

UNIVERSITY

OF

CALIFORNIA



GENERAL

CATALOGUE

1947 - 48

**HOWARD B. SHONTZ**  
**Recorder**

UNIVERSITY OF CALIFORNIA

# General Catalogue

*Admission and Degree Requirements*

*Announcement of Graduate and  
Undergraduate Courses of Instruction*

FALL AND SPRING SEMESTERS

**1947-1948**

AUGUST 15, 1947

*Primarily for Students in the*  
DEPARTMENTS AT BERKELEY

BERKELEY, CALIFORNIA

*Published by the*  
UNIVERSITY OF CALIFORNIA PRESS • BERKELEY AND LOS ANGELES

# CONTENTS

	PAGE
Calendar . . . . .	7
Regents of the University . . . . .	9
Administrative officers . . . . .	11

## THE UNIVERSITY

Composition of the University . . . . .	15
Administration . . . . .	17
Survey of curricula . . . . .	17
The four undergraduate colleges . . . . .	18
Professional curricula . . . . .	18
The professional schools . . . . .	19
The professional colleges . . . . .	21
Graduate curricula in engineering . . . . .	21
Special professional curricula . . . . .	22
University of California at Los Angeles . . . . .	22
Summer Sessions . . . . .	23
University Extension . . . . .	23
The University Library . . . . .	24

## ADMISSION TO THE UNIVERSITY

Admission in undergraduate status . . . . .	26
Admission in freshman standing . . . . .	26
Admission on basis of high school record . . . . .	26
Accrediting schools in California . . . . .	28
Responsibility of high school authorities . . . . .	28
Preparation for University curricula . . . . .	28
Admission by examination . . . . .	29
Admission of returning members of the armed forces . . . . .	29
Removal of admission deficiencies . . . . .	29
Admission in advanced standing . . . . .	30
Admission of special students . . . . .	31
Admission from schools and colleges in foreign countries . . . . .	32
Limitation of enrollment . . . . .	32
Late admission and registration . . . . .	33
Admission in graduate standing . . . . .	33

## GENERAL REGULATIONS

Routine of registration . . . . .	35
Medical and physical examination . . . . .	36
Student Health Service . . . . .	36
Physical Education and use of gymnasiums . . . . .	37
Subject A: English Composition . . . . .	37



	PAGE
American History and Institutions . . . . .	38
Military Science . . . . .	39
Naval Science . . . . .	40
Study-list regulations . . . . .	40
Candidacy for degrees . . . . .	41
Change of college or major . . . . .	41
Honors . . . . .	42
Credit and scholarship . . . . .	42
Grades of scholarship; grade points . . . . .	42
Minimum scholarship requirements . . . . .	44
Credit by examination . . . . .	45
Final examinations . . . . .	46
Removal of deficiencies . . . . .	47
Transcript of record . . . . .	48
Leave of absence and honorable dismissal . . . . .	49
Discipline . . . . .	49
Student self-government . . . . .	50

#### MISCELLANEOUS INFORMATION

Site, climate, and transportation . . . . .	51
General expenses and fees . . . . .	51
Rules governing residence . . . . .	55
Living accommodations . . . . .	56
Self-support and student employment . . . . .	58
Bureau of Occupations . . . . .	59
Bureau of Guidance and Placement . . . . .	59
Scholarships, prizes, and loans . . . . .	60

#### REQUIREMENTS IN THE SEVERAL COLLEGES, SCHOOLS, AND CURRICULA

College of Letters and Science . . . . .	61
Description of group majors and curricula . . . . .	70
Honors . . . . .	84
College of Agriculture . . . . .	86
College of Chemistry . . . . .	95
College of Dentistry . . . . .	98
College of Engineering . . . . .	100
College of Pharmacy . . . . .	117
Schools of:	
Architecture . . . . .	118
Business Administration . . . . .	121
Education . . . . .	124
Forestry . . . . .	130

PAGE

Jurisprudence . . . . .	134
Librarianship . . . . .	137
Medicine . . . . .	138
Nursing . . . . .	141
Optometry . . . . .	145
Public Health . . . . .	147
Social Welfare . . . . .	151
Curriculum in Hospital Dietetics . . . . .	154

COURSES OF INSTRUCTION

Announcement of courses of instruction offered in the departments at Berkeley . . . . .	155
Index . . . . .	477

# CALENDAR, 1947-1948

Referring Primarily to the Departments of the University at Berkeley

## FALL SEMESTER, 1947-1948

*Importance of early application:* In order to give time for necessary correspondence and for due notice to applicants who may be required to take examinations for admission, applications and credentials should be forwarded to the Director of Admissions at the earliest possible date.

- Aug. 15, Friday Final date for applications for admission to the fall semester and credentials to be filed with the Director of Admissions. Credentials received as late as this may not be evaluated in time for the enrollment of the student during the regular registration period.
- Aug. 26, Tuesday Applications for readmission to the fall semester to be filed with the Registrar by former students, graduate and undergraduate.
- Sept. 15, Monday Fall semester begins.
- Sept. 15, Monday Subject A Examination, 9 A.M.—12 M.
- Sept. 16, Tuesday Other qualifying examinations for admission to certain courses, including Chemistry 1A, Journalism 130A, and Mathematics 3 and 8A, will be held in the afternoon.
- Sept. 17, Wednesday } Registration of students, graduate and undergraduate, in the departments at Berkeley for courses of the fall semester.
- Sept. 18, Thursday }
- Sept. 19, Friday }
- Sept. 20, Saturday }
- Sept. 22, Monday Instruction begins.
- Oct. 2, Thursday All candidates for the degree of Associate in Arts, or for a bachelor's degree, who expect to complete the work for the degree in February, 1948, file announcement of candidacy before 5 P.M., at the Office of the Registrar, Administration Building.
- Oct. 6, Monday Last day for filing applications in candidacy for the master's degree, and the degree of Engineer to be conferred in February, 1948; office of the Dean of the Graduate Division, 207 Administration Building. All signatures required upon these applications must be obtained in advance.
- Oct. 13, Monday Columbus Day—an academic and administrative holiday.
- Oct. 14, Tuesday Last day for filing applications in candidacy for professional higher degrees (except the degrees of Engineer and Graduate in Architecture), and for the degree of Doctor of Philosophy, to be conferred in June, 1948; office of the Dean of the Graduate Division, 207 Administration Building. All signatures required upon these applications must be obtained in advance.
- Oct. 27, Monday Last day for filing applications and programs in candidacy for the certificates of completion of teacher-training curricula to be received in February, 1948; office of the Faculty Counseling Committee of the School of Education, 107 Haviland Hall.
- Nov. 22, Saturday Last day for filing in final form with the committees in charge, theses for professional higher degrees (except the degree of Engineer) and for the degree of Doctor of Philosophy, to be conferred in February, 1948.
- Nov. 27, Thursday Thanksgiving Day—an academic and administrative holiday.
- Nov. 27, Thursday } Thanksgiving Recess—an academic holiday.
- Nov. 29, Saturday }
- Dec. 22, Monday } Christmas recess—an academic holiday.
- Jan. 7, Wednesday }
- Dec. 25, Thursday Christmas Day—an academic and administrative holiday.
- Dec. 31, Wednesday Last day for students enrolled in the current session to file applications for undergraduate scholarships for 1948-1949.
- Jan. 1, Thursday New Year's Day—an academic and administrative holiday.

Jan. 8, Thursday Last day for filing in final form with the committees in charge, theses for the master's degree and the degree of Engineer, to be conferred in February, 1948.

Jan. 26, Monday }  
 Feb. 5, Thursday } Final examinations in the departments at Berkeley.  
 Feb. 5, Thursday } Fall semester ends.

### SPRING SEMESTER, 1948

Jan. 15, Thursday Applications for admission to the spring semester and credentials to be filed with the Director of Admissions.

Jan. 27, Tuesday Application for readmission to the spring semester to be filed with the Registrar by former students, graduate and undergraduate.

Feb. 12, Thursday Lincoln's Birthday—an academic and administrative holiday.

Feb. 16, Monday Spring semester begins.

Feb. 16, Monday Last day for entering students to file applications for undergraduate scholarships for 1948-1949.

Feb. 17, Tuesday }  
 Feb. 18, Wednesday } Registration of students, graduate and undergraduate, in the  
 Feb. 19, Thursday } departments at Berkeley for courses of the spring semester.  
 Feb. 20, Friday }  
 Feb. 21, Saturday }

Feb. 20, Friday Last day for filing applications for fellowships and graduate scholarships for 1948-1949.

Feb. 23, Monday Instruction begins.

Mar. 4, Thursday All candidates for the degree of Associate in Arts, or for a Bachelor's degree, who expect to complete the work for the degree in June, 1948, file announcement of candidacy before 5 P.M., at the office of the Registrar, Administration Building.

Mar. 8, Monday Last day for filing applications in candidacy for the master's degree and the degree of Engineer, to be conferred in June, 1948; office of the Dean of the Graduate Division, 207 Administration Building. All signatures required upon these applications must be obtained in advance.

Mar. 15, Monday Last day for filing applications in candidacy for professional higher degrees (except the degree of Engineer) and for the degree of Doctor of Philosophy, to be conferred in September, 1948; office of the Dean of the Graduate Division, 207 Administration Building. All signatures required upon these applications must be obtained in advance.

Mar. 15, Monday Last day for filing applications and programs in candidacy for the certificates of completion of teacher-training curricula, to be received in June, 1948; office of the Faculty Counseling Committee of the School of Education, 107 Haviland Hall.

Apr. 3, Saturday Last day for filing in final form with the committees in charge, theses for professional higher degrees (except the degree of Engineer) and for the degree of Doctor of Philosophy, to be conferred in June, 1948.

May 17, Monday Last day for filing in final form with the committees in charge, theses for the master's degree and the degree of Engineer, to be conferred in June, 1948.

May 31, Monday Memorial Day—an academic and administrative holiday.

June 7, Monday }  
 June 17, Thursday } Final examinations in the departments at Berkeley.

June 17, Thursday Spring semester ends.

## THE REGENTS OF THE UNIVERSITY

### REGENTS EX OFFICIO

His Excellency, EARL WARREN, B.L., J.D.  
Governor of California and President of  
the Regents  
Sacramento 14

GOODWIN J. KNIGHT  
Lieutenant-Governor of California  
344 S Las Palmas st, Los Angeles

SAM L. COLLINS  
Speaker of the Assembly  
Chapman bldg, Fullerton

ROY E. SIMPSON, M.A.  
State Superintendent of Public Instruc-  
tion  
531 Library and Courts bldg,  
Sacramento 14

ARTHUR J. McFADDEN, B.S., LL.B.  
President of the State Board of Agricul-  
ture  
1228 N Broadway, Santa Ana

ELGIN STODDARD  
President of the Mechanics Institute  
450 Mission st, San Francisco 5

STANLEY N. BARNES, A.B., J.D.  
President of the California Alumni Asso-  
ciation  
610 Title Insurance bldg, Los Angeles 13

ROBERT GORDON SPROUL, B.S., LL.D.,  
Litt.D.  
President of the University  
250 Administration bldg, Berkeley 4  
203 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.

JAMES KENNEDY MOFFITT, B.S., LL.D.  
(1948)  
599 Eighth st, San Francisco 3

EDWARD AUGUSTUS DICKSON, B.L. (1958)  
425 S Windsor blvd, Los Angeles 5

CHESTER HARVEY ROWELL, Ph.B., LL.D.  
(1952)  
149 Tamalpais rd, Berkeley 8

MORTIMER FLEISHHACKER (1950)  
1080 Mills bldg, San Francisco 4

JOHN FRANCIS NEYLAN, LL.D. (1960)  
Crocker First National Bank bldg, San  
Francisco 4

CHARLES COLLINS TEAGUE, LL.D. (1960)  
Santa Paula

SIDNEY M. EHRMAN, B.L., LL.B. (1948)  
700 Nevada Bank bldg, San Francisco 4

AMADEO PETER GIANNINI (1950)  
Bank of America, 300 Montgomery st,  
San Francisco 4

FRED MOYER JORDAN, A.B. (1954)  
242 North Canon dr, Beverly Hills

FREDERICK W. ROMAN, Ph.D., Litt.D.  
(1956)  
2101 S Gramercy pl, Los Angeles 7

EDWIN W. PAULEY, B.S. (1954)  
756 Broadway, Los Angeles 14

BRODIE E. AHLPORT, A.B. (1956)  
639 S Spring st, Los Angeles 14

EDWARD H. HELLER, A.B. (1958)  
600 Market st, San Francisco 4

NORMAN F. SPRAGUE, D.O. (1952)  
235 N Hoover st, Los Angeles 4

MAURICE E. HARRISON, A.B., J.D., LL.D.  
(1960)  
111 Sutter st, San Francisco 4

VICTOR R. HANSEN, LL.B. (1962)  
842 Title Insurance bldg, Los Angeles 13

*Officers of the Regents*

## OFFICERS OF THE REGENTS

His Excellency, Earl Warren, B.L., J.D.  
Governor of California  
President  
Sacramento 14

James K. Moffitt, B.S., LL.D.  
Chairman  
599 Eighth st, San Francisco 3

Robert M. Underhill, B.S.  
Secretary and Treasurer  
240 Administration bldg, Berkeley 4

James H. Corley, B.S.  
Comptroller  
250 Administration bldg, Berkeley 4

Jno. U. Calkins, Jr., B.L., J.D.  
Attorney  
910 Crocker bldg, San Francisco 4

Ashley H. Conard, B.L., J.D.  
Associate Attorney for the Regents and  
Attorney in Residence Matters  
910 Crocker bldg, San Francisco 4

George D. Mallory, A.B.  
Assistant Treasurer and Assistant  
Secretary  
240 Administration bldg, Berkeley 4

George F. Taylor, B.S.  
Assistant Secretary  
101 Administration bldg, Los Angeles 24



# THE UNIVERSITY OF CALIFORNIA

NOTE.—General information about instruction at Berkeley and Davis may be obtained by addressing the Registrar, University of California, Berkeley 4; for information about instruction at Los Angeles, address the Registrar, University of California, Los Angeles 24; for information about instruction at Santa Barbara College, address the Registrar, University of California, Santa Barbara College, Santa Barbara; information concerning the schools and colleges in San Francisco may be obtained by addressing the deans in charge. University publications available to inquirers are listed on the cover pages of this catalogue.

## ADMINISTRATIVE OFFICERS OF THE UNIVERSITY

### *President of the University:*

Robert G. Sproul  
250 Administration bldg, Berkeley 4  
208 Administration bldg, Los Angeles 24

### *Vice-President of the University and Dean of the College of Agriculture:*

Claude B. Hutchison  
101 Giannini Hall, Berkeley 4

### *Provost of the University:*

Clarence A. Dykstra  
208 Administration bldg, Los Angeles 24

### *Secretary and Treasurer of the Regents:*

Robert M. Underhill  
George D. Mallory, *Assistant Treasurer and Assistant Secretary*  
240 Administration bldg, Berkeley 4  
George F. Taylor, *Assistant Secretary*  
101 Administration bldg, Los Angeles 24

### *Attorney for the Regents:*

Jno. U. Calkins, Jr.  
Ashley H. Conard, *Associate Attorney for the Regents and Attorney in Residence Matters*  
910 Crocker bldg, San Francisco 4

### *Assistant to the President:*

George A. Pettitt  
225 Administration bldg, Berkeley 4

### *University Admissions Director:*

Herman A. Spindt  
125 Administration bldg, Berkeley 4  
105 Administration bldg, Los Angeles 24  
Edgar L. Lazier, *Director of Admissions*  
105 Administration bldg, Los Angeles 24  
Miss Elizabeth M. Roberts, *Assistant Director*  
121 Administration bldg, Los Angeles 24

### *Registrars:*

Thomas B. Steel  
Miss Constance M. Steel, *Associate Registrar*  
Clinton C. Gilliam, *Assistant Registrar*  
Miss Virginia F. Green, *Assistant Registrar*  
John T. Peterson, *Assistant Registrar*  
128 Administration bldg, Berkeley 4  
William C. Pomeroy  
Mrs. Nettie H. Zwick, *Assistant Registrar*  
146 Administration bldg, Los Angeles 24  
Lester B. Sands  
Santa Barbara College, Santa Barbara

### *Deans of the Graduate Division:* *Northern Section:*

Morris A. Stewart, *Assistant Dean*  
207 Administration bldg, Berkeley 4

### *Southern Section:*

Vern O. Knudsen  
136 Administration bldg, Los Angeles 24

### *Deans of Students:*

Hurford E. Stone  
———, *Dean of Men*  
Mrs. Mary B. Davidson, *Dean of Women*  
Miss Alice G. Hoyt, *Associate Dean of Women*  
C. C. Conrad, *Assistant Dean of Students*  
Chaffee E. Hall, Jr., *Assistant Dean of Men*  
Mrs. Catharine DeMotte Quire, *Assistant Dean of Women*  
201 Administration bldg, Berkeley 4  
———, *Dean of Undergraduates*  
Clyde S. Johnson, *Assistant Dean of Undergraduates*  
202 Administration bldg, Los Angeles 24  
Miss Jessie Rhulman, *Dean of Women*  
Mrs. Marie Vanderburg Howes, *Counselor*  
289 Administration bldg, Los Angeles 24

*Deans of the College of Agriculture :*

Claude B. Hutchison  
 Stanley B. Freeborn, *Assistant Dean*  
 101 Giannini Hall, Berkeley 4  
 Knowles A. Ryerson, *Assistant Dean*  
 College of Agriculture, Davis  
 Robert W. Hodgson, *Assistant Dean*  
 146 Physics-Biology bldg, Los Angeles 24

*Dean of the College of Applied Arts :*

\_\_\_\_\_, *Dean*  
 214 Josiah Royce Hall, Los Angeles 24

*Dean of the College of Business Administration :*

\_\_\_\_\_  
 250 Josiah Royce Hall, Los Angeles 24

*Dean of the College of Chemistry :*

Wendell M. Latimer  
 110 Gilman Hall, Berkeley 4

*Dean of the College of Dentistry :*

Willard C. Fleming  
 Medical Center, Third and Parnassus  
 avs, San Francisco 22

*Deans of the Colleges of Engineering :*

\*Morrrough P. O'Brien  
 Everett D. Howe, *Assistant Dean*  
 218 Engineering bldg, Berkeley 4  
 Llewellyn M. K. Boelter  
 346 Chemistry bldg, Los Angeles 24

*Dean of Hastings College of the Law :*

David E. Snodgrass  
 California bldg, 515 Van Ness av,  
 San Francisco 2

*Deans of the Colleges of Letters and Science :*

Alva R. Davis  
 210 Administration bldg, Berkeley 4  
 Paul A. Dodd, *Dean*  
 William G. Young, *Divisional Dean of Physical Sciences*  
 Franklin P. Rolfe, *Divisional Dean of the Humanities*  
 Albert W. Bellamy, *Divisional Dean of Life Sciences*  
 \_\_\_\_\_, *Divisional Dean of Social Sciences*  
 232 Administration bldg, Los Angeles 24

*Dean of the College of Pharmacy :*

Troy C. Daniels  
 Medical Center, Third and Parnassus  
 avs, San Francisco 22

*Provost of Santa Barbara College :*

J. Harold Williams, *Acting Provost*  
 Santa Barbara College, Santa Barbara

*Dean of the School of Architecture :*

Warren C. Perry  
 A Architecture bldg, Berkeley 4

*Dean of the School of Business Administration :*

Ewald T. Grether  
 Perry Mason, *Associate Dean*  
 113 South Hall, Berkeley 4

*Deans of the Schools of Education :*

Frank N. Freeman  
 206 Haviland Hall, Berkeley 4  
 Edwin A. Lee  
 231 Education bldg, Los Angeles 24

*Dean of the School of Forestry :*

\_\_\_\_\_  
 231 Giannini Hall, Berkeley 4

*Dean of the School of Jurisprudence :*

Edwin D. Dickinson  
 107 Boalt Hall of Law, Berkeley 4

*Dean of the School of Librarianship :*

J. Periam Danton  
 217 Library, Berkeley 4

*Dean of the Medical School :*

Francis S. Smyth  
 Mayo H. Soley, *Assistant Dean*  
 Medical Center, Third and Parnassus  
 avs, San Francisco 22

*Dean of the School of Nursing :*

Miss Margaret A. Tracy  
 Miss Pearl Castile, *Assistant Dean*  
 Miss Mildred E. Newton, *Assistant Dean*  
 3578 Life Sciences bldg, Berkeley 4  
 Medical Center, Third and Parnassus  
 avs, San Francisco 22

*Dean of the School of Optometry :*

Kenneth B. Stoddard  
 301 LeConte Hall, Berkeley 4

*Dean of the School of Public Health :*

Edward S. Rogers  
 3579 Life Sciences bldg, Berkeley 4

*Dean of the School of Social Welfare :*

\_\_\_\_\_  
 2400 Allston way, Berkeley 4

*Director of Relations with Schools :*

Hiram W. Edwards  
 Harrison M. Karr, *Associate Director*  
 \_\_\_\_\_, *Assistant Director*  
 119 Administration bldg, Berkeley 4  
 105 Administration bldg, Los Angeles 24

\* Absent on leave, 1947-1948.

