prerequisite or concurrent: course 101B.  
Permeability, salt accumulation, bioelectric phenomena, oxidation-reduction potentials, effect of temperature and cell metabolism.

\* Not to be given, 1960-1961.

- \*202A-202B-202C. Advanced General Physiology. (2-2-2) I.** Mr. Crescitelli  
Prerequisite: courses 101A, 101B.  
Among topics discussed are respiration, enzymes, nerve physiology, vitamins, tracer techniques, and physiology of growth.
- 204. Kinetics of Biological Systems. (2) I.** Mr. Levedahl  
Prerequisite: courses 101A-101B or Biochemistry 108A-108B. Recommended: calculus and physical chemistry.  
A consideration of the basis and practice of modern enzyme kinetics.
- 205. Experimental Cell Biology. (3) I.** Mr. James  
Lecture, one hour; laboratory, six hours. Prerequisite: course 101A or equivalent.  
The physiology of control mechanisms and the integration of metabolic systems at the cellular level. Individual experiments will be encouraged.
- 206. Advanced Vertebrate Morphology. (3) I.** Mr. Vaughn  
Lecture, one hour; laboratory, six hours. Prerequisite: course 106.  
Problems in vertebrate morphology with emphasis on evolution of the skeleton and muscles. Lectures, discussion, assigned reading and laboratory study of fossil and living vertebrates. Designed for students in vertebrate zoology.
- 208. The Vertebrate Eye. (2) II.** Mr. Crescitelli  
The morphology, physiology, and biochemistry of the vertebrate eye with special emphasis on its adaptive features.
- 210. Physiology of Protozoa. (2) I.** Mr. Jahn  
Lecture, two hours. Recommended: course 110.  
Protoplasmic structure, locomotion, motor responses, respiration, excretion, metabolism, growth and nutrition of protozoa, especially as compared with other groups of organisms.
- \*211. The Physiology of Animal Parasites. (2) II.** Mr. Heyneman  
Prerequisite: courses 101A, 111.  
Lectures on nutrition, metabolism, physiological ecology, and immunology and evolution of parasitic protozoa and helminths.
- 212. Advanced Invertebrate Zoology. (2) I.** Mr. Boolootian  
Prerequisite: course 112.  
Problems in functional adaptations, anatomy, development, and systematics of invertebrates; intraphyletic relationships as illustrated by an intensive study of one phylum.
- 219. Radiation Biology. (3) I.** Mr. Barber  
Lecture, two hours; laboratory, 3 hours. Prerequisite: course 101A or 109, 139 or consent of instructor.  
The effects of ionizing and ultraviolet radiation from the points of view of physiology, pathology, cytology, and genetics.
- \*230. Advanced Genetics. (2) II.** Mr. Siegel  
Prerequisite or concurrent: course 130A or Botany 140.  
Elucidation of genetics through the study of experimental animal cytogenetics, chromosomal alteration, position effect, irradiation effects, and mutations.
- \*231. Human Familial Genetics. (2) I.** \_\_\_\_\_  
Lecture, two hours. Prerequisite: course 130A.  
A survey of human genetics with emphasis on methodology.

\* Not to be given, 1960-1961.

- 232. Analytical Cytology. (2) II.** Mr. Bloch  
Prerequisite: course 132A or 132B.  
Lecture, one hour; laboratory, three hours.  
Application of physical and chemical methods to the determination of cell structure and function.
- 234. Advanced Cytology. (2) II.** Mr. Sjöstrand  
Prerequisite: course 132A, Chemistry 8, Physics 2A-2B.  
A discussion of classical problems in cytology and the attempts at their solution using the modern techniques of electron microscopy, cell fractionation and cytochemistry.
- 237. The Behavior of Animals. (3) II.** Mr. Collias  
Lecture, two hours; laboratory, three hours. Prerequisite: course 134.  
Principles of ethology, including ecological significance, underlying mechanisms, and evolution of behavior, with special reference to natural conditions.
- 240A. Physiology of Contractile Tissues and Muscle. (3) I.** Mr. Abbott  
Lecture, two hours; laboratory, three hours. Prerequisite: course 101A.
- 240B. Comparative Physiology of Circulatory Systems. (3) II.** Mr. Abbott  
Lecture, two hours; laboratory, three hours. Prerequisite: course 240A.
- 242. Comparative Neurology. (2) I.** Mr. Bullock  
Lecture, two hours.  
Evolution of structure and function of nervous systems in invertebrates and vertebrates, with special reference to the central nervous system.
- \*250. Survey of Animal Biology. (2) II.** Mr. Furgason  
Prerequisite: course 140 and consent of the instructor.  
A review of the basic concepts and theories of biological sciences as viewed with historical perspective and as related to contemporary viewpoints.
- \*251A-251B. Seminar in Ecology of Amphibia and Reptiles. (2-2) Yr.** Mr. Cowles
- 251C-251D. Seminar in Ecology of Birds and Mammals. (2-2) Yr.** Mr. Bartholomew, Mr. Howell
- 252A-252B. Seminar in Endocrinology. (2-2) Yr.** Miss Szego
- 253A-253B. Seminar in Genetics. (2-2) Yr.** Mr. Siegel  
Prerequisite: course 131A or 131B.
- 254A-254B. Seminar in Physiology of Development. (2-2) Yr.** Mr. Kavanau, Mr. Schechtman
- 255A-255B. Seminar in Protozoology and Parasitology. (2-2) Yr.** Mr. Ball
- \*256. Seminar in Genetics of Protozoa. (2) II.** Mr. Siegel  
Prerequisite: course 131A or 131B.
- 257. Seminar in Comparative Physiology. (2) II.** Mr. Bullock
- 258. Seminar in Physiology of Sense Organs. (2) II.** Mr. Abbott
- 260A. Seminar in Ichthyology. (2) I.** Mr. Walker, Mr. Gordon

\* Not to be given, 1960-1961.