<sup>1</sup> In residence fall semester only, 1947-1948.

*Director of University Extension :*

Baldwin M. Woods  
 Boyd B. Rakestraw, *Associate Director  
 and Business Manager*  
 University Extension, Berkeley 4  
 130 Administration bldg, Los Angeles 24

*Director of the George Williams Hooper  
 Foundation (for Medical Research) :*

Karl F. Meyer  
 Medical Center, Third and Parnassus  
 avs, San Francisco 22

*Director of the Lick Observatory :*

C. Donald Shane  
 Lick Observatory, Mount Hamilton

*Director of the Scripps Institution of  
 Oceanography :*

Harald U. Sverdrup  
 Scripps Institution of Oceanography,  
 La Jolla

*Director of the Agricultural Experiment  
 Station :*

Claude B. Hutchison  
 Stanley B. Freeborn, *Assistant Director*  
 101 Giannini Hall, Berkeley 4

*Director of the Citrus Experiment Station :*

Leon D. Batchelor  
 Citrus Experiment Station, Riverside

*Director of the California School of Fine  
 Arts :*

Douglas MacAgy  
 800 Chestnut st, San Francisco 11

*Librarians :*

Donald Coney  
 John M. Cory, *Associate Librarian*  
 Douglas W. Bryant, *Assistant Librarian*  
 208 Library, Berkeley 4  
 Lawrence C. Powell  
 234 Library, Los Angeles 24

*Business Office :*

James H. Corley, *Comptroller (General  
 Business Manager)*  
 239 Administration bldg, Berkeley 4  
 101 Administration bldg, Los Angeles 24  
 William J. Norton, *Business Manager*  
 311 Administration bldg, Berkeley 4  
 George F. Taylor, *Business Manager*  
 101 Administration bldg, Los Angeles 24  
 F. Stanley Durie, *Business Manager*  
 Medical Center, San Francisco 22  
 Ira F. Smith, *Assistant Comptroller and  
 Business Manager*  
 College of Agriculture, Davis  
 W. D. Drew, *Business Manager*  
 Citrus Experiment Station, Riverside  
 J. A. D. Muncy, *Business Manager*  
 Santa Barbara College, Santa Barbara

*Chief Accounting Officer :*

Olof Lundberg  
 401 Administration bldg, Berkeley 4

*Chief Purchasing Agent :*

Lewis G. Baker  
 318 Administration bldg, Berkeley 4

*Manager of Insurance and Retirement  
 Systems :*

Henry H. Benedict  
 311 Administration bldg, Berkeley 4

*Chief Personnel Officer :*

Boynton S. Kaiser  
 329 Administration bldg, Berkeley 4

*Manager of the University Press :*

Samuel T. Farquhar  
 August Frugé, *Assistant Manager*  
 University Press, Berkeley 4  
 Franklin S. Fearing, *Assistant Manager*  
 350 Josiah Royce Hall, Los Angeles 24

*Manager of the Bureau of Guidance and  
 Placement :*

Lloyd Bernard  
 102 Administration bldg, Berkeley 4  
 123 Education bldg, Los Angeles 24

*Bureau of Occupations :*

Miss Vera Christie, *Placement Office Man-  
 ager*  
 South Hall Annex, Berkeley 4  
 Miss Mildred E. Foreman, *Placement  
 Office Manager*  
 35 Administration bldg, Los Angeles 24

*University Physicians :*

William G. Donald  
 Margaret Zeff, *Senior Physician*  
 Ernest V. Cowell Memorial Hospital,  
 Berkeley 4  
 William J. Norris  
 Donald S. MacKinnon, *Acting Director  
 of Student Health Service*  
 2 Library, Los Angeles 24  
 W. T. Robbins, *Director of Student  
 Health Service*  
 Santa Barbara College, Santa Barbara

*General Superintendent of Hospitals and  
 Infirmaries :*

F. Stanley Durie  
 University Hospital, Medical Center,  
 San Francisco 22

*Chief Superintendent of Grounds and  
 Buildings :*

E. A. Hugill  
 John W. Aljets, *Acting Chief Superin-  
 tendent*  
 Grounds and Buildings, Berkeley 4  
 Laurence H. Sweeney, *Principal Super-  
 intendent*  
 100 Mechanic Arts bldg, Los Angeles 24

*Foreign Student Adviser :*

Allen C. Blaisdell  
 International House

*Administrative Officers*

## VETERANS' AFFAIRS

*University Administrative Officers of Veterans' Affairs:*

Robert W. Webb, *State-wide Coördinator*  
321 Administration bldg, Los Angeles 24

James G. Siler, *Coördinator*  
Office Building F, Berkeley 4

Troy C. Daniels, *Coördinator*  
Medical Center, San Francisco 22

C. D. Woodhouse, *Coördinator*  
Provost's Office, Administration bldg  
Santa Barbara College, Santa Barbara

Knowles A. Ryerson, *Coördinator*  
204 Library-Administration bldg  
College of Agriculture, Davis

*United States Veterans' Administration Representatives:*

Ralph A. Proctor, *Senior Training Officer*

John J. Collins, *Training Officer*

Elizabeth Crosby, *Training Officer*

Gordon W. Smith, *Training Officer*  
Building E, Berkeley 4

Don F. Marrs, *Training Officer*  
142 Men's Gymnasium, Los Angeles 24

George M. Lott, *Contact Representative*  
224 Administration bldg, Los Angeles 24

Ralph E. Early, *Training Officer*  
115 Library-Administration bldg  
College of Agriculture, Davis

Kenneth Todd, *Training Officer*

Russell Erikson, *Assistant Training Officer*  
405 W Montecito st, Santa Barbara

*Veterans' Counseling Center (University Extension)*

Barbara A. Kirchheimer, *Manager*  
Office building C, Berkeley 4

# THE UNIVERSITY OF CALIFORNIA

FOUNDED 1868

THE UNIVERSITY OF CALIFORNIA is composed of academic colleges, professional schools, divisions, departments of instruction, museums, libraries, research institutes, bureaus and foundations, and the University of California Press, situated on eight different campuses throughout the State, namely: Berkeley, Los Angeles, San Francisco, Davis, Riverside, Mount Hamilton, La Jolla, and Santa Barbara. A list of the divisions on each campus follows:

## I. AT BERKELEY

### The Colleges of

Letters and Science

Agriculture (including the Department of Agriculture, the Agricultural Experiment Station, and the Agricultural Extension Service)

Chemistry

Engineering

Pharmacy (first year of the B.S. curriculum)

### The Schools of

Architecture

Business Administration

Education

Forestry

Jurisprudence

Librarianship

Medicine (first year)

Nursing (in part)

Optometry

Public Health (in part)

Social Welfare

The Graduate Division (Northern Section)

The University Extension (offering instruction wherever classes can be formed, or anywhere in California by correspondence, and providing lectures, recitals, moving pictures and other material for visual instruction)

The California Museum of Vertebrate Zoölogy

The Museum of Paleontology

The Anthropological Museum

The Institute of Child Welfare

The Institute of Experimental Biology

The Institute of Industrial Relations

The Bureau of International Relations

The Bureau of Public Administration

The William H. Crocker Radiation Laboratory

The University Art Gallery

The University of California Press

**Departments of Instruction in the Colleges at Berkeley**

Agriculture (including Plant Science, Animal Science, Entomology and Parasitology, Agricultural Economics, Food Technology, Home Economics, Soil Chemistry, Soil Science, and Landscape Design), \*Anatomy, Anthropology, Architecture, Art, Astronomy, Bacteriology, \*Biochemistry, Botany, Business Administration, Chemistry, Classics (Greek, Latin, Sanskrit), Decorative Art, Dramatic Art, Economics, Education, Engineering (civil, electrical, irrigation, mechanical, mining, metallurgy and petroleum), English, Forestry, French, Geography, Geological Sciences (and Mineralogy), German, History, Italian, Journalism, Jurisprudence, Librarianship, Mathematics, Military Science and Tactics, Music, Naval Science, Near Eastern Languages, Nursing, Optometry (and Physiological Optics), Oriental Languages, Paleontology, Philosophy, Physical Education, Physics, \*Physiology, Political Science, Psychology, Public Health, Romance Philology, Scandinavian Languages and Literature, Slavic Languages, Social Welfare, Sociology and Social Institutions, Spanish and Portuguese, Speech, Veterinary Science, Zoölogy.

**II. AT LOS ANGELES†**

University of California at Los Angeles:

College of Letters and Science

College of Business Administration

College of Applied Arts

College of Agriculture (including courses of instruction and the Agricultural Experiment Station's activities in Los Angeles)

College of Engineering

School of Education

School of Public Health (in part)

Graduate Division, Southern Section

The Summer School of Surveying

Bureau of Governmental Research

The Institute of Geophysics

The Senator William Andrews Clark Memorial Library

Los Angeles Medical Department, graduate instruction only

**III. AT SAN FRANCISCO**

Medical School (second, third, and fourth years, including the University Hospital and Langley Porter Clinic)

School of Nursing (in part)

School of Public Health (in part)

The George Williams Hooper Foundation (for Medical Research)

College of Dentistry

California School of Fine Arts

College of Pharmacy

Hastings College of the Law

\* A division of the Medical School.

† A more detailed description of instruction offered at Los Angeles will be found on page 22.



IV. AT DAVIS

The College of Agriculture, including the University Farm, the School of Veterinary Medicine, and certain divisions of the Department of Agriculture and of the Agricultural Experiment Station.

V. AT RIVERSIDE

The College of Agriculture, including the Citrus Experiment Station.

VI. AT MOUNT HAMILTON

The Lick Astronomical Department (Lick Observatory).

VII. AT LA JOLLA

The Scripps Institution of Oceanography.

VIII. AT SANTA BARBARA

Santa Barbara College.

ELSEWHERE

In addition to the principal divisions named above, the University maintains several field stations of the Agricultural Experiment Station in various parts of the State.

ADMINISTRATION

The Regents of the University of California, by authority vested in them by the State constitution, created an academic administrative body called the Academic Senate. The Senate, subject to the approval of the Regents, determines the conditions for admission, for certificates, and for degrees. It authorizes and supervises all courses of instruction in the academic and professional colleges and schools. It recommends to the Regents all candidates for degrees in course and has general supervision of the discipline of students. The dean or director of a school, college, or other division of the University is entrusted with the duty of assisting the President in the administration of the University, with special reference to the welfare of the particular school, college, or other division concerned, and of the students therein.\*

SURVEY OF CURRICULA

In order that the student may gain some idea of the scope of the curricula offered—undergraduate, professional, and graduate—and of the academic and professional opportunities that are open to him, there is presented in the following paragraph a cursory but fairly comprehensive outline of the programs of instruction offered in the different schools and colleges.

\* For a list of the administrative officers of the University at Berkeley, and elsewhere, see page 11.

**THE FOUR UNDERGRADUATE COLLEGES**

Four academic colleges at Berkeley offer undergraduate curricula of four years, leading, in the College of Letters and Science, to the bachelor's degree in arts (A.B.), and in the three colleges of applied sciences to the bachelor's degree in science (B.S.). Students who complete successfully the first two years of the undergraduate curriculum in the College of Letters and Science will qualify for the award of the degree, Associate in Arts. The undergraduate colleges are:

College of Letters and Science

Colleges of Applied Sciences—

College of Agriculture. In this college, curricula are open in the fields of plant science, animal science, agricultural economics, entomology and parasitology, home economics, soil science, landscape design, and agricultural education.

College of Chemistry. In this college, the student may choose a program in chemistry or a program in chemical engineering.

College of Engineering. The student in this college may elect Agricultural Engineering, Civil Engineering, Electrical Engineering, Engineering Physics, Industrial Engineering, Mechanical Engineering, Mining, Metallurgy, Economic Geology, Petroleum Engineering, or Process Engineering.

In Civil Engineering, he has a further choice of construction, structural, transportation, irrigation, or sanitary and municipal engineering.

In Electrical Engineering, the student may select options in communications, illumination, industrial electronics and control, physics and power.

In Mechanical Engineering, the student has a choice of options in air conditioning and refrigeration, automotive, fluid mechanics, heat power, heat transfer and thermodynamics, marine engineering, or mechanical design.

In Metallurgy there are open to the student the fields of physical or process metallurgy.

In Economic Geology the student may elect mining geology or petroleum geology.

In Process Engineering, the student has a choice of options in heat and thermodynamics, fluid mechanics, design, and food technology.

**PROFESSIONAL CURRICULA**

The professional curricula offered by the University are based on two or more years of undergraduate work. Some of the curricula may be carried to completion at Berkeley; others must be pursued in part at Berkeley and completed in San Francisco or at Davis; others may be pursued in full in San Francisco.

These curricula lead to the higher degrees, or to degrees and/or certificates, in the respective fields of architecture, business administration, dentistry, education, engineering, forestry, jurisprudence, law, librarianship, medicine, pharmacy, public health, nursing, optometry, and social welfare. Full details of the respective curricula will be found in later pages of this catalogue.

#### *The Professional Schools—*

The School of Architecture offers a curriculum of two years leading to the bachelor's degree and a curriculum of four years leading to the degree of Graduate in Architecture. See also the two-year curriculum in the College of Letters and Science.

The School of Business Administration offers two programs. The first, beginning with junior standing in the University, normally requires two years and leads to the degree of Bachelor of Science. The second, a graduate curriculum, is based upon the bachelor's degree and leads to the degree of Master of Business Administration. The degree of Master of Business Administration normally requires from one to two years, depending upon the undergraduate preparation. Students who have completed the work for the degree of Bachelor of Science in the School of Business Administration should be able to complete the requirements for the degree of Master of Business Administration in one year.

The School of Education offers two programs. The first (a three-year curriculum) covers, with the required preliminary work, a total of five years—the four usual undergraduate years leading to the bachelor's degree, and an additional postgraduate year leading to the Certificate of Completion of teacher-training curricula. The second program (a two-year curriculum following the bachelor's degree) requires six years—the four undergraduate years leading to the bachelor's degree, and two postgraduate years, leading either to the degree of Master of Education or to the degree of Doctor of Education.

The School of Forestry, which replaced the curriculum in forestry of the College of Agriculture July 1, 1946, offers undergraduate and graduate curricula leading to the degrees of Bachelor of Science, Master of Forestry, and Master of Science. For further details consult the special ANNOUNCEMENT OF THE SCHOOL OF FORESTRY.

The School of Jurisprudence offers the following curricula:

1. A three-year curriculum leading to the degree of Bachelor of Laws. Applicants for admission to the professional curriculum must have received the degree of Bachelor of Arts or Bachelor of Science from the University of California, or an equivalent degree from a college or university of approved standing. Exceptions will be made for war veterans eligible for admission to senior standing at the University of California. Senior students in the College of Letters and Science who may be admitted to the School may offer the first year's work in law in place of a major for the degree of Bachelor of Arts. (For

admission requirements, see under School of Jurisprudence in later pages of this catalogue and consult the ANNOUNCEMENT OF THE SCHOOL OF JURISPRUDENCE, a copy of which may be obtained from the Secretary of the School.)

2. A graduate curriculum of one year, based on the degree of Bachelor of Laws and leading to the degrees of Master of Laws (LL.M.) or Doctor of the Science of Law (J.S.D.). Admission to the second curriculum, it is to be noted, is limited to applicants who hold both an academic bachelor's degree and a professional degree in law (LL.B.) from approved institutions.

The School of Librarianship offers a curriculum of two years based on the bachelor's degree (six years in all), leading at the end of the first (fifth) year to the Bachelor of Library Science degree, and at the end of the second (sixth) year to the degree of Master of Library Science.

The Medical School prescribes a curriculum of four years based on three years of undergraduate work in the College of Letters and Science, a total of seven years. Four of these years are spent in Berkeley, the rest in San Francisco. Admission to the school may be granted upon the attainment of senior standing in the premedical curriculum in the College of Letters and Science. The student's senior year in the College of Letters and Science is thus his first year in the Medical School; the student is enrolled in both the college and the school; he is subject to all the regulations of the college and upon the completion of the first year in the Medical School he may receive the degree of Bachelor of Arts from the college. The second, third, and fourth years of the curriculum of the Medical School are given in San Francisco, and they lead to the degree of Doctor of Medicine.

In addition, the Medical School offers practical training in clinical techniques for a limited number of qualified students.

The School of Nursing, in connection with the University Hospital, offers a curriculum of five years, leading to the degree of Bachelor of Science, and to a Certificate in Nursing. Matriculation and the completion of the lower division requirements in the College of Letters and Science or in the College of Applied Arts are required. The program includes two years in the College of Letters and Science at Berkeley or Los Angeles or in the College of Applied Arts, and three years in the School of Nursing.

The School of Optometry offers a curriculum of two years based on the completion of requirements for the degree of Associate in Arts in the College of Letters and Science, and leading to the degree of Bachelor of Science and the Certificate of Completion in Optometry.\*

The School of Public Health offers curricula on both the undergraduate and the graduate levels. Students may be admitted to the undergraduate curricula leading to the degree of Bachelor of Science upon completion of the degree of

\* The expansion of the Curriculum in Optometry to a five-year program is under consideration. Ample notice will be given later as to the exact date on which any change in the program is to become effective.

Associate in Arts or its equivalent. The graduate curricula lead to the following higher degrees and certificates:

Master of Public Health, Doctor of Public Health, Certificates in Public Health for Health Officers, Public Health Engineers, Statistical Technicians, Laboratory Technicians, Health Educators.

The School of Social Welfare offers a curriculum of two years, based upon the bachelor's degree, and leading to the degree of Master of Social Welfare.

The School of Veterinary Medicine (at Davis) offers a curriculum of four years, based upon two or more years of undergraduate work, and leading to the degree of Doctor of Veterinary Medicine. (NOTE.—Although this School has been established at the University, the organization of it is not yet complete, and applications for admission cannot be accepted at the present time.)

#### *The Professional Colleges—*

The College of Dentistry offers three curricula: two six-year curricula leading to the degrees of Bachelor of Science and Doctor of Dental Surgery; and a curriculum, limited to women students, in the training of dental hygienists.

The academic (undergraduate) and professional curriculum leading to the degrees of B.S. and D.D.S., covers six years. The degree of Bachelor of Science is awarded at the end of five years—two years in the College of Letters and Science at Berkeley or Los Angeles, followed by three years of the four-year professional curriculum in the College of Dentistry at San Francisco—and the degree of Doctor of Dental Surgery is awarded after one additional year (the fourth year of the professional curriculum) in San Francisco.

For the training of dental hygienists a four-year curriculum is offered, including two years of academic instruction similar in scope and content to that required for admission to the curricula in dentistry, followed by two years of professional training in dental hygiene. On completion of the curriculum for dental hygienists, the degree of Bachelor of Science is awarded.

The Hastings College of the Law offers a curriculum of three years, based upon the degree of Associate in Arts in the University of California or its equivalent (a total of five years) which leads to the degree of Bachelor of Laws.

The College of Pharmacy offers a four-year curriculum leading to the degree of Bachelor of Science in Pharmacy. The requirements for admission are the same as the requirements for admission to the academic departments of the University. The first year of this curriculum is given at Berkeley and Los Angeles; the final three years comprise specialized training in the College of Pharmacy in San Francisco.

#### *Graduate Curricula in Engineering—*

Curricula leading to the following advanced professional degrees: Master of Engineering, Civil Engineering, Electrical Engineering, Mechanical Engineering, Metallurgical Engineering, Mining Engineering, and Petroleum Engineering.

*Special Professional Curricula—*

The professional curriculum in Public Health Nursing leads to the Certificate in Public Health Nursing, awarded by the School of Nursing to students who (a) have completed the requirements of the B.S. degree in the curriculum for undergraduate students in nursing, provided they hold the Certificate of Completion in Nursing and have completed an additional program of prescribed study, including four months of supervised field practice; or (b) have completed the requirements of the B.S. degree in the curriculum for graduate nurses, and in addition four months of supervised field practice in Public Health Nursing.

The professional curriculum in Nursing Education leads to the Certificate in Nursing Education, awarded by the School of Nursing to students who (a) have completed the requirements of the B.S. degree in the curriculum for undergraduate students in Nursing, provided they hold the Certificate of Completion in Nursing and have completed an additional program of study prescribed by the School of Nursing, including four months of supervised field practice in Nursing Education; or (b) have completed the requirements of the B.S. degree in the curriculum for graduate nurses and in addition four months of supervised field practice in Nursing Education.

The professional curriculum in Hospital Dietetics requires one year of work following the bachelor's degree (including one semester's residence at the University Hospital in San Francisco and one semester in the Graduate Division at Berkeley) and leads to a Certificate of Completion of the Curriculum in Hospital Dietetics.

The course in physical therapy is given at the Medical School in San Francisco. It requires a period of one year divided into two semesters and two summer sessions of six weeks each and leads to a Certificate or to a B.S. degree in the Medical School with a major in physical therapy.

**UNIVERSITY OF CALIFORNIA AT LOS ANGELES**

The University of California at Los Angeles comprises: (a) the College of Letters and Science, with curricula leading to the degrees of Associate in Arts, Bachelor of Arts, and Bachelor of Science, curricula of the earlier years of the College of Dentistry, the Medical School, and the College of Chemistry; (b) the College of Applied Arts, with curricula leading to the degrees of Associate in Arts, Bachelor of Arts, and Bachelor of Science, and curricula of the earlier years of the College of Pharmacy and the School of Optometry, and a curriculum leading to the Certificate in Public Health Nursing; (c) the College of Business Administration, with curricula leading to the degrees of Associate in Arts and Bachelor of Science; (d) the College of Agriculture, with curricula leading to the degree of Bachelor of Science; (e) the College of Engineering, with most of the courses of the first two years of the curricula in civil, electrical, mechanical engineering, and mining and metallurgy, third-year courses of



most of the curricula, and restricted fourth-year offerings; and (f) the School of Education, with teacher-training curricula leading to certificates of completion for the general secondary and junior college credentials. Graduate studies, leading to the degrees of Master of Science and Master of Arts, and to the degrees of Doctor of Education, Doctor of Philosophy, and Doctor of Public Health are available in the Graduate Division, Southern Section.

### SUMMER SESSIONS

During the summer the University conducts at Berkeley one or more sessions of six weeks' duration each. In 1947 two such summer sessions of six weeks each were conducted, the first session beginning June 23, and the second beginning August 4. Information concerning the Summer Sessions of 1948 will be published in the ANNOUNCEMENT OF THE SUMMER SESSIONS, obtainable upon request from the Vice-President and Provost, 222 Administration Building, University of California, Berkeley 4, California.

In addition to the sessions at the University on the Berkeley campus, Summer Sessions are conducted annually by the University of California on the Los Angeles campus, and on the Santa Barbara College campus.

### UNIVERSITY EXTENSION

University Extension offers facilities to men and women who seek some form of higher education, but are prevented from taking up residence at the University.\* Offerings are addressed increasingly to those who have been to college and who desire to advance themselves professionally. The University of California therefore provides through University Extension educational opportunities to adults living in any part of the State.

The work is carried on in five ways:

(1) *Class Instruction*.—Classes are organized in cities and towns wherever a sufficient number of people can be secured who wish to study a subject. Instruction is offered in art, business administration, economics, education, engineering, geography, history, languages, law, literature, mathematics, political science, psychology, science, speech, etc.

(2) *Correspondence Instruction*.—Courses are given by mail in art, astronomy, composition and literature, drawing, economics, education, engineering, history, the languages, mathematics, music, philosophy, physics, political science, psychology, etc. Courses may begin at any time.

(3) *Institutes*.—Institutes for periods ranging from two days to several weeks, provide intensive familiarization courses for interested groups, under the leadership of experts in theory and practice.

(4) *Lectures*.—Lectures, singly or in series, are provided for any committee, club, organization, or community in the State that will make the necessary arrangements for their delivery.

\* For information concerning admission to the University through residence courses in University Extension, see page 80.

(5) *Visual Instruction*.—The University Extension circulates instructional aids in the form of motion picture reels, which cover many phases of educational work.

For information concerning credit for extension courses, see page 23.

Persons desiring to take advantage of the facilities offered by any one of these departments may receive detailed information on request. Address University Extension, University of California, Berkeley 4, or 813 South Hill Street, Los Angeles 14, or 130 Administration Building, University of California, Los Angeles 24, or 755 Cliff Drive, Santa Barbara.

### THE UNIVERSITY LIBRARY

The Library of the University of California at Berkeley consists of one main collection, five branch libraries, and eighty-five departmental and special libraries. These groups, collectively known as the University Library, contain more than 1,400,000 volumes. Approximately 16,600 periodicals and serials are received currently.

The principal collection, called the Main Library, is housed in the Charles Franklin Doe Library Building. It is centrally situated and supplies the basic library services for the majority of the faculty and students on the Berkeley campus.

The Biology Library is a branch situated in the Life Sciences Building, conveniently serving faculty and students of the biological sciences. Other branches are the Lange Library of Education in Haviland Hall, the Engineering Library in the Engineering Building, the Music Library in the Music Building, and the Library School Library in the Main Library building.

The Alexander F. Morrison Library, housed in an attractively furnished room on the first floor of the Main Library building, is an open shelf collection of about 20,000 volumes for recreational reading. It is open only to students and officers of the University and its books are limited to use within the Morrison Library room.

The Bancroft Library of far western and Pacific Coast history, a department of the General Library, is on the fourth floor of the Main Library building.

Attention is directed especially to the following departmental and special libraries. The Law Library, situated in Boalt Hall, is used by the School of Jurisprudence. The Giannini Library, in Giannini Hall, is a collection of material in the field of agricultural economics, for the special use of the students and staff of the College of Agriculture. The Bureau of Public Administration and the Library of Economic Research, with a combined reading room, are on the first floor of the Charles Franklin Doe Library Building. The Bureau of International Relations has its own collection and reading room in South Hall, situated near the Department of Political Science. Besides these, there are many departmental libraries, varying in size and availability, the largest being the libraries of Architecture, Chemistry, and Physics.

Registered students may draw books and periodicals from the University Library, according to the regulations of the various units, by presentation of their registration cards as identification. The privilege of borrowing does not include the right to transfer to another person the materials borrowed. Specifically, the lending of books or periodicals by an authorized borrower to any person not authorized to draw books from the Library is prohibited; also, the signing of call slips by an authorized borrower for the use of another person is prohibited. In certain circumstances an authorized borrower, by signing a form at the Library Loan Desk, may give special permission to another person to draw books in his name. A borrower is held responsible for any material borrowed in his name. Therefore, if a book is to be transferred from one authorized borrower to another, a cancelation of the original charge at the desk from which the material was borrowed and a recharging to the new borrower is essential.

Any borrower intending to leave the vicinity for more than four days is required to return, before he leaves, all books and periodicals charged to him, or to make such arrangements with the Librarian as will insure their prompt return if needed.

## ADMISSION TO THE UNIVERSITY

### ADMISSION IN UNDERGRADUATE STATUS

AN APPLICANT WHO WISHES to enter the University must fulfill the general requirements for admission, as set forth below. Application blanks may be obtained from the Director of Admissions, 125 Administration Building, University of California, Berkeley 4. 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 made payable to The Regents of the University of California. With the application for admission of every student planning to enter the University in the Spring Semester, 1948, or later, there must be filed a certificate showing successful vaccination against smallpox within the last seven years. This form will be furnished by the University and must be signed by a licensed physician.

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 in Freshman Standing

##### ADMISSION ON THE BASIS OF THE HIGH SCHOOL RECORD

The applicant must file with the Admissions Office a regular application, on or before the last date for the receipt of applications for the semester desired, and must have the secondary schools he has attended send to the Admissions Office complete transcripts of record of all studies undertaken in such schools. The transcripts must show that the applicant has been graduated from an accredited high school. The Admissions Office will then evaluate the high school record, and the applicant will be eligible for admission if he qualifies under any one of the following methods:\*

1. Complete the high school courses listed under (a) to (f) below with marks that demonstrate ability to do university work with good prospect of success. Courses in the (a) to (f) list taken in the ninth grade need show passing marks only; courses in the (a) to (f) list taken in the tenth, eleventh, and twelfth grades must be passed with marks that will make an average of grade B. Courses in which a grade of D is received may not be counted either in reckoning the required scholarship or in satisfaction of the subject require-

† Veterans who expect to enroll under the provisions of Public Law 346 or 16 are not required to remit this fee at the time of application; if the applicant is accepted and registers in the University, the fee will be paid by the government.

\* Although this minimum program will entitle the student to entrance to the University, it will not give him the right to enter unconditionally the curriculum of his choice unless he has credit for the prescribed subjects. Information regarding the preparation required and recommended for each curriculum may be found in later pages of this catalogue.

ments. An A grade in one course will balance a C grade in another. Grades are considered on a semester basis, except from schools that give only year marks.

The courses that must be completed under this plan of admission are as follows:

- (a) History ..... 1 unit.—This requirement must be satisfied by one unit of United States history or one unit of United States history and civics.
- (b) English ..... 3 units.—These may consist of any six semesters that give preparation in written and oral expression and in the reading and study of literature. Reading and study of contemporary literature may be included. The requirement in English must be satisfied by credit designated "English."
- (c) Mathematics ..... 2 units.—These must consist of two semesters of elementary or advanced algebra, and two semesters of plane geometry, or solid geometry and trigonometry.
- (d) Science ..... 1 unit.—This may consist of a year course in one field of science, namely, biology, botany, chemistry, physics, physical science, physiology, or zoology. The science selected must be an advanced (third or fourth year) laboratory science, and the two semesters must be in the same subject field.
- (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);
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.

2. Achieve a scholarship rank in the highest tenth of his graduating class, with a substantial academic preparation, although he need not complete the exact pattern of subjects (a) to (f) listed above.

3. Complete not less than 15 high school units of grade A or B in work taken in the ninth, tenth, eleventh, and twelfth years, or not less than 12 high school units of grade A or B in the work of the tenth, eleventh, and twelfth years; and not more than two subject deficiencies in the required list (a) to (f).

4. Complete not less than 15 high school units with no grade lower than C in work taken in the ninth, tenth, eleventh, and twelfth years, or not less than 12 high school units with no grade lower than C in work taken in the tenth, eleventh, and twelfth years; and not less than 6 high school units of grade A or B selected from the following 10 units of 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.

5. Complete not less than 15 high school units with no grade lower than C in work taken in the ninth, tenth, eleventh, and twelfth years, or not less than 12 high school units with no grade lower than C in work taken in the tenth, eleventh, and twelfth years; and pass the *Examination in Subject A*; and have grade A or B in the following subjects:

Plane geometry, 1 unit

Second-year foreign language, 1 unit

Third- or fourth-year laboratory science, 1 unit

Requirement (*f*), 1 unit.

### Accrediting of Schools in California

An accredited high school is one that has been officially recognized by the University as fulfilling the regulations laid down by the Regents of the University for the accrediting of secondary schools in California. The list of accredited schools is published by the University annually in the month of June or July. For blank forms of application for accrediting and for other information, school principals may communicate with the Director of Relations with Schools, Berkeley or Los Angeles.

### Responsibility of High School Authorities

The responsibility for the granting of certificates to high school students lies with the high school authorities, and students naturally will be guided by their respective principals in making their preparation for entrance to the University.

Upon the high school authorities rests also the responsibility for determining the scope and content of courses preparatory to admission to the University and for certifying each course to the University under the proper subject designation of the high school program.

### Preparation for University Curricula

In addition to those subjects required for admission to the University, outlined beginning on page 27, 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.\*

Attention is directed especially to the fact that physics and chemistry are recommended in the preparation for the various curricula in the College of Letters and Science. This recommendation is made not only because of the value of each or both of these subjects as preparation for the courses of a particular curriculum, but also because completion of these subjects in the high school will meet a part of the requirements for the degree of Associate in Arts

\* See the separate circular PREREQUISITES AND RECOMMENDED SUBJECTS to be obtained from the Registrar, University of California, Berkeley 4.



in the College of Letters and Science (see pages 63-66) and thereby will give the student greater opportunity in his freshman and sophomore years at the University to choose elective subjects. However, it should be understood that neither chemistry nor physics is required for admission to the University.

Especial care should be exercised by the high school student in selecting a foreign language. High school Latin is valuable in itself and will satisfy either the (b) or (e) requirements for the degree of Associate in Arts in the College of Letters and Science; other languages satisfy only the (b) requirement. The study of a modern language is important not only because of its value in a broad cultural preparation but also because a reading knowledge of foreign languages may be very useful in the pursuit of advanced work in many departments of the University.

#### **Admission by Examination**

The University of California does not itself offer entrance examinations, but accepts on all campuses the results of examinations given by the College Entrance Examination Board. If the applicant has completed all of the subjects included in the (a) to (f) list with grades of C or better, but is deficient in the scholarship average, he may clear his admission requirements by achieving scores above 500 on the Scholastic Aptitude Test and on any three achievement tests in subject fields: if the applicant desires, he may substitute the Comprehensive Mathematics Examination for the Scholastic Aptitude Test. Information about dates and places of examination may be secured from the Admissions Office or from the College Entrance Examination Board, P. O. Box 592, Princeton, New Jersey.

#### **Admission of Returning Members of the Armed Forces**

Some exceptions in the subject requirements for admission will be made for men and women who were for at least one year members of our armed forces during the last war. Such exceptions will apply, however, only when the scholarship record is high enough to indicate probable success in the University. Veterans whose scholastic records are good and whose high school subject deficiencies total not more than three units, are encouraged to make application, even though they may not have all of the usual requirements. A veteran with a good scholarship record but with subject deficiencies will be classified as a special student until deficiencies are removed, or until all of the requirements for junior standing in the college of his choice have been completed.

#### **Removal of Admission Deficiencies**

Deficiencies in high school scholarship or subject requirements may be removed as follows:

1. By college courses of appropriate content and amount completed with satisfactory scholarship in junior colleges, or state colleges of California, or in other approved colleges. The applicant may clear his deficiencies by satisfac-

tory grades in courses acceptable for removing his subject shortages, and present either:

- (a) Sixty units with at least a grade C average in college transfer courses, or
- (b) A minimum of 15 units of college transfer courses with an average of 1.5 grade points. 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 there the lower division requirements of the college in which they wish to register.