- 260B. Seminar in Fisheries Biology. (2) II. Mr. Walker, Mr. Gordon
263. Seminar in Physiology of Microorganisms. (2) II. Mr. Jahn
264. Seminar in Kinetics of Biological Systems. (2) II. Mr. Levedahl
266. Seminar in Vertebrate Paleontology. (2) II. Mr. Vaughn
- 267A-267B. Seminar in Animal Cytology. (2-2) Yr. Mr. Bloch  
Prerequisite: any of the following: course 132A, 132B, 230, Botany 141.
268. Seminar on the Invertebrates. (2) II. Mr. Boolootian
269. Seminar in Animal Behavior. (2) I. Mr. Collias
270. Seminar in the Physiology of Growth. (2) I. Mr. Scherbaum
- 290A-290B. Research in Zoology. (2-6; 2-6) Yr. The Staff

#### PALEONTOLOGY

Courses in general and invertebrate paleontology are offered by the Department of Geology (see page 242).

#### LIFE SCIENCES

- 1A-1B. Fundamentals of the Life Sciences. (3-3) Yr. Mr. Norris, Mr. Thompson

Lecture, demonstration, discussion, three hours.

An integrated year-course designed primarily for students who are not majoring in the biological sciences. A nontechnical presentation of the fundamental biological concepts leading to an understanding of living things and man's place in the scientist's view of things. Both semesters must be satisfactorily completed to fulfill the College of Letters and Science requirement of at least 5 units of biological science.

370. Methods and Materials for Teaching Life Science. (3) II. Mr. Herbst  
Lecture, demonstration, field trips. Prerequisite: major in biological sciences, senior or graduate status, and one of the following courses: Botany 3, Zoology 112, 133, 134. Required of all prospective life science teachers who wish to secure the general secondary or junior college credential. It must be taken prior to practice teaching courses, Education G377, G378, and G379.

#### BIOLOGY:

12. Natural History. (3) I, II. Mr. Turner, Mr. Collias  
Lecture, three hours; demonstration, one hour; one required field trip in the semester. Prerequisite: high school biological science or the equivalent, or consent of the instructor.

The biology of the environment, the common animals and some plants of southern California; their interrelationships, and their relationship to climate.

‡ The attention of nonscience majors is called to Zoology 138, Biology and Human Welfare (see page 446). This course is designed for students not majoring in zoology.



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# **Administrative Bulletins of the University of California, 1960-1961**

The administrative bulletins of the University of California present information concerning the colleges, schools, and departments of the University. For copies of the bulletins or other information concerning instruction at Los Angeles, address the Office of Admissions, University of California, Los Angeles 24; for other bulletins, and for information concerning the departments at Berkeley, address the Registrar of the University of California, Berkeley 4; for information concerning instruction at Davis, address the Registrar, University of California, Davis; for information concerning instruction at Riverside, address the Registrar, University of California, Riverside; for bulletins concerning instruction at Santa Barbara, address the Registrar, University of California, Santa Barbara, Goleta; bulletins of the schools and colleges at the University of California, San Francisco Medical Center, San Francisco 22, may be had by addressing the deans in charge.

## **Bulletins Referring Primarily to the Departments of the University at Los Angeles**

- The Circular of Information, Departments at Los Angeles, containing general information about the University, requirements for admission, general regulations, students' fees and expenses, curricular offerings in the several colleges and schools, etc.
- The Announcement of Courses and Curricula, Departments at Los Angeles, containing requirements for the bachelor's degree in the Colleges of Letters and Science, Applied Arts, Agriculture, and Engineering, and in the Schools of Business Administration, Education, Law, and Nursing; for the master's and doctor's degrees; and announcements of courses of instruction in the departments at Los Angeles and La Jolla. Price, 40 cents.
- The General Catalogue, Departments at Los Angeles. A combination of the Circular of Information and the Announcement of Courses and Curricula. Price, 50 cents.
- The Announcement of the Graduate Division, Southern Section.
- The Announcement of the Graduate School of Business Administration.
- The Announcement of the College of Applied Arts.
- The Announcement of the Colleges of Engineering.
- The Announcement of the School of Business Administration, Los Angeles.
- The Announcement of the School of Education, Los Angeles.
- The Announcement of the School of Law, Los Angeles.
- The Announcement of the School of Medicine, Los Angeles.
- The Announcement of the School of Nursing, Los Angeles.
- The Announcement of the School of Social Welfare, Los Angeles.
- The Schedule of Classes, University of California, Los Angeles: containing the time schedule of exercises and an office directory of officers of instruction and administration. Published in May and December of each year for the semester immediately following. Price, 15 cents.
- The Annual Commencement Program (at Los Angeles), containing the list of degrees conferred, scholarships, prizes, and other honors.
- The Bulletins and Circulars of University Extension.

## **Other Bulletins Referring to Departments of the University at Los Angeles**

- The Announcement of the School of Public Health.
- The Bulletin of the College of Agriculture.

## PURPOSES OF A UNIVERSITY...



... to serve the whole society ...

\* The dynamics of progress have changed the university from a tiny band of scholars situated on the periphery of society to a large group of teachers and investigators operating at an intersection crossed by nearly all the paths of human activity; from a debating forum to a research laboratory; from an isolated retreat restricted to the contemplation of history, philosophy, the classics, and the arts to a vast intellectual enterprise devoted also to the social, physical, and biological sciences.

Some professors have transferred their investigations from the library into the factory and onto the farm. Today the university is much more an integral part of society than ever before.

CLARK KERR

President of the University

\* This is one of a series of statements explaining the rôle of the University of California.