2. By college courses in one of the three following divisions of the University of California:

- (a) *University Extension.*—These courses are of three types—correspondence, general adult education classes marked "X," "XB," "XL," or "XSB," and special classes designed to make up entrance deficiencies. There are no restrictions on enrollment in correspondence courses, but only those with 5 units or less of scholarship deficiencies in their high school records are eligible for the special program of class courses designed to make up entrance deficiencies. To be acceptable, marks received in this program must be definitely above the C average, and must serve, not merely as specific make-up of deficiencies, but also as a demonstration of ability to do college work successfully.
- (b) *Combination Program of the College of Agriculture at Davis.*—Courses in the Combination Program of the College of Agriculture at Davis (open only to students who have not more than 5 units of scholarship and/or subject-matter deficiencies). Students cannot remove entrance deficiencies in the Two-Year Curriculum (non-degree course). See PROSPECTUS OF THE COLLEGE OF AGRICULTURE.
- (c) *Summer Session.*—For students with only one or two deficiencies the first summer session of the University may be used to make up shortages. Because of the short time between the end of the second summer session and the fall semester, the second summer session may not be used to make up deficiencies for entrance to the fall semester.

3. By postgraduate courses in accredited high schools.

4. By College Entrance Examination Board Examinations (see page 29).

#### Admission in Advanced Standing

An applicant for admission to the University in advanced standing must present evidence that he has satisfied the subject and scholarship requirements prescribed for the admission of high school graduates in freshman standing and that his advanced work in institutions of college level has met the scholarship standard required of transferring students, namely, an average of grade C or higher in all college courses undertaken.

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 preparatory schools and colleges he has attended to forward complete official transcripts direct to the Director of Admissions. A statement of honorable dismissal from the last college attended must also be sent.

An applicant, who on graduation from high school did not qualify for admission in freshman standing, must present evidence that he has made up all subject deficiencies and, in addition, has completed:

(a) Not less than 60 semester units of work acceptable for advanced standing in the University, with a scholarship average of at least grade C, or

(b) Not less than 15 semester units of acceptable advanced work with a distinctly high scholarship average.

#### **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 in correspondence courses in University Extension. Except for veterans, applicants for advanced standing who have scholarship deficiencies will not be admitted to the admissions program classes of University Extension.

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

Special students are students of mature years who have not had the opportunity to complete a satisfactory high school program, but who, by reason of special attainments, may be prepared to undertake certain courses in the University. The conditions for the admission of each applicant under this classification are assigned by the Director of Admissions. Ordinarily, a personal interview is required before final action can be taken. In general, special students are required to confine their attention to some special study and its related branches.

Transcripts of record from all schools attended beyond the eighth grade must be submitted. An applicant for special status may be required to take an aptitude test and the Examination in Subject A. The Director of Admissions will supply, upon request, the forms of application for admission and for transcripts of high school record.

No person under the age of 21 years will be admitted as a special student, but the 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 so admitted, if not candidates for degrees, may, with the approval of the proper study-list officer, pursue elective or limited programs.

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 until he has completed the prerequisite subjects.*

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 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 and 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, be of assistance to him in obtaining the necessary passport visa.

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. This regulation applies to both graduate and undergraduate foreign students. The admission of an applicant who fails to pass this examination will be deferred until such time as 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.

Special advisers have been 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 county is urged, upon his arrival at the University, to consult Mr. Allen C. Blaisdell, Foreign Student Adviser, International House.

#### LIMITATION OF ENROLLMENT IN CERTAIN COLLEGES OR COURSES

It is the general policy of the University to accept as students all eligible applicants; but because of the exceptionally heavy registration following World War II, certain limitations of enrollment have become necessary. For

the Fall Semester of 1947, and possibly for succeeding semesters, out-of-state students will not be admitted to the freshman and sophomore classes, and it may be necessary to limit enrollment in Engineering on both the Berkeley and Los Angeles campuses, in Business Administration on the Berkeley campus, in the Colleges of Dentistry and Pharmacy and in the School of Optometry. Students desiring to enter these departments or schools should keep in close touch with their high school or junior college counselors, who will be informed as to dates of application and required aptitude examinations.

### LATE ADMISSION AND REGISTRATION

The student or prospective student should consult the University calendar and acquaint himself with the dates upon which students are expected to register and begin their work at the opening of the sessions. Failure to register upon the stated registration days is certain to cause difficulty in the making of a satisfactory program and to retard the progress both of the student himself and of each class to which he may be admitted.

A student who registers after the opening of the session and who later is found to be deficient in his work may not plead late admission as an excuse for his deficiency.

A fee of \$2 is charged for late registration; this fee applies both to old and new students.

A qualified student or applicant who fails to register upon the stated registration days at the opening of the session, but who, nevertheless, appears *during the first two weeks of instruction*, will usually be permitted to register. After the first week, however, he is required to obtain the written approval of all the instructors in charge of his proposed courses and of the dean of his college, before his registration can be completed.

### ADMISSION IN GRADUATE STANDING

Holders of bachelors' degrees (representing the usual college course of four years) from institutions on the Accepted List of the Association of American Universities will be admitted to the Graduate Division of the University of California, Berkeley, upon presentation of credentials including a diploma or certificate of graduation, with the proviso that the University of California may deny admission to graduate status in cases where the undergraduate program has not been of such character as to provide an adequate basis for advanced work leading to academic or professional higher degrees or certificates. This applies to colleges and schools within the University of California as well as to those outside. With the application for admission of every student planning to enter the University in the Spring Semester, 1948, or later, there must be filed a certificate showing successful vaccination against smallpox within the last seven years. This form will be furnished by the University and must be signed by a licensed physician. Applicants for admission to the graduate years

of the Medical School in which registration is limited to sixty in each class should file their credentials with the Registrar for evaluation by the Director of Admissions. Such credentials should be accompanied by a money order or bank draft for \$5 in payment of the *application fee*.† (No part is refunded).

Applicants for admission to graduate work at the College of Agriculture at Davis,\* the Lick Observatory on Mount Hamilton, the Hooper Foundation, and the College of Dentistry in San Francisco must first secure admission to the Graduate Division and authorization to pursue such work through the Dean of the Graduate Division, Northern Section. *In the absence of a diploma or other official evidence of graduation or degree, registration will not in any case be permitted.*

The Accepted List of the Association of American Universities is printed in the ANNOUNCEMENT OF THE GRADUATE DIVISION, NORTHERN SECTION. Graduates of institutions not on this list may be admitted to the Graduate Division with the approval of the Dean of the Graduate Division if the evaluation of their certified college records by the Director of Admissions proves them eligible for graduate status. Every applicant for admission to the Graduate Division is required to pay an application fee of \$5 at the time the application is presented.† Remittance should be made payable to The Regents of the University of California. No part of this fee is refunded.

The level of work to which graduate students are assigned, and their standing as candidates for degrees, depends upon the extent and character of their undergraduate courses. If in any department the preliminary training of an applicant has not been sufficient to qualify him for graduate work he may be admitted to such undergraduate courses as may be suited to his needs.

Applicants for admission to the Graduate Division on credentials from universities and colleges in foreign countries are required to appear for the Examination in English for Foreign Students described in the preceding section, to demonstrate whether or not their command of English is sufficient to permit them to profit by instruction in this University.

For information concerning all matters pertaining to the Graduate Division at Berkeley, including the list of available fellowships and graduate scholarships, and the requirements for all higher degrees and certificates see the ANNOUNCEMENT OF THE GRADUATE DIVISION, NORTHERN SECTION, to be obtained from the Dean of the Graduate Division, University of California, Berkeley 4.

For regulations concerning graduate study at Los Angeles consult the ANNOUNCEMENT OF THE GRADUATE DIVISION, SOUTHERN SECTION, which may be obtained upon request from the Dean of the Graduate Division, University of California, Los Angeles 24.

† Veterans who expect to enroll under the provisions of Public Law 346 (the G. I. Bill of Rights), or Public Law 16, are not required to remit this fee.

\* For information on graduate courses at Davis, consult the ANNOUNCEMENT IN AGRICULTURE AND RELATED SCIENTIFIC FIELDS, which may be obtained upon request from the Dean of the Graduate Division, University of California, Berkeley 4, California.

## GENERAL REGULATIONS

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

### ROUTINE OF REGISTRATION

No student in the departments of the University at Berkeley may undertake any work or examination with a view to credit toward a University degree without registration for the work or examination with the Registrar; such registration must be accepted by the proper faculty before the work proposed is undertaken.

Students of good standing carrying a limited amount of regular classwork may be permitted, on the basis of private study outside of University classes, to take certain University examinations for the purpose of gaining advanced standing, but the authorization of the proper faculty must be obtained by written petition before preparation for the examinations is begun.

All students must register with the Registrar their choice of courses to be pursued in any semester, on blanks provided for the purpose, at the time and place designated. Registration at a later date requires special permission. For further information, see under Late Admission and Registration, page 33.

Students in year courses must register with the Registrar for these courses at the beginning of each semester. They are sometimes permitted to register for year courses in the second semester without having been registered in the first semester. When this is done, credit is given for the work of the second semester only.

No person will be admitted as a student to any course, except as authorized by the official certificate of registration and duplicate study card supplied to each student by the Registrar, subject to the approval of the appropriate study-list officer.

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 registered with the Registrar before the work is undertaken.

After the study cards are filed, students are given an opportunity to make changes in their programs by formal petition, which must be approved by the instructors concerned and by the dean or other proper officer of the student's college.

Every regular student must include in his study list all required work appropriate to the college and year of his course. (The rules governing the choice of studies of regular students are stated in the description of the curricula of the several colleges.) The Committee on Study Lists of each college is authorized to withdraw study cards that do not show compliance with this regulation.

The names of students who fail to comply with the regulations governing registration will not appear on the official class rolls.

### **MEDICAL AND PHYSICAL EXAMINATION**

All new students (graduate and undergraduate), just after filing their registration papers, must appear before the University Medical Examiners and pass a medical and physical examination, to the end that the health of the University community, as well as of the individual student, may be safeguarded. Every new student (graduate and undergraduate) planning to enter the University in the Spring Semester, 1948, or later, must include with his application for admission a certificate testifying to successful vaccination against smallpox within the last seven years. This form is furnished by the University and must be signed by a licensed physician. Tests for tuberculosis are a part of the examination of all new students. Applicants for admission who have contagious diseases will be excluded. Those having physical conditions, such as convulsive seizures, which grossly disturb the classwork of other students, should not apply for admission.

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 remedial treatment, such as diseased tonsils or imperfect eyesight, corrected. This will prevent possible loss of time from studies.

### **STUDENT HEALTH SERVICE**

The purpose of the Student Health Service is to conserve the time of students for their classwork and studies, by preventing and treating acute illnesses. This service is made possible by the general funds of the University and in part by the staff physicians, and is not a health insurance plan; therefore, the services are limited by the staff and facilities available.

Each registered student at Berkeley may, at need, have such consultations and medical care on the campus as the Ernest V. Cowell Memorial Hospital is staffed and equipped to provide, from the time of payment of his registration fee to the last day of the current term. Surgical treatment is also included in the services offered when, in the opinion of the University Physician, this service is necessary and within the limitations herein outlined. During the semester hospital care for a period up to thirty days may be given in the event of serious illness, on the recommendation of the University Physician.

If illnesses are of a nature requiring long continued care so that the student may not be returned to classes during the current semester, or if at the end of the semester the patient is still ill, he will be released from the hospital to the care of his home or community as soon as the University Physician considers it safe. Charges will be made for unusual appliances or remedies not ordinarily available or for hospitalization in excess of thirty days.

The Health Service does not take responsibility for any chronic physical



defects or illnesses present at the time of entrance to the University (for example, hernias, chronic bone and joint diseases or deformities, chronic gastrointestinal disorders, fibroids of the uterus, chronically infected tonsils, tuberculosis, syphilis, malignant diseases, allergic and endocrine disorders, etc.).

Dental service for diagnosis and emergencies (such as fractures) is provided. A limited amount of general dentistry is available and will be charged for in accordance with a schedule of rates approved by the President of the University.

### PHYSICAL EDUCATION AND USE OF GYMNASIUMS

*Men.*—All men students are required, at the time of first registration in the University, to present themselves at the Department of Physical Education, Gymnasium for Men, for an interview and appraisal regarding their fitness for participation in physical training exercises and athletic sports. On the basis of this examination each student will be informed concerning the opportunities available to him in organized courses of the department, in athletic sports, and in other recreational activities. The use of the Gymnasium for Men, including the swimming pool, is open to all men students of the University.

*Women.*—The Hearst Gymnasium rooms, courts, swimming pools, sports fields, and equipment for games and sports, are available to all women students of the University who wish an opportunity for exercise and recreation, either with or without instruction. Courses may be elected with or without academic credit. The Women's Athletic Association and the Department of Physical Education cooperate in furthering opportunities for a wide variety of activities. Further information may be obtained from the Secretary, Room 200, Hearst Gymnasium.

### SUBJECT A: ENGLISH COMPOSITION

With the exceptions noted below, every undergraduate intrant 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, and punctuation.

The examination in Subject A is given at the opening of the fall and spring semesters (see the REGISTRATION CIRCULAR, to be obtained from the Registrar), and at the opening of each of the Summer Sessions. A second examination for late intrants is given not later than two weeks 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 study cards 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 of \$15, 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 the bachelor's degree until he has satisfied the Subject A requirement.

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 1, in English 1-2, or in the Comprehensive Examination in English, will receive credit for Subject A. A student who has passed an examination in Subject A given by the University at Los Angeles 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 with credentials showing the completion elsewhere with a grade not lower than C of one or more college courses in English composition (with or without unit credit) is exempt from the requirement in Subject A.

### AMERICAN HISTORY AND INSTITUTIONS

All students who are candidates for the bachelor's degree must demonstrate a knowledge of American History and Institutions and may meet the requirement in the following ways:

1. By passing a single examination in American History and Institutions. The passing of this examination will not entitle the student to receive unit credit.
2. By completing any two of the following courses, subject to the conditions noted below: \* American Institutions 101 (Summer Session), or XB7ABC or X7AB (University Extension); Business Administration 155 (not included in Letters and Science List of Courses); Economics 113, 150B; History 17A, 17B, or XB17A, XB17B (University Extension), 167, 172A,

---

\* Students taking the above courses are subject to the regular rules which apply for prerequisites and majors. Upper division history courses may be taken to satisfy the requirement only with the permission of the instructor.

172B, 173A, 173B, 174A, 174B, 176A, 176B, 187A, 187B; Political Science 1, XB1 (University Extension), 113, 115, 119, 128, 140, 150, 151, 152, 154, 155, 157A, 157B, 159, 162, 172, 175, 182; Speech 137.

Any one of the above courses offered in the Summer Sessions is acceptable.

3. (a) By automatic equivalence granted for courses offered by collegiate institutions within the State of California in those cases where an official transcript of record from such an institution indicates satisfaction of the requirement by such courses. (Candidates for the teacher's credential, if they are satisfying the requirement by course work, must take at least one course in American government within the State of California.)
- (b) By presenting a certificate of completion of acceptable courses at other collegiate institutions. Certificates may be obtained from the office of the Supervisor.

Further information regarding this requirement, and examination necessary to meet it, may be obtained from the Supervisor of the Requirement of American History and Institutions, Room 208, Building T-9. For office hours, see official announcements on campus bulletin boards.

### MILITARY SCIENCE

All undergraduate male students must, upon admission to the University, report immediately to the proper officers for enrollment in military science, in accordance with instructions in the CIRCULAR FOR NEW UNDERGRADUATES or the announcements which may be posted on the University bulletin boards. Students must list the prescribed courses in military science on their study cards with other University courses.

A petition for excuse from, or deferment of, military science, must be filed within two weeks of the date of registration. Exception will be made where illness or physical disability occurs after that date. Further information about the requirement in military science, including statements of the grounds upon which students may be excused from this work, may be obtained from the Registrar.

If a student subject to this requirement lists the prescribed course on his study card, and thereafter without authority fails to appear for work in the course, his neglect will be reported to the Registrar, who, with the approval of the President, will notify the student that he is dismissed from the University. The Registrar will then inform the dean of the student's college or other officer in charge of the student's program of his dismissal. Reinstatement will be made only upon approval of the President of the University with the concurrence of the Professor of Military Science and Tactics.

**NAVAL SCIENCE**

Candidates for enrollment in the Naval Reserve Officers' Training Corps will be selected by the Professor of Naval Science. These candidates are in addition to candidates entering from the competitive nation-wide aptitude test, and will be accepted to the limit of the quota as established by the Navy Department. Applications will be accepted from freshmen and any other students who will have a minimum of eight semesters of schooling remaining on this campus, in the undergraduate and/or graduate field. The curriculum of the Naval Science Department includes 24 units of Naval Science studies in eight semesters; one course being taken each semester. In addition, two hours of military drill or practical work per week are required each semester. Students are not accepted for a period shorter than eight semesters. Upon successful completion of 24 units of Naval Science, and all other requirements for a first bachelor's degree in any field of study, graduating students are given officers' commissions in the U. S. Naval Reserve or Marine Corps Reserve. In addition to the other course requirements, Naval R.O.T.C. students must complete one year of college physics and mathematics courses through trigonometry by the end of the sophomore year; sufficient courses in English to achieve a proficiency in written and oral expression; and a course in physical training each semester, including instruction in swimming to qualify as a first-class swimmer. Candidates must contract to fulfill all the requirements of the four-year Naval R.O.T.C. curriculum, without serious interference with or from other academic work required for the bachelor's degree. Certain monetary advantages accrue to Naval R.O.T.C. students during their third and fourth years in the program.

For further information about the Naval R.O.T.C., consult the Professor of Naval Science in Room 47, Gymnasium for Men.

**STUDY-LIST REGULATIONS**

At the beginning of each semester every student is required to file with the Registrar, upon a date to be fixed by the Registrar, a detailed study list bearing the approval of a faculty adviser or other specified authority.

The presentation of a study list by a student and its acceptance by the college is evidence of an obligation on the part of the student to perform faithfully the designated work to the best of his ability. Withdrawal from, or neglect of, any course entered on the study list, or a change in program without the formal permission of the dean of the college, makes the student liable to enforced withdrawal from the University, or to other appropriate disciplinary action.

The various colleges observe certain study-list limits with which the student must comply. For detailed regulations, see the announcements of the respective colleges in later pages of this catalogue.

*Authority of instructors.*—No student will be permitted to enter upon the study of any subject if, in the opinion of the instructor, he lacks the necessary preparation to insure competent work.

Every student is required to satisfy the instructor in each of his courses of study, in such ways as the instructor may determine, that he is performing the work of the course in a systematic manner. Instructors will report to the President from time to time the names of students whose attendance or work is unsatisfactory.

Any instructor, with the approval of the President, may at any time exclude from his course any student guilty of unbecoming conduct toward the instructor or any member of the class, or any student who, in his judgment, has neglected the work of the course. A student thus excluded will be recorded as having failed in the course of study from which he is excluded, unless the faculty determines otherwise.

*Other general requirements.*—The attention of the student is directed to further University regulations concerning the requirements in scholarship, and for candidacy for degrees.

#### CANDIDACY FOR DEGREES

Every student who intends to become a candidate for a bachelor's degree or the degree of Associate in Arts must file with the Registrar, on a date to be fixed by the Registrar, an announcement of candidacy for the degree. For filing this announcement later than the appointed date, a fee of \$1 is charged. In 1947-1948 these dates are: Thursday, October 2, for candidates who expect to complete their work in February, 1948, and Thursday, March 4, for candidates for graduation in June, 1948.

All candidates for the bachelor's degree are required to have been enrolled throughout the senior or final year of residence in that college of the University in which the degree is to be taken. This regulation applies both to students entering this University from other institutions and to students transferring from one college to another within this University. Of the 120 (or more) units required for the bachelor's degree, at least 24 units must have been completed at this University in resident courses of instruction taken in the final or senior year.

All graduates of 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 (major or department) of the University to another upon the approval of the dean or other responsible officer 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 include those who receive honorable mention with the degree of Associate in Arts in the College of Letters and Science, or upon attaining junior standing in the colleges of Agriculture, Chemistry, and Engineering, or in the schools of Architecture, Business Administration, Forestry, Nursing, Optometry, and Public Health. 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 later pages of this catalogue.

### CREDIT AND SCHOLARSHIP

In both the University and the high school the student is credited, in respect to 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.

The value of a course in units is reckoned at the rate of one unit for three hours' work per week per semester on the part of the student. The credit value assigned to a course is not determined by the number of class meetings per week, but by the number of hours of work required of the student. For most courses it is expected that the average student will spend two hours in preparation for one hour of lecture or recitation.

### GRADES OF SCHOLARSHIP; GRADE POINTS

In the University (except in the College of Dentistry and in the Medical School in San Francisco), the result of the student's work in each course (graduate and undergraduate, including courses in which credit is sought by examina-

tion) 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 passing; E and F, not passing. Grades are not otherwise defined, as for example, by percentages, or by a rule stipulating the manner in which the several grades shall be distributed.

Grade E (not passed) or grade X (not passed), used prior to July 1, 1944, 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 (not passed) denotes a record so poor that it may be raised to a passing grade only by repeating the course.

The term "incomplete" is not used in reporting the work of students. The instructor is required to assign, for every student, 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 3 points; B, 2 points; C, 1 point; D, E, and F, no points.

In order to qualify for the degree of Associate in Arts in the College of Letters and Science, or for the bachelor's degree in the College of Letters and Science, the College of Agriculture, the College of Chemistry, or the College of Pharmacy, in the School of Architecture, the School of Business Administration, the School of Forestry, the School of Nursing, the School of Optometry, or the School of Public Health, the student must have obtained at least as many grade points as there are units in the total credit value of all courses undertaken by him in the University of California. For the bachelor's degree in the College of Engineering, the student must have obtained at least as many grade points as there are units in the credit value of all courses undertaken by him in the University in and after January, 1930.

In the College of Dentistry, the student's work is reported, in reference to each course, as "passed" or "not passed." The Faculty of this College determines the conditions under which a grade of "not passed" may be raised to a grade of "passed." For the bachelor's degree in the College of Dentistry, or for the degree of D.D.S., the student must have obtained a grade of "passed" in every course in which he has been enrolled in that College in and after July 1, 1942.

For the grading system in the Medical School, see the ANNOUNCEMENT OF THE MEDICAL SCHOOL.

Every student who desires to obtain his scholarship grades at the end of the semester should deposit with the Registrar a self-addressed stamped envelope for the return of his report.

### MINIMUM SCHOLARSHIP REQUIREMENTS

Any student who receives a notice of dismissal from the University may petition the dean of his college or school for a hearing. Ordinarily, however, students dismissed for unsatisfactory scholarship will be excluded from the University for an indefinite period, with the presumption that their connection with the University will be ended by such exclusion. The conditions under which students may be dismissed follow:

#### Colleges of Letters and Science, Agriculture (Berkeley), Chemistry, and Pharmacy; also Schools of Architecture, Business Administration, Forestry, Nursing, and Public Health—

*Probation.*—A student will 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; or

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

*Dismissal.*—A student will be subject to dismissal from the University

(1) If during 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 one (a C average); or

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

Students in the School of Nursing may, at the discretion of the Faculty of the School of Nursing, be placed on probation or made subject to dismissal for deficiencies in qualification for their profession other than those listed above.

A student who becomes subject to the provisions of this regulation will also be subject to such supervision as the Faculty of his college or school may determine. The Faculty may dismiss from the University students under its supervision or may suspend the provisions of this regulation and permit the retention in the University of the students subject to dismissal, and the return to the University of students who have been dismissed under this regulation.

#### College of Engineering—

A student will be subject to dismissal from the University (A) if during any semester he fails to pass with a grade of C or higher courses totaling at least 4 units; or (B) if at the end of any semester he has failed to attain at least a C average in all courses undertaken in the University. A student who becomes subject to the provisions of this regulation will be under the supervision of the Faculty of the College. The Faculty of the College may dismiss



from the University students under its supervision, or may suspend the provisions of this regulation and permit the retention 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.

**School of Optometry—**

*Probation.*—A student will be placed on probation if at the close of his first semester in the School of Optometry his record falls below a C average.

*Dismissal.*—A student will be subject to dismissal from the University

(1) If at the end of any semester subsequent to his first, he has failed to maintain a grade-point average of one (a C average), computed on the total of all courses taken subsequent to his admission to the School of Optometry for which he has received a final report; or

(2) If during any semester he fails to pass with a grade of C or higher courses totaling at least 4 units.

A student in the School of Optometry who becomes subject to the provisions of this regulation will be under the supervision of the Faculty of the School. The Faculty may dismiss from the University students under its supervision, or at its discretion may suspend the provisions of this regulation and permit the retention 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.

**Graduate Division—**

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.

**Medical School—**

Matriculants in the Medical School who are pursuing all their work in that school are not subject to the foregoing regulations. For the rules governing scholarship requirements in the Medical School, reference should be made to the annual announcement of the School.

**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, page 42). No fees are required.

The privilege of taking an examination for credit will ordinarily be granted only to students who have at least a B average for all courses undertaken in the University.

Arrangements must be made in advance with the dean of the student's college or school; his approval, and that of the instructor who is appointed to give the examination, are necessary before an examination can be given.

The application form for examinations may be obtained from the Registrar.

### FINAL EXAMINATIONS

Final examinations are obligatory in most undergraduate courses. Each course in which a final examination is not required is so indicated in the SCHEDULE OF CLASSES at the beginning of the semester in which the course is given. 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 will 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 the examination, except as provided in the preceding paragraph.

Any department may examine a student, at the end of the semester immediately preceding his graduation, in the major subject in which the department has given instruction; and a student to be examined in a major subject may, at the discretion of the department, be excused from all final examinations in courses in the department of the major subject in which he has been enrolled during the semester. Credit value may be assigned to this general examination in the major subject.

In the year courses of the professional curriculum in jurisprudence, mid-year reports may be made without formal examinations, and these reports will be final.

Reexaminations are permitted only for the purpose of raising grade E or X (not passed) to a passing grade. In the courses of the Summer Sessions, however, the University does not provide reexaminations. A student who received grade B, C, or D in any course is not allowed a reexamination for the purpose of raising the grade. Concerning methods of raising nonpassing grades to passing grades, see under Removal of Deficiencies, below.

Application for examination for advanced standing on the basis of work done before entrance to the University should be made to the Director of Admissions upon entrance to the University.

## REMOVAL OF DEFICIENCIES

NOTE.—In this section whenever reference is made to removal of grade E (not passed), the statement applies also to grade X (not passed), used prior to July 1, 1944.

A student who receives a grade lower than C in a lower division course may, upon repetition of the course, receive the grade assigned by the instructor and grade points appropriate to that grade. The foregoing privilege does not apply to grades received in upper division or graduate courses. A student who receives grade E or F in an upper division or graduate course may, upon successful repetition of the course, receive unit credit for the number of units passed, but ordinarily will not receive grade points. (For exceptions, see below.)

Special provision is made for students whose university work has been interrupted by one year or more of service with the armed forces of the United States and who prior to such service, had undertaken one or more courses forming part of an announced sequence of courses. Such a student may, with the approval of the dean of his college or school (or, in the case of graduate students, with the approval of the Dean of the Graduate Division concerned), be permitted to repeat any course previously undertaken in the sequence, irrespective of the grade previously assigned, and to receive the new grade assigned by the instructor and grade points appropriate thereto; provided, however, that for a course so repeated the student may receive unit credit toward graduation, or toward the satisfaction of major requirements, only in an amount not to exceed the difference between the full unit value of the course and the number of units, if any, which he has previously received from the same course.

For the purpose of raising grade E to a passing grade the student may, with the consent of the instructor concerned and of the dean or director of the appropriate school, college, or division, have the privilege of a "condition examination." In Summer Sessions courses, however, reexaminations for the removal of deficiencies are not provided by the University.

Any examination, term paper, or other exercise which the instructor may require of the student in order to raise grade E to a passing grade in a course is a "condition examination." For every such examination a formal permit, to be obtained in advance from the Registrar, must be shown to the instructor in charge of the examination; otherwise he will lack authority to consider and report upon the work submitted by the student. For every course in which a special examination is undertaken with a view to raising grade E to a passing grade, a fee of \$2 is charged. The fee for a permit for two or more special examinations of this type is \$3. There is no fee for a reexamination (final examination taken with the class), if the final examination is the only task required by the instructor for the purpose of raising grade E to a passing grade and if this final examination is taken with the class not later than the close of the next succeeding semester of the student's residence in which the course is

offered. A form of petition for a special examination or for admission to an examination with a class, with instructions concerning procedure, may be obtained from the Registrar. Grade E in a course in which a final examination is regularly held can be raised to a passing grade only by passing a satisfactory final examination in the course.

If a student who has received grade E in any course fails to raise it to a passing grade by the end of the next semester of his residence in which the course is regularly given, then the grade shall be changed to F. If in the meantime, however, the student has repeated the course and has again received grade E, his grade in the course will remain grade E, as it would be if he were taking the course for the first time. A student who fails to attain grade D or a higher grade in any course following a reexamination for the purpose of raising grade E to a passing grade, will be recorded as having received grade F in the course.

A student who raises a grade E or F, incurred in an upper division or graduate course, to a passing grade by *successful repetition* of the course, and a student who raises a grade E, incurred in any course, lower division, upper division, or graduate, to a passing grade by *examination* or by performing other tasks required by the instructor (short of actual repetition of the course), shall ordinarily receive no grade points. An exception to this rule is permitted, however, when the deficiency consists solely in the *omission* of the final examination or other required exercise on account of illness or other unavoidable circumstances, the student's performance in all other respects having been satisfactory. In such circumstances the student may petition to have that grade assigned which he would have received had the work been completed without delay, together with the appropriate number of grade points. His petition must set forth in detail the reasons for his failure to complete the course within the usual limit of time. The petition must be endorsed by the instructor concerned, and must be submitted for final approval as follows: by undergraduate students (except students in the College of Pharmacy), to the Dean of Students; by students in the College of Pharmacy, to the Dean of that College; by graduate students, to the Dean of the Graduate Division.

#### TRANSCRIPT OF RECORD

Each student will be provided, upon request to the Registrar, with one official transcript (copy) of his University record, without charge. After the first request a minimum charge of fifty cents is made for each additional transcript of record. Students who plan to enter the teaching profession or to seek other employment following graduation, should provide themselves with one or more transcripts of their records so as to be ready at all times to show official evidence of attendance at the University.

Application for a transcript of record should be made directly to the Registrar well in advance of the time when the record will be needed by the applicant.

## LEAVE OF ABSENCE AND HONORABLE DISMISSAL

A *brief leave of absence*, to expire on a definite date, may be issued to a student in good standing who finds it necessary to withdraw for a short time, but who wishes to retain his status in his classes and to resume his work before the close of the current semester. No excuse for absence will relieve the student from the necessity of completing all the work of each course to the satisfaction of the instructor in charge. Petition forms for leaves of absence, with complete instructions, may be obtained at the office of the Registrar.

A student must apply for leave to be absent from or excuse for having been absent from any college exercise other than a final examination, to the instructor in charge of the exercise; unless, for unavoidable cause, the student is obliged to absent himself from all college exercises for several days, in which event he should apply for a brief leave of absence as directed above. Leave to be absent from a final examination must be sought by written petition to the proper faculty.

An *honorable dismissal* or an *indefinite leave of absence* may, upon petition, be issued to any student in good standing provided he complies with the instructions on the form of petition, which may be obtained from the Registrar.

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, students on probation, students under censure, and students under suspension are not regarded as students in good standing.

*Discontinuance without notice.* Students who discontinue their work without formal leave of absence do so at the risk of having their registration privileges curtailed or entirely withdrawn.

## 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, his conduct warrants. 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.

*Administration.*—By authority of the Academic Senate, the President of the University is entrusted with the administration of student discipline with full power to act. He accomplishes this through the assistance of his teaching staff, the administrative officers concerned with student welfare, and the Faculty-Administrative Committee on Student Discipline under the chairmanship of the Dean of Students.

*Degrees of discipline.*—There are five degrees of discipline: warning, censure, suspension, dismissal, and expulsion. Censure indicates that the student is in danger of exclusion from the University. Suspension is exclusion from the University for a definite period. Dismissal is exclusion for an indefinite period, with the presumption that the student's connection with the University will be ended by it. Expulsion is the most severe academic penalty, and is final exclusion of the student from the University.

*Student self-government.*—The Men's and Women's Judicial Committees of the Associated Students, advise the Faculty-Administrative Committee on Student Discipline regarding student views on conduct, penalties, and procedures, and recommend measures conducive to the improvement of student conduct. They are responsible for developing a program for creating among the students attitudes and opinions favorable to good conduct.

Rules for women students, particularly with respect to good conduct in living groups, have been established by the Women's Executive Board of the Associated Students. Discipline for infractions of these regulations is administered by the Women's Judicial Committee of the Associated Students with the help and advice of the Dean of Women.

**MISCELLANEOUS INFORMATION**  
**CLIMATE—EXPENSES—LIVING ACCOMMODATIONS**  
**EMPLOYMENT—SCHOLARSHIPS—LOANS**

**Site, Climate, and Transportation**

THE BERKELEY CAMPUS of the University of California is situated on the eastern shore of San Francisco Bay, directly opposite the Golden Gate. The University grounds comprise five hundred and thirty acres, rising in gentle slopes to the Berkeley hills. From almost every part of the campus—and the city of Berkeley—there is a magnificent outlook over the bay and city of San Francisco, the neighboring plains and mountains, the Pacific Ocean, and the Golden Gate.

Berkeley has a climate well suited for university work throughout the year. Extremes of heat and cold, such as are experienced in many other parts of the country, are unknown in Berkeley. The average temperature for the winter months is about 53 degrees; for the months of May, June, and July, about 60 degrees. Temperatures as high as 85 degrees are of infrequent occurrence and brief duration.

The average rainfall is 24 inches, of which about three-fourths comes in the four months, December to March, when approximately one day out of three is rainy. Throughout the rest of the school year on an average one-fifth of the days are rainy. In the rainy season fogs are infrequent. Fully half the foggy days of the year come in the summer months.

From the business center of Oakland, it is about thirty minutes' ride by street car or bus to the University, and from San Francisco about thirty-five minutes by electric train. Motorists from San Francisco may come by way of the San Francisco-Oakland Bay Bridge.

**EXPENSES OF STUDENTS**

**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 expenditure. In a student body of more than twenty thousand members there are so many different tastes, as well as such a wide range of financial resources, that each student must determine his budget in keeping with his own needs and financial condition. It is possible to live simply, and to participate moderately in the life of the student community, on a modest budget. The best help the University authorities can offer the student in planning his budget is to inform him of certain definite expense items, and acquaint him with others that he will in all probability have to provide for.

A table of estimated minimum, moderate, and liberal budgets for a college year of two semesters is given on page 52.

*Incidental fee.*—The incidental fee is \$35 each semester, for both undergraduate and graduate students. This fee, which must be paid on the date of registration, covers certain expenses of students for use of laboratories, library books, for athletic and gymnasium facilities and equipment, for lockers and washrooms, for registration and graduation, and for such consultation, medical advice, and hospital care or dispensary treatment as can be furnished by the Student Health Service with the aid of the visiting staff at Cowell Memorial Hospital and not elsewhere. No part of this fee is remitted to those students who may not desire to make use of all or any of these privileges. If a student

PRINCIPAL ITEMS OF EXPENSE ESTIMATED FOR THE  
FALL AND SPRING SEMESTERS

Expense Items	Minimum		Moderate		Liberal	
	Men	Women	Men	Women	Men	Women
Incidental Fee .....	\$ 70.00	\$ 70.00	\$ 70.00	\$ 70.00	\$ 70.00	\$ 70.00
Books and Supplies .....	25.00	25.00	43.00	43.00	63.00	63.00
A.S.U.C. Membership .....	12.50	12.50	12.50	12.50	12.50	12.50
Board and Room .....	310.00	330.00	405.00	470.00	500.00	608.00
Miscellaneous (Recreation, club dues, laundry, drugs, etc.)....	30.00	46.00	80.00	130.00	206.00	286.00
Total .....	\$477.50	\$483.50	\$610.50	\$725.50	\$851.50	\$1039.50

withdraws from the University within the first five weeks from the first day of registration for the semester, a part of the incidental fee will be refunded.

Students who are classified as nonresidents of the State are required to pay, each semester, in addition to the incidental fee, a tuition fee of \$150.<sup>1</sup> It is important for every prospective student to note carefully the rules governing legal residence in the University, which are stated on page 54. For conditions governing the commutation of the tuition fee for graduate students, see the ANNOUNCEMENT OF THE GRADUATE DIVISION.

*Fees in the professional schools and colleges.*—In the professional schools and colleges tuition and general expenses differ. Nonresidents of California enrolled in the School of Jurisprudence pay a fee of \$185<sup>2</sup> a semester, which includes the incidental fee paid by all students.

In the Medical School, tuition for residents is \$125 a semester; for nonresidents, \$250. (Note that intrants are required to make an advance payment of

<sup>1</sup> Formerly \$75. (The increase will not apply to students who were in attendance throughout the Spring Term, 1944, so long as they continue attendance upon subsequent semesters without interruption.)

<sup>2</sup> Formerly \$97.50. (The increase will not apply to students who were in attendance throughout the Spring Term, 1944, so long as they continue attendance upon subsequent semesters without interruption.)



\$50 upon acceptance of the application for admission.) Undergraduate resident students in the College of Dentistry pay a tuition fee of \$100 a semester, non-residents, \$175; resident graduates, \$150, nonresidents, \$225. In the College of Pharmacy the tuition fee for undergraduate resident students is \$100 a semester; for nonresidents \$175.<sup>2</sup>

Further information about fees and expenses in the professional curricula is given in detail in the separate announcement of each school or college. Copies may be obtained from the dean in charge.

*Laboratory fees.*—Beginning in the fall semester, 1947, no laboratory fees will be charged. The incidental fee has been adapted to meet these costs.

*Living expenses.*—The main item of expense for students living away from home is room and board. A detailed statement of costs will be found below, under Living Accommodations.

*Other expenses.*—Books and stationery cost on an average of from \$25 to \$45 a year. Women students taking physical education are required to buy shoes which cost about \$2. Students who fail to pass the required Examination in Subject A must pay a fee of \$15 for the Course in Subject A (see page 37). For the tardy performance of certain routine procedures—such as late registration, late filing of study lists, etc.—fees are imposed which range from \$1 to \$2.

Membership in the Associated Students of the University costs \$12.50 each year (fall and spring semesters), and though membership is not obligatory, it is advisable. A membership card entitles the holder to a subscription to the student newspaper, the *Daily Californian*; membership in the Henry Morse Stephens Memorial Student Union, which is the center of campus life; privilege of admission free or at reduced rates to athletic contests; and participation in all student affairs, including athletics and student-body and class activities.

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 fee. Students classified as nonresidents of the State must also add to their estimated budgets the tuition fee of \$150<sup>1</sup> a semester.

*Tuition.*—The University charges a tuition fee to 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. Such a student is classified as a nonresident. A student entering the University for the first time should read carefully the rules governing determination of residence, as quoted below, that he may be prepared, in the event of classification as a nonresident, to pay the required tuition fee. This fee must be paid at the time of registration. *The attention of prospective students, who*

<sup>1</sup> Formerly \$75. (The increase will not apply to students who were in attendance throughout the Spring Term, 1944, so long as they continue attendance upon subsequent semesters without interruption.)

<sup>2</sup> Formerly \$110. (The increase will not apply to students who were in attendance throughout the Spring Term, 1944, so long as they continue attendance upon subsequent semesters without interruption.)

have not attained the age of 22 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 during which it is proposed to attend the University, does not, of itself, entitle the student to classification as a resident. An alien who has not made, prior to the opening day of the semester during which he proposes to attend the University, a valid declaration of intention to become a citizen of the United States, is classified as a nonresident.

Tuition in the academic colleges is free to students who have been residents of the State of California for a period of one year immediately preceding the opening day of the semester during which they propose to attend the University. Students who are classified as nonresidents are required to pay a tuition fee of \$150 each semester. This fee is in addition to the incidental fee. The tuition fee may be remitted for distinguished graduate students in full graduate standing in other than professional schools and colleges, on the approval of the Dean of the Graduate Division. For conditions of eligibility for exemption from this fee, see the ANNOUNCEMENT OF THE GRADUATE DIVISION.

Students of the University who were in attendance throughout the Spring Term of 1944, and who were not exempted from payment of the tuition fee, will be allowed the privilege of paying only \$75 per semester for tuition, so long as they continue in attendance upon subsequent terms or semesters without interruption.

If the student is in doubt about his residence status, he may communicate with the Attorney for the Regents in Residence Matters. When the University is not in regular session, the Attorney may be consulted or communications may be addressed to him at Room 910, Crocker Building, San Francisco 4, California. At other times he, or his deputy, will keep office hours in Room 130, Administration Building, on the campus at Berkeley.

*The eligibility of a student to register as a resident student may be determined only by the Attorney for the Regents 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 soon after registration. Old students are advised that application for reclassification as a resident student must be filed within ten days after regular registration; by late registrants, within one week after registration. Application for a change of classification with respect to some preceding semester will not be received under any circumstances.

*Refunds.*—For students who leave before the end of any semester, part of the fees enumerated above may be refunded. A schedule of refunds and other information will be found in a separate circular (STUDENT FEES AND DEPOSITS) which may be obtained from the Registrar, University of California, Berkeley 4.

**Rules Governing Residence**

The term "nonresident student" is construed to mean any 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 Section 20005 of the Education Code of California, provided, however:

1. That every alien student who has not made a valid declaration of intention to become a citizen of the United States, as provided by the laws thereof, prior to the opening day of the semester during which he proposes to attend the University, is deemed to be a nonresident student.

2. That no person is deemed to have made a valid declaration of intention to become a citizen of the United States whose declaration of intention at the time when it is presented in support of an application for classification as a resident student in the University has lost its force or effectiveness, or who can not, under said declaration, without renewing the same or making a new declaration, pursue his declared intention of becoming a citizen of the United States.

Every person who has been, or who shall hereafter be classified as a nonresident 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 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 shall 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.

The nonresident tuition fee may be remitted in the case of students in full graduate status [except in the professional schools and curricula, e.g., Jurisprudence, Medicine, Public Health, Education (Teacher-Training and the Ed.D. degree), Business Administration, Librarianship, Social Welfare, Hospital Dietetics, 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 in full graduate standing, 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 or other courses for his cultural advancement.

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 if he is a nonresident. Students exempted from the tuition fee pay only the incidental fee.

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.

### LIVING ACCOMMODATIONS

Lists of approved boarding and lodging houses for women, information about men's accommodations, fraternities, sororities and clubs, and advice and information about other types of accommodations may be obtained from the Dean of Students, Housing Office, Building Q. The University is within commuting distance of Oakland and other Eastbay cities, and San Francisco.

The cost of board and lodging depends entirely on the type of accommodation desired. In the boarding houses the estimated cost is between \$50 and \$55 for men, and \$40 and \$67.50 a month for women. In the majority of the boarding houses for women the cost includes lodging and two meals per day. In the men's coöperative houses the cost is approximately \$34.65 a month, and in the women's coöperative houses between \$36.75 and \$40 a month. Monthly bills in sorority and fraternity houses, and in clubhouses range from \$52.50 to \$65 exclusive of initiation and pledge fees. These prices ordinarily include dues, lodging and three meals per day. Apartments vary greatly in price depending on size and location, but during the war period they have been difficult, if not impossible, to obtain. This situation still prevails.

Whatever type of lodgings the student engages he is urged at the time of making his reservation to have a clear understanding in writing with the proprietor regarding terms of payment, charges, if any, for the vacation periods, laundry privileges, the use of baths, etc.

New undergraduate women students who do not live in their own homes are expected to live in houses approved by the University. Every undergraduate woman under 21 years of age must have the written endorsement of the Dean of Women for her college residence before she will be permitted to file her study list. Approval is given to women students living with their parents, to those living in houses approved by the University, and to those living in sororities and student clubs. Every undergraduate woman under 21 years of age not living in an approved house must have not only the permission of the Dean of Women for her college residence, but also the permission of her parent or guardian, whose approval must be indicated by signature on the women's Residence Card provided at the time of registration.

*Approved boarding and lodging houses*, exclusively for women, have been inspected by the University authorities. They are all within walking distance of the campus. A list of such houses is published annually. Proprietors of these approved houses expect students to remain throughout an entire semester and usually require a written contract to this effect. Reservations must be made with the person whose name appears on the list as manager.

*Fraternities and sororities.* Fraternity membership is by invitation only. All men students who are interested in membership in such groups should submit their names and addresses to the Dean of Men, office of the Dean of Students at once. From these, "rushing" lists will be compiled and distributed to the fraternities. The majority of the national sororities maintain chapters here. There are also several local sororities and clubs. Each of these organizations provides living quarters for its members. The sorority houses are approved by the University. Membership in these organizations is by invitation, and women students who are interested in membership in a sorority may obtain information from the Dean of Women. Temporary accommodations are usually not available in boarding and lodging houses; therefore, students who anticipate living in fraternity or sorority houses during their first semester should make temporary living arrangements for the rushing period. Reservations in the University residence halls for women, except for Stern Hall, will be open to women intending to participate in rushing on condition that they remain for the entire semester unless the Housing Office can replace them.

*Stern Hall*, a residence hall for women students, is a gift of Mrs. Sigmund Stern. It accommodates 90 women. The price for room and board is \$275 a semester. Application must be made to the Housing Office at least five months in advance of prospective residence.

*Bowles Hall*, a residence hall for men, is a memorial to the late Philip Ernest Bowles, member of the Class of 1882 and for twelve years a Regent of the University. Two hundred and six undergraduate men can be accommodated. Applications for residence may be obtained from the Housing Office approximately five months in advance of prospective attendance. The charge for room and board is \$250 a semester.

*Fernwald Halls* at Hillside and Dwight Way are seven residence halls for women. The names of the halls are: Mitchell, Peixotto, Richards, Oldenberg, Freeborn, Cheney, and Cunningham. The price for room and board, with three students in a room, is \$250 a semester. Application should be made to the Housing Office, Building Q.

*University Dormitories, Richmond*, are dormitories for men located approximately ten miles from the campus in the city of Richmond. The price for room and board, with two students in a room, is \$225 a semester. Single rooms are available at additional cost. Direct bus transportation is provided. Applications may be obtained from the Housing Office, Building Q.

*International House* is a residential and social center for American and foreign students. The residence facilities for men and for women are separate, the social halls and dining rooms being used in common. Ordinarily, residence is open only to graduate and upper division students; however, applications from all non-Caucasian Americans, and from all foreign students will be given careful consideration. Applications and requests for information should be sent directly to International House, University of California, Berkeley 4.

For information about the 290 units for married students operated by the University in Richmond and Albany, students should write the Housing Office, Building Q.

### STUDENT EMPLOYMENT

Many students who plan to attend the University expect to earn part or all of their expenses. The following statements are made, not to discourage the able student who must work, but to forewarn 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) It is not often advisable for a student to undertake outside employment until he has had 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 a combined program of studies and work for subsequent terms. A student in good health can, with reasonable diligence, carry an average program of studies, and give from twelve to eighteen hours a week to outside employment.

(2) The undergraduate curricula are organized on the assumption that students will give the major part of their time and attention to their studies. A student who is largely self-supporting must consider at the outset the possibility of taking more than the minimum number of semesters required to obtain a degree, if he is to maintain his scholastic standing and his health, and to enjoy the advantages of University life. Students who are not physically strong or in good health should not attempt to be wholly self-supporting because of the danger of jeopardizing health and academic progress.

(3) There are some part-time cash jobs available to men students, but it is not always easy to fit an academic program to the employer's needs. In most cases programs must be arranged before referrals for employment can be given. Those who have a limited amount of time available or difficult class schedules can often supplement their income by doing gardening and housework. There are many opportunities for men students to work in exchange for board.

Women students can always be placed in private homes to work eighteen hours a week in exchange for room, board, and \$10 a month. Although experienced waitresses and expert stenographers have less difficulty than others in securing permanent part-time cash jobs, there is usually not a sufficient demand just at registration time to take care of all who apply for such work.

Since the majority of part-time cash positions require from 20 to 24 hours of work a week and transportation time, students who must be entirely self-supporting should plan to carry a limited academic program.

### **BUREAU OF OCCUPATIONS**

The Bureau of Occupations assists students to find part-time work, and graduates other than teachers to obtain full-time employment. There is no charge for this service. Arrangements for employment through the Bureau of Occupations cannot be made by correspondence; a personal interview with a member of the staff is required of everyone. The office of the Bureau of Occupations is in South Hall Annex.

### **BUREAU OF GUIDANCE AND PLACEMENT**

The Bureau of Guidance and Placement has as its chief function the coordination, under one executive officer, of the teacher placement activities on the Berkeley, Los Angeles, and Santa Barbara campuses. In addition, the Manager of the Bureau is available to students who wish advice in regard to choosing an occupation; books and pamphlets may be consulted at 102 Administration Building.

#### **OFFICE OF TEACHER PLACEMENT**

The Office of Teacher Placement recommends graduates, students, and former students for positions in universities, colleges, junior colleges, high schools, and elementary schools, and for educational research, thereby assisting qualified candidates to obtain permanent employment or promotion in the work for which they have prepared themselves. A fee of \$5 is charged for the clerical services of this office. Communications should be addressed to the Manager of the Bureau of Guidance and Placement, 102 Administration Building, University of California, Berkeley 4.

The University reserves the right to refuse to extend its cooperation to candidates who apply for positions for which they are manifestly unfit. 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.

### SCHOLARSHIPS, PRIZES, LOANS

Through the generosity of alumni and friends of the University, scholarships, fellowships, prizes, and loan funds have been established which are available to undergraduate and graduate students in accordance with the conditions laid down by the donors.

*Scholarships.*—A circular giving information about undergraduate scholarships may be obtained from the Committee on Undergraduate Scholarships, 201 Administration Building. Students who maintain an excellent scholarship standing are eligible to make application. Holders of undergraduate scholarships must carry a minimum of 12 units a semester. Applications for scholarships for any academic year (July 1–June 30) must be filed with the Committee on Undergraduate Scholarships not later than the preceding December 31 by students already in attendance, and not later than February 16 by entering students. Application forms are available in the Office of the Dean of Students, 201 Administration Building, each year from the beginning of the last week in November.

Information about fellowships for graduate students may be obtained from the Dean of the Graduate Division. Fellowships and graduate scholarships are ordinarily awarded as a mark of honor, on the basis of scholarship, not of need. The holders of fellowships or graduate scholarships are expected to devote all their time to graduate study and research in the University. Applications for fellowships and graduate scholarships must be filed with the Dean of the Graduate Division not later than February 20, prior to the academic year in which the award is tenable.

*Prizes.*—A complete list of available prizes, together with the regulations governing each competition, may be obtained from the Registrar.

*Loans.*—The loan funds for both graduate and undergraduate students are administered in the office of Dean of Students. Loans are not available to students in their first semester of residence at the University. Applicants are required to have a creditable scholarship record and must present a satisfactory repayment program. There are no loans available by which a student may finance his entire college course.



## REQUIREMENTS IN THE SEVERAL COLLEGES, SCHOOLS, AND CURRICULA

### COLLEGE OF LETTERS AND SCIENCE

THE FIRST two years in the College of Letters and Science constitute the lower division. During this period it is expected that the student, besides fulfilling the prerequisites for the major work upon which he will later concentrate, will make an effort to establish a basis for that breadth of culture which will give him a realization of the methods and results of some of the more important types of intellectual endeavor, and a mental perspective that will aid him in reaching sound judgments. The requirements of the first two years are designed for these purposes and are given in detail later on. A student, upon fulfillment of these requirements with not less than a C average, and with at least a year of residence in the University, and at least the final semester in residence in the college, is awarded the degree of Associate in Arts. There are many for whom two years of general education is sufficient preparation for their subsequent life activities.

The upper division, consisting of the third and fourth years, constitutes a period of more advanced study and limited specialization. In order to be admitted to the upper division, a student must have either received the Associate in Arts degree in the College of Letters and Science at Berkeley or Los Angeles, or have fulfilled, at this or another institution, the lower division requirements set forth below.

Approximately half of a student's time in the upper division is devoted to advanced study in some particular field, called the major. In many cases the major consists of a program of related courses as set up by one of the departments. In other cases, combinations chosen from more than one department have been set up and are known as group majors. Again, a student has the privilege of presenting for approval his own program of correlated studies known as an individual group major. The major or group major that the student has completed is stated on his diploma. A student who desires less concentration than is required in one of the above majors may enroll in what is known as the general curriculum. This consists of 36 units of upper division courses selected according to the student's own preference from not more than three departments. These departments need not be related. The general curriculum allows a student to continue with a more general education and meets the needs of many who look forward to nonprofessional occupations. His diploma states merely that he has graduated in the general curriculum; if, therefore, he wishes to attain competence for some specialized activity, it may be to his advantage to present a major or a group major and receive the advice of a member of the faculty especially competent in his chosen field.

The courses and curricula in the College of Letters and Science are designed

to give the student an education, the value of which is not limited by its possible vocational use. In this respect it differs from a purely technical college, the value of which is realized mainly in the vocational application of the instruction offered. For example, a major in Greek might, of course, lead ultimately to a professorship in Greek, but its value would not disappear on entering some other occupation. Again, zoölogy is a subject basic to the profession of medicine, but it also reveals the nature of life processes, a topic to excite the curiosity of a person with an inquiring mind.

To safeguard this character of instruction in the College, there has been set up a Letters and Science list of courses the educational values of which are regarded as not dependent upon their vocational applications. Nearly all courses elected by the student must be chosen from this list.

The maintenance of a B average or better secures privileges that the student may well regard as valuable, particularly in the upper division, where this standing qualifies the student as an honor student.

Following this general introduction, a prospective student should familiarize himself with the more detailed information given in the following paragraphs.

#### **Faculty Advisers and Study-List Regulations**

*Lower division.*—Every lower division student at the time of registration will report to a faculty adviser and his study list must be approved by an adviser. Special advisers are provided for students in architecture, business administration, dentistry, medicine, nursing, optometry, pharmacy, and public health. Study lists aggregating 12 units or more a semester may be presented without special permission in respect to quantity of work except that during the freshman year or, in the case of transfer students, their first semester of residence at the University, the maximum is 16 units. Requests to take fewer than 12 units must be approved by the Dean of the College.

Two lower division courses in physical education may be included in a student's academic program to the extent of not more than 1 unit in any semester or session, in addition to the above study list limits, and with degree credit totaling not more than 4 units.

A student in the lower division may each semester designate his intended major. The student may seek advice from his proposed major department or committee. Students who fail in the lower division to fulfill the requirements of a department regarding both subjects and grades may be denied the privilege of a major in that department.

*Advisers for students entering with advanced standing.*—Students entering the College of Letters and Science after attendance at other institutions will report to faculty advisers if they are lower division students; upper division students receive advice concerning the major from the major adviser. Such students, however, frequently have problems unrelated to the major, and should call at the office of the Dean to confer about their problems concerning elective

courses. Students undertaking the general (nonmajor) curriculum should report to Professor R. N. Walpole.

*Upper division.*—Each upper division student must designate his major or group major on his study-list card, he must register with his major department, or committee in charge of the group major, and his study list must be approved (in respect to its relation to his major program) by a representative of the major department or group major committee before it will be accepted by the Registrar. Furthermore, all cards must be presented at the office of the Dean of the College for approval if totaling less than 12 units.

Students who fail in the lower division to complete the preparation for a major, both in subjects and grades, may, at the option of the department, be denied the privilege of a major in the department concerned.

A change in the major may be made only by permission of the Dean of the College and of the department to which the student petitions to transfer. Notice that the change has been authorized will be sent by the Registrar to the departments concerned.

All students are required to complete at least 6 units in their major during their last or senior year; either 3 units each semester, or 2 units in one semester and 4 units in the other.

Students who enter the College of Letters and Science of the University of California after attendance at other institutions, or other colleges of this University with senior standing at the time of their admission, must complete at least 24 units, including 18 units of work in upper division Letters and Science courses, of which at least 12 units must be in their major department or group major in this University.

*Status of courses in professional curricula.*—Certain designated professional curricula (as in the first year of the Medical School or the School of Jurisprudence) are accepted as constituting a year's work toward the A.B. degree. If these are offered in place of a major in Letters and Science, all the courses required or included as part of the student's program in that curriculum become required courses for the degree.

### Lower Division Requirements

Students who transfer from other colleges of the University of California or from other institutions will be required to meet the lower division requirements in this College but will not be held strictly to the time distribution of requirements, if the credit allowed them in the College of Letters and Science at the University of California amounts to at least 60 units.

Certain of these requirements may be satisfied by courses taken in the high school. It is desirable that the student should so arrange his high school program as to reduce the required work in the fields of foreign language, mathematics, and natural science. This makes his program more flexible, gives him a greater freedom of choice, and prepares him to pass more quickly into

advanced work or into new fields of study. The satisfaction of requirements in the high school does not, however, reduce the amount of work required in the University for the degree of Associate in Arts (60 units) or for the A.B. degree (120 units).

The degree of Associate in Arts will be granted on the completion of not less than 60 units of college work, including at least the last two semesters in residence at the University and at least the last semester in this college, with a grade-point average in all work done in the University of not less than 1.00 (a C average), and the fulfillment of the following general and specific requirements:

(a) *General University Requirements.*†

Subject A. (See page 37.)

Military Science and Tactics, 8 units (men). (See page 39.)

(b) *Foreign Languages.* At least 16 units in not more than two languages, with not less than 4 units in any one language. The first two years of high school work in a foreign language will be counted in satisfaction of 4 units of this requirement and each year thereafter as 4 units. Courses given in English by a foreign language department will not be accepted in fulfillment of this requirement. A student may satisfy this requirement either in whole or in part by giving such evidence of his proficiency in foreign language as may be authorized by the Executive Committee of the College.

(c) *Mathematics.* Elementary algebra and plane geometry.

(d) *Natural Science.* At least 12 units chosen from the following list:

High school physics\*, 3 units (1 high school credit).

High school chemistry\*, 3 units (1 high school credit).

Anthropology 1.

Astronomy 1A, 1B, 2\*, 7A-7B.

Bacteriology 1, 2, 4\*.

Botany 1\*, 12, 15\*, 16\*.

Chemistry 1A\*-1B\*, 5\*, 8.

Entomology 1\*.

‡Geography 1.

Geology 1A, 1B, 2.

Paleontology 1, 10.

Physics 2A-2B, 3A-3B\*, 4A-4B-4C\*\*, 10A-10B.

Physiology 1A, 1C\*.

Zoölogy 1A\*, 1B\*, 10.

† For information concerning exemption from these requirements, apply to the Registrar.

\* Will be accepted as a laboratory course.

‡ Geography 1 may be used in partial satisfaction of the natural science requirement; if so used, it may not be included in requirement (e), group 4.

\*\* Two courses from 4A-4B-4C satisfy the laboratory requirement.

The student must include among the courses taken in satisfaction of the requirement in natural science at least one course in laboratory science. Any of the courses marked with an asterisk in the foregoing list will be accepted in fulfillment of this requirement. Courses with but one unit of laboratory science are not accepted as fulfilling this requirement and are not marked above unless they have as prerequisite a course that also requires one unit of laboratory work.

(e) Additional. A sequence (of 5 or 6 units) in subjects of college level, except as otherwise provided, in each of four of the following six groups, one of which may be postponed to the upper division:

- (1) English, Speech.
- (2) Foreign Language (additional to b). This may be satisfied by one college course of not less than four units, or by two years of high school Latin.
- (3) Mathematics. This may be satisfied partly in the high school, as indicated below.
- (4) Social Sciences.
- (5) Philosophy.
- (6) Fine Arts (architecture, art, music) and Literature. This may be satisfied by two or more courses which may or may not form a sequence.

#### Year Courses Acceptable in Fulfillment of Requirement (e) for the Degree of Associate in Arts

##### *Group 1—English and Speech*

English 1A-1B; Speech 1A-1B.

##### *Group 2—Foreign Languages*

Classics: Greek 1A-1B, 101, 102; Latin 1, 2, 3, 4. Any year sequence from the following: Latin 105, 106, 107, 108. Two years of high school Latin are accepted as satisfying this requirement.

French: 1, 2, 3, 4, 8, 25, or any upper division year sequence.

German: 1, 2, 3, 4, 3s, 4s, or any upper division year sequence.

Italian: 1, 2, 3, 4, or any upper division year sequence.

Near Eastern Languages: 21A-21B, 131A-131B, 151A-151B, 161A-161B.

Oriental Languages: 1A-1B, 9A-9B.

Portuguese: 1, 121, 122, 123.

Slavic Languages: 1, 2, 6A-6B, 10A-10B, or 14A-14B.

Spanish: Course 1, 2, 3, 4, or 25A-25B, or any upper division year sequence.

##### *Group 3—Mathematics*

Any two of the following courses: C or high school trigonometry, 2, 3A or 11A, 3B or 11B, 10, 12.

*Group 4—Social Sciences*

Anthropology 2A-2B.

Economics 1A-1B.

\*Geography 1-2.

History 4A-4B, 8A-8B, 17A-17B, 19A-19B.

Near Eastern Languages 13A-13B.

Oriental Languages 42.

Political Science 1, 2.

Psychology 1A and 1B or 2.

Social Institutions 2A-2B, 10A-10B.

*Group 5—Philosophy*

Philosophy 6A-6B.

Philosophy 10A-10B.

*Group 6—Fine Arts and Literature*

Architecture 5A, 5B, 5C, 5D, 6A, 6B, 6C, 6D.

Art 1A, 1B, or 1C.

Classics 34.

English 30, 44A, 44B, 46A, 46B, 49.

French 9A, 9B, 9C.

German 9A, 9B, 9C, 9D.

Music 27A, 27B, 27C, 27E.

Music 30A, 30B.

Speech 2A, 2B.

*Summer Sessions courses.*—Students who desire to satisfy the specific subject requirements for the degree of Associate in Arts in the summer sessions may use only those courses which are the equivalent of courses offered in the regular semesters listed as acceptable in meeting requirements for the degree of Associate in Arts.

Requirements (b), (c), (d), and (e) may be met in whole or in part by the completion of acceptable courses in the University Extension. For a list of such courses, see the announcements of the University Extension. The requirements in units must be met in full. Students who desire to satisfy specific subject requirements for the degree of Associate in Arts in the University Extension may use only those courses which are the equivalent of courses offered in the regular semesters and listed as acceptable in meeting requirements for the degree of Associate in Arts.

*Honorable mention with the degree of Associate in Arts.*—Honorable mention will be granted with the degree of Associate in Arts to students who attain at least an average of two grade points for each unit undertaken. The list of

\* If Geography 1 is used in satisfaction of requirement (e), it may not be used in satisfaction of requirement (d).

students who receive honorable mention with the degree of Associate in Arts will be sent to the chairmen or study-list officers of departments before the beginning of the next semester. A student who gains honorable mention has thereby attained honors status for his first semester in the upper division.

### Upper Division Requirements

The degree of Bachelor of Arts is granted upon the following conditions:

1. The total number of units in college courses in the lower and upper divisions offered for the degree must be *at least* 120, of which at least 108 must be in courses chosen from the Letters and Science List of Courses (see page 82). Not more than 6 units of courses numbered in the 300 or 400 series will be accepted toward the A.B. degree. No credit will be allowed toward the A.B. degree for work completed at a junior college after the student has completed 66 units toward the degree.

2. The student must attain as many grade points as there may be units in the credit value of all courses undertaken by him in the University. (Attention is directed to the fact that the School of Education will admit to candidacy for the Certificate of Completion only those students who have maintained a grade-point average of not lower than 1.5 in the work undertaken during the junior and senior years.)

3. At least 54 units of college work must be completed after admission to the upper division.

4. The Requirement of American History and Institutions must be completed by all candidates for the bachelor's degree. Students may complete this requirement by passing a single examination in American History and Institutions, for which no unit credit will be assigned; by completing certain courses; by automatic equivalence granted for courses taken at a collegiate institution in California where it is indicated on the student's official transcript from the institution that the requirement has been satisfied; or by presentation of a certificate of completion of acceptable courses at another collegiate institution (see American History and Institutions, page 38).

5. *At least 36 units of work chosen from the upper division courses named in the Letters and Science list* (see page 82), with the exceptions noted, must be completed after the student has attained upper division standing.

6. Fulfillment of either A or B:

A. A major of at least 24 upper division units according to the rules given below.

B. A general (nonmajor) curriculum of 36 upper division units named in the Letters and Science List of Courses according to the student's choice, distributed through not more than three departments with a maximum of 30 units permitted in any one department.

7. All candidates for the A.B. degree entering the College of Letters and Science of the University of California after attendance at other institutions, or colleges of this University, with senior standing at the time of admission, are required to have been enrolled during the senior or final year in resident courses of instruction at this University in the College of Letters and Science. At least 24 units, including at least 18 units in upper division courses, of which 12 units must be in the major, must be completed in this period. It is permissible to offer two Summer Sessions as equivalent to one semester; but in any event, the student must complete in resident instruction at least one regular semester of his senior year.

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

### Majors for the A.B. Degree

A major consists of a substantial group of coordinated upper division courses, representing one or more departments of the college. If one year of an acceptable professional curriculum, for example the first year of the Medical School or the School of Jurisprudence, is offered by the student as part of his program for the A.B. degree, this fulfills the requirement of the major. It will not be counted, however, as more than 30 units toward the A.B. degree.

Majors may be offered for the A.B. degree in any of the subjects or departments listed below. The details of the program must be approved by the authorized adviser in the major chosen.

Special attention is directed to the courses listed as preparation for or prerequisite to the major. Usually 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 24-unit major must in its entirety be completed in the upper division. In exceptional cases, however, students who have completed all requirements for the degree of Associate in Arts may be permitted by the Dean, on recommendation by the department, to count not more than 6 units of upper division work taken in the lower division as part of the major, but not as part of the 36 units of upper division work required to be completed in the upper division.

Not more than 30 units of upper division courses taken in one department after admission to the upper division will be counted toward the A.B. degree.

The major must consist (1) of courses taken in *resident instruction* at this or another university (in a regular semester or in a summer session) or (2) of courses in University Extension with numbers having the prefix X, XB, XL, or XSB (with approval of department concerned). See, however, paragraph 7, above.

No courses numbered in the 300 series (teachers' courses) or 400 series (professional courses) will be accepted as part of the major.

See further, under Study-List Regulations, pages 40-41.



## Organized Majors and Professional Curricula

In order to fulfill the major requirement for the A.B. degree, a student may select one of the organized programs listed below. It is recognized, however, that suitable programs may be prepared that are not included in the published announcements. A student may therefore present a plan for a major program to the Executive Committee. If this meets the committee's approval, the committee will designate a member of the faculty to take charge of the student's special major and to approve his upper division study lists and the final completion of the major.

Detailed descriptions of the departmental programs designated below will be found under their respective departments under Courses of Instruction in later pages of this catalogue. Descriptions of the group majors follow the list hereunder.

- |  |                                    |
|--|------------------------------------|
| American Civilization                  | Greek. See Classics                |
| American Literature                    | History                            |
| Anthropology                           | International Relations            |
| Art                                    | Italian                            |
| Astronomy                              | Japanese. See Oriental Languages   |
| Bacteriology                           | Journalism                         |
| Biochemistry                           | Jurisprudence                      |
| Botany                                 | Latin. See Classics                |
| Chemistry                              | Mathematics                        |
| Child Development                      | Medical Sciences                   |
| Chinese. See Oriental Languages        | Music                              |
| Civilization of the Middle Ages        | Near Eastern Languages             |
| Civilization of the Nineteenth Century | Oriental Languages                 |
| Classics                               | Paleontology                       |
| Communication and Public Policy        | Philosophy                         |
| Criminology                            | Physical Education                 |
| Decorative Art                         | Physics                            |
| Dramatic Art                           | Physiology                         |
| Dramatic Literature                    | Political Science                  |
| Economics                              | Premedical Curriculum. See Medical |
| Education                              | Sciences                           |
| English                                | Psychology                         |
| Far Eastern Studies                    | Public Speaking. See Speech        |
| French                                 | Recreation                         |
| Geography                              | Regional Group Majors              |
| Geological Sciences                    | Religion                           |
| Geophysics. See Geological Sciences    | Renaissance, The                   |
| German                                 | Sanskrit. See Classics             |

Scandinavian Languages and Literature	Social Welfare
Sculpture	Spanish
Slavic Languages	Speech
Sociology and Social Institutions	Wildlife Conservation
	Zoölogy

### Description of Group Majors and Curricula

Students who plan to complete a group major should note the requirements for admission to the upper division as well as the prerequisite courses for the major.

#### AMERICAN CIVILIZATION

*Group Major Adviser:* Mr. J. D. HART.

*Preparation for the Major.*—Students must have maintained an average grade of C and must have obtained the degree of Associate in Arts.

*The Major.*—Twenty-four units, of which 21 units are to be selected by the student with the approval of the committee in such fields as American history, political science, economics, literature, philosophy, and the fine arts. The student will stress one of these fields and conferences will be held to adapt the program to the student's particular needs. A comprehensive final examination to be taken at the end of the senior year will count for three of the 24 units.

#### AMERICAN LITERATURE

*Group Major Adviser:* Mr. HART.

*Preparation for the Major.*—English 1A–1B, 30, 46A–46B. Recommended as preparation: History 17A–17B.

*The Major.*—Required: 24 units of work distributed as follows: English 130A, 130B, 130C (8 units); 16 units in literature, to be arranged in consultation with the adviser (ordinarily 9–12 units of this work will be in the English department in courses concurrent in time with American literature, and 3–6 units in similar courses in other departments). Not more than 4 units should be in literature in translation.

#### CHILD DEVELOPMENT

*Group Major Adviser:* Miss LANDRETH.

*Preparation for the Major.*—Required: Psychology 1A, Psychology 5 or Economics 40 (two years of high school algebra, or Mathematics D), Economics 1A, Physiology 1A, Physiology 1C. Recommended: Psychology 1B or 2, Anthropology 1, Economics 1B, Zoölogy 10, Public Health 5A.

*The Major.*—Required: Psychology 112 (or Home Economics 132), Psychology 113, 162, 163, Home Economics 135, Physiology 102, Home Economics 103, Public Health 121, Social Welfare 100. Recommended: Psychology 107 (for students preparing for child development research), Psychology 116, Psychology 160, Education 116.

#### CIVILIZATION OF THE MIDDLE AGES

*Adviser:* Mr. BREWER.

By the term Middle Ages is meant the civilization which reached its climax in France in the thirteenth century.

*Preparation for the Major.*—Required: A reading knowledge of French, at least equivalent to that attained by passing French 3 (Intermediate French); History 4A; English 46A; French 9A; Philosophy 10A-10B; English 1A-1B. Recommended: German 9A; and a reading knowledge of Latin, German, or Italian, similar in scope to the reading knowledge of French required above.

*The Major.*—French 122A-122B; History 121A-121B; Italian 109A-109B or Italian 150A-150B; Art 175A-175B; a course in Medieval Thought such as History 125C, or a suitable course in Medieval Philosophy. A minimum of 9 units selected from the following list: German 118A, 135; Spanish 107A; History 122, 152A-152B; Classics 180B; English 151, 155, 116.

#### CIVILIZATION OF THE NINETEENTH CENTURY

*Adviser:* Mr. ROWBOTHAM.

*Preparation for the Major.*—Required: English 1A-1B, 46B; History 4A-4B; Philosophy 10A-10B; Economics 1A-1B; Art 1B or Music 27B or 30B. Recommended: English 41A-41B; Architecture 5C; French 9B; German 9C.

*The Major.*—Required: 30 units distributed as follows—9 units chosen from the following courses: English 121, 122, 123, 130B, Dramatic Art 157A-157B, Slavic Languages 130; 6 units from: History 134A-134B, 145, 146, 150A; 9 units from: Economics 101A-101B, 106, 117A-117B, 150A-150B, 188A, 190A-190B, Political Science 118A-118B, 129; 6 units from: Philosophy 103 and Philosophy 108 or 146.

#### COMMUNICATION AND PUBLIC POLICY

*Adviser:* Mr. BARNHART.

The group major in Communication and Public Policy is designed to contribute to an understanding of the role of mass communication in society. It introduces the student, in general, to the study of the nature, function, content, values, and effects of communication in society and directs his attention specifically to the effects of communication on public policy and opinion. The courses selected cover both these interrelated fields of study—the nature of language, and the nature of the media of mass communication: radio, press, film, as well as the role played by informative and persuasive communication in modifying the character of public opinion and public institutions.

*Preparation for the Major.*—Required: Speech 10, 12; History 4A-4B; Psychology 1. Recommended: Speech 1A-1B; Economics 1A-1B; Social Institutions 2A-2B.

*The Major.*—Required: 24 units from Speech 117, 119, 135 (or 137 or 138); Journalism 141; Political Science 114; History 148; Psychology 145A; Philosophy 108; 3 to 6 units of directed research in the senior year on selected topics; and 6 units from Social Institutions 141; Journalism 190; Psychology 180; Political Science 115, 159, 157A-157B; Economics 101A-101B; Philosophy 104; Business Administration 125, 151; Anthropology 160; History 167.

#### CRIMINOLOGY

Two aspects of the field of criminology are represented by organized group majors: the technical, and the social.

##### *Technical Aspects*

This program is intended to train students for the scientific identification of such materials as may be used as evidence by police departments and courts of justice.

*Group Major Adviser:* Mr. KIRK.

*Preparation for the Major.*—Chemistry 1A-1B, 5, 8, 9; Physics 2A-2B, 3A-3B; Psychology 1A-1B; Physiology 1A, 1C, or Zoölogy 1A-1B.

*The Major.*—Biochemistry 103, 108 (5 units); Political Science 167A-167B, 168A-168B; Psychology 168; Zoölogy 119A-119B. Recommended: Anatomy 102; Anthropology 2A-2B, 150A-150B; Bacteriology 1, 4; Biochemistry 104, 107; Botany 1 (or 12), 110A-110B; Forestry 114; Mathematics 3A-3B; Mineralogy 4A, 4B; Geology 1A, 103, 104A-104B; Philosophy 14; Physiology 100A-100B; Psychology 5, 160; Speech 1A-1B, 110A-110B; Zoölogy 4, 114.

#### *Social Aspects*

*Group Major Adviser:* Mr. WILSON.

*Preparation for the Major.*—Business Administration 6A-6B; Economics 1A-1B, 40 or Psychology 5; Psychology 1A; Zoölogy 1A or 10. Strongly recommended: Chemistry 1A-1B; Physics 2A-2B, 3A-3B; Psychology 1B or 2, 3; Speech 1A-1B, 2A-2B. Also recommended: Anthropology 1; Architecture 1; Journalism 20A-20B; Physiology 1A; Public Health 5A-5B, 21.

*The Major.*—Political Science 167A-167B, 168A-168B, 181; Psychology 160, 168; Social Welfare 101A-101B. Eight units selected from the following: Anthropology 150A-150B; Business Administration 120, 121, 125, 160A-160B; Economics 180, 185; Journalism 130A-130B; Mathematics 120A-120B; Physiology 104A; Political Science 117, 151, 154, 155, 162, 172, 183, 261A-261B, 267A-267B, 281A-281B; Psychology 109, 112, 145A-145B, 146, 148, 149, 180, 185; Public Health 164A-164B; Speech 107A-107B, 110A-110B, 120; Social Welfare 100, 102, 105, 108, 110A-110B, 201, 262; Zoölogy 119A-119B.

#### DRAMATIC LITERATURE

*Group Major Adviser:* Mr. A. R. THOMPSON.

The major is concerned with the drama primarily as literature and a manifestation of humane culture. But since all plays are written for production on a stage, the relation of the drama to the theater is also emphasized, and candidates for graduation in this major should have acquired such practical experience in the theater, amateur or professional, as will enable them to recognize a play's theatrical as well as its literary value.

*Preparation for the Major.*—Classics 35 (if offered) and 6 units from the following: Speech 2A-2B; Dramatic Art 10A-10B.

*The Major.*—Thirty units, of which the comprehensive examination counts for 3 units. Required: English 114A-114B and one of the Shakespeare courses (English 117A-117B, 117E); Dramatic Art 157A-157B, 160A-160B; 6 units selected from English 153A-153B, 154, Philosophy 136A-136B, 146, Dramatic Art 130C-130D, 135.

The student must, at the end of the senior year, pass with a grade of C or higher a comprehensive examination consisting of two three-hour papers. The student's preparation for this examination should extend throughout his junior and senior years, but the grade will be assigned upon his passing the examination; credit, 3 units.

To graduate in this major the student must maintain at least a C average in all courses required for the major.

## FAR EASTERN STUDIES

This major is intended for students who seek a more thorough knowledge of the Far East than can be attained by a major in any one department. The program is composed chiefly of courses in the social sciences dealing with Asia, the Far East, and the Pacific. Of particular importance is the fact that language study in Chinese, Japanese, or Russian may be included in the major.

Attention is called to the fact that students interested in the Far East may, if they wish, offer programs under the Regional Group Majors on China, Japan, and Russia and eastern Europe. Specifications for these regional group majors are found elsewhere in the catalogue.

*Advisers:* Mr. BOODBERG, Mr. BINGHAM.

*Preparation for the major.*—Required: History 19A–19B and one of the following: Economics 1A–1B, Political Science 1, 2, Geography 1–2, 5A–5B, Anthropology 2A–2B. Strongly recommended: Oriental Languages 1A–1B, 17, 42; or 9A–9B, 17; or Slavic Languages 1, 2, 18A–18B.

*The Major.*—Required: 24 units consisting of Geography 125A–125B, History 191A–191B or 192A–192B, Political Science 136, 138, Economics 190A or 190B, Anthropology 115, 143A, or 147; and 12 units selected from upper division courses dealing with the study of Asia.

## INTERNATIONAL RELATIONS

*Group Major Adviser:* Mr. F. M. RUSSELL.

*Committee in Charge of the Major:* Mr. RUSSELL, Mr. LANDAUER, Mr. PALM.

International Relations embraces those social relationships which transcend the boundaries of national states. The major in International Relations is devised to meet the needs of students interested in acquiring an understanding of the forces and influences conditioning present-day world politics, as well as the main problems and policies of organized states in their relations with one another in the twentieth century. These problems and policies must be dealt with and determined by governments, and consequently the major is built around courses dealing with intergovernmental legal, diplomatic, and economic relations. But the major cuts across departmental lines, for statesmen develop their policies in relation to geographic, economic, and social conditions, and in the light of historic policies. History reveals these traditional policies, regional geographic and anthropological studies provide an acquaintance with relevant physical and biological factors, and social psychology contributes to an understanding of nationalism and other phenomena in the field of study. Courses in other fields likewise make their contribution.

*Preparation for the Major.*—Economics 1A–1B; History 4A–4B; Political Science 1, 2.

*The Major.*—Economics 190A–190B; Political Science 123, 124, 133A–133B; 6 units of history selected in consultation with the Adviser. A minimum of 15 units (exclusive of the 4-unit Beginner's Course) in one of the following languages: French, German, Spanish; or 15 units in Russian, Chinese, Japanese, or Portuguese. The language requirement may be met by passing a written reading test prior to the senior year.

The attention of the student is directed to the following courses as important in relation to certain general aspects of this field: Geography 143, Economics 197, Psychology 145A–145B, Anthropology 160. Others, related to regional aspects, are to be noted in the Departments of Anthropology, Economics, Geography, History, Oriental Languages, Slavic Languages.

## JURISPRUDENCE

*Prelegal Adviser:* Mr. HARRY W. JONES.

War veterans who enter the School of Jurisprudence as seniors may receive the A.B. degree after one year, offering the first year of the law school curriculum in lieu of a major. Upon completing the prescribed curriculum of the School of Jurisprudence, such students will be eligible for the LL.B. degree.

Since admission to the School of Jurisprudence is selective, it is advisable for such students to select an alternate major and to undertake programs in their lower division and junior years that will make it possible for them to complete such alternate major in the senior year if they are not admitted to the School of Jurisprudence. This may require the selection of courses, both in the lower division and the junior year, prerequisite to work in the alternative major.

It should be particularly noted that, except for war veterans, seniors are no longer being admitted to the School. For full information respecting admission to the School of Jurisprudence, consult the ANNOUNCEMENT OF THE SCHOOL OF JURISPRUDENCE.

*Preparation for the Study of Law.*—The School of Jurisprudence has not prescribed a prelegal curriculum. It is prepared to give prelegal students specific advice concerning courses. For the guidance of all students who are looking forward to the study of law, the essentials of a satisfactory prelegal education are summarized as follows:

In the first place, *the prelegal student should follow a plan of study which will assure adequate foundations for a broad culture.* Such a plan should include among its objectives: (1) a well-grounded facility in the use of English, written and spoken, and a wide acquaintance with the best of English literature; (2) an introduction to Latin as the basis of modern language and the cultivation of at least one modern language other than English, to a point at which it may be used freely in reading; (3) a familiarity with at least the outlines of human history and a much more thorough knowledge of the history of our own country and people; (4) an acquaintance with the great philosophers and an understanding of the progress and significance of philosophic thought; (5) a mastery of elementary logic and mathematics and some acquaintance with their applications in contemporary life; (6) an introduction, at least, to science, particularly to chemistry and physics; and an appreciation of the tremendous importance of science in the modern world; and (7) a thorough knowledge of the elements of social science, including the essentials of economics, government, psychology and other important social studies. Foundations must be laid in high school for the study of English, foreign language, history, mathematics, and science. The prelegal student will generally be well advised to defer philosophy and the social studies until he has entered college. If prelegal study is planned effectively, the foundations for a broad culture may be laid during the high school period and the first two years of college.

In the second place, *the prelegal student should acquire the intellectual discipline and experience which is to be derived from intensive work for a substantial period of time in a selected field of study.* This work should be carefully planned and a special competence should be achieved in the selected field. The field is ordinarily described as a major and the work in this field may be expected to occupy a substantial part of the last two years of college. In general, it has been found that a well-planned major in economics may be related effectively to later professional study in the field of law. Majors in

political science, philosophy, English, history, or other social studies, if carefully selected, may also provide a suitable preprofessional training. College courses in commercial, elementary or business law, planned primarily for students who do not expect to study law, should not be included in any prelegal program.

In the third place, *the prelegal student should begin the cultivation of professional standards of study as early as possible.* Few ideas are more fallacious or harmful than the notion that it is possible to dawdle through high school and college and then make the adjustment to higher standards promptly upon entering the professional school. Essential habits of concentration and effective methods of study must be acquired and developed during the prelegal years. Careful reading and the constant exercise of practice in writing should be cultivated assiduously. Intelligently selected private reading should supplement the work of the classroom at all times. The law as a process of social adjustment is reflected in all aspects of life and the student who carelessly wastes the opportunities of his prelegal years cannot possibly present himself well prepared for professional training. A large proportion of failures in professional school may be traced directly to the neglect of opportunities in school and college. Distinguished achievement in school and college is usually followed by distinction in the professional school and in later practice.

Students contemplating the study of law are invited to consult as early as possible with the Prelegal Adviser or with the Dean of the School concerning their programs of preparatory study. Appointments will be arranged by the Secretary of the School.

See also under Criminology.

#### MEDICAL SCIENCES

Candidates for the degree of A.B. in the College of Letters and Science who plan to pursue the four-year curriculum leading to the M.D. degree in the Medical School may reduce by one year the total time for attaining the two degrees, by offering the first year of the Medical School curriculum as the senior year of the College of Letters and Science. In order to do this the student should register as a premedical student on entering the College of Letters and Science. He should then fulfill the requirements for the degree of Associate in Arts, comply with the requirements in American History and Institutions and Military Science, complete the premedical subjects required for admission to the Medical School, and attain full senior standing. Full senior standing for this purpose means the completion of at least 90 units toward the A.B. degree (at least 24 after receipt of the degree of Associate in Arts), including at least 6 units of upper division courses (on the Letters and Science list) taken in the upper division. In order that the student may matriculate into the Medical School in his fourth college year, it is essential that he satisfy the lower division requirements by the end of his sophomore year.

A student who has attained full senior standing in the premedical curriculum has thereby complied with the requirements for admission to the Medical School, and if he is admitted to the Medical School may register simultaneously as a senior in the College of Letters and Science. The curriculum of the first year of the Medical School will be accepted as the senior year (30 units) of the College of Letters and Science, and as fulfilling the major requirement for the A.B. degree.

Enrollment in the Medical School is limited. Candidates for admission to the first-year class are accepted primarily on the basis of scholarship, particular emphasis being placed on the required subjects. Personal interviews are also

held. Arrangements for personal interviews are made by the Dean's office after a formal application has been filed and credentials rated. In addition, each applicant must take the Professional Aptitude Test (Graduate Record Examination). Not more than five students will be admitted to each first-year class from institutions of any state outside of California and of these five not more than one will be selected from a single state. It may happen that a student who has completed the premedical curriculum and attained full senior standing in the College of Letters and Science is not admitted to the Medical School. In order to qualify for the A.B. degree, such a student must select some other major subject, and complete the requirements of its program and the other requirements for the degree. It may be impossible for such a student to complete his chosen major program in one year unless he has already partly fulfilled its requirements before entering the senior year. It is therefore desirable that each premedical student should plan his program with this contingency in mind, and undertake in his junior year the part of the major program of his alternative choice that will make it possible for him to complete the program for the A.B. degree in one year if he is not admitted to the Medical School. This can be done without in any way interfering with the completion of the premedical requirements.

An applicant for admission to the Medical School who in any year is unsuccessful in gaining admission to the School on account of an inferior scholarship record, may, at the proper time, present a second application for admission. His success in admission will depend on his scholarship rank as a member of the group of applicants for the new group.

An accepted applicant who finds it impossible to begin his work in the Medical School with the entering class, or a student who actually enters and begins his work, but finds it necessary to withdraw during his first year, loses his place in the list of applicants and is required, in the event he desires to begin his work in a later year, to reapply with the group of applicants for that year.

While it is virtually essential that a student register in the premedical curriculum if he wishes to proceed to the A.B. and M.D. degrees in the shortest possible time, such registration is not required for admission to the Medical School. Certain medical schools require an A.B. degree for admission; and the holder of an A.B. degree who has not been in the premedical curriculum may apply for admission to the University of California Medical School, provided he has completed work in the specific subjects required for admission. The minimum requirements in these subjects in terms of courses offered at Berkeley are: English 1A-1B (or Speech 1A-1B); Chemistry 1A-1B, 5, 8; Physics 2A-2B, 3A-3B; Zoölogy 1A-1B, 4, 100; 8 units of a modern foreign language. Psychology 160, 168 and Public Health 163A, 163B are recommended strongly.

The Committee on Admissions to the Medical School is authorized to refuse admission to students who have a low academic record and to those of obvious physical, mental, or moral disability.

For further information concerning the Medical School see the ANNOUNCEMENT OF THE MEDICAL SCHOOL.

### Premedical Curriculum

*Advisers:* Mr. CHARLES NOBLE, JR., Mr. FRANK ALLEN, Mr. HAROLD COPP, Mr. WILLIAM REINHARDT, Mr. HAROLD TARVER.

In order that entrance to the Medical School and attainment of the A.B. and M.D. degrees may not be delayed, the student should make sure that his program is arranged so as to satisfy the requirements for the degree of Associate



in Arts by the end of the sophomore year, and all other premedical requirements by the end of the spring semester just preceding the proposed date of entering the Medical School. Following is a suggested program:

<i>First Year</i>			<i>Second Year</i>		
	<i>Fall</i> Units	<i>Spring</i> Units		<i>Fall</i> Units	<i>Spring</i> Units
Subject A and American History and Institutions* .....	2	..	Military Science .....	2	2
Military Science .....	2	2	Zoölogy 1A-1B .....	4	4
Chemistry 1A-1B .....	5	5	Zoölogy 4 .....	..	2
†English 1A-1B or Speech 1A-1B .....	3	3	‡Foreign Language .....	4	4
‡Foreign Language .....	4	4	Year Course (See requirement (e) for degree of Associate in Arts) .....	3	3
Electives as necessary to make up units .....	..	3	Year Course (See requirement (e) for degree of Associate in Arts) .....	3	3
			Electives .....	1	..
	<hr/>	<hr/>		<hr/>	<hr/>
	14	17		17	18

*Third Year*

	<i>Fall</i> Units	<i>Spring</i> Units
Physics 2A-2B .....	3	3
Physics 3A-3B .....	1	1
‡Chemistry 5 .....	3	or 3
‡Chemistry 8 .....	3	or 3
Zoölogy 100 .....	4	..
Electives .....	2 or 3	5 or 11
	<hr/>	<hr/>
	16	15

**Medical Sciences**

The requirements of the first year of the Medical School are accepted as fulfilling the major requirement, and the senior year of the College.

*Adviser:* DR. FRANCIS S. SMYTH.

*Preparation for the Major.*—The Premedical Curriculum outlined above.

*The Major.*—Anatomy 101, 105; Biochemistry 101M; Physiology 101M.

\* For regulations concerning Subject A, see page 37; American History and Institutions, page 38.

† English: any 3 units in composition plus any 3 units in English literature will satisfy this requirement. Speech 1A or 1B may be offered in place of either course in English. If the student fails to pass the examination in Subject A it will be necessary to postpone English (or speech) until he has completed the course in Subject A, for which no credit in units is given. The student is advised to substitute in the interim one of the year courses which are required for requirement (e) for the degree of Associate in Arts in place of English (or speech).

‡ Foreign Language: the Medical School requirement is 8 units of credit in a modern foreign language, and the requirement for the degree of Associate in Arts is 16 units of foreign language in not more than two languages. These may be satisfied partly in the high school. The student's program should be made so as to satisfy these requirements.

Students who have completed the language requirement in whole or in part in high school may take Chemistry 5 or Chemistry 8 in the second year.

## PHYSICAL EDUCATION

*Group Major Advisers:* For women—Miss HODGSON, Miss COBB, Miss COLEMAN, Miss ESPENSCHADE. For men—Mr. HENRY, Mr. COZENS.

*Preparation for the Group Major.*—High school chemistry or the equivalent, Public Health 5A (3), Physiology 1A-1C (5), Psychology 1A (3), Zoölogy 1A (4) or 10 (3), Home Economics 10 (2); physical education activities (Physical Education 1 or 26) (2-4); for women—rhythmic basis of dance and allied arts (Physical Education 35) (2); introduction to physical education (Physical Education 20) (1); and first aid (Physical Education 5A) ( $\frac{1}{2}$ ).

*The Group Major.*—Physical Education 130 (3), 105 (4), 101 (4), 110 (2); Anatomy 102 (3); Education 110 (3); either Community Recreation (Physical Education 140) (2) or Tests and Measurements (Physical Education 135) (3); an upper division course dealing with the problems of society and human relations, to be chosen with the approval of the adviser (3).

Completion of a major program for graduation will be certified only on the basis of at least a C average in the courses required in the group major. Students who do not maintain such an average may be required at any time to withdraw from the group major in Physical Education.

## RECREATION

The insistent demand for recreation in modern life has brought with it the realization of the responsibility of the community to provide not only space and facilities but also trained leadership. The College of Letters and Science, recognizing the need for trained leadership in this field, has established a Group Major in Recreation. This major offers an integrated program of courses drawn from a number of departments and emphasizes a broad cultural background pointed toward an understanding of the needs and aspirations of individuals and groups in a democratic society, the significance of leisure in our civilization, and a skill in, and an appreciation of, a wide variety of leisure time activities.

The Group Major in Recreation is administered by a special committee of the College with F. W. Cozens, Professor of Physical Education, as chairman. Students will be assigned advisers according to their special interest in the various fields of study involved; that is, art, dramatic art, music, physical education, etc.

*Group Major Advisers:* Mr. COZENS, chairman; Mr. PEPPER, Mr. F. O. HARRIS, Mr. LAWTON, Mrs. GLASS, Mr. NEWSOM.

*Preparation for the Major.*—Physiology 1A, Zoölogy 10, Psychology 1A, History 4A-4B, Dramatic Art 10A, and either 20 or 135, Philosophy 6A, either Economics 1A-1B or Political Science 1, 2, 4 units of specified activity courses in Physical Education, and 12 units of courses leading to a field of specialization in the upper division.

*The Group Major.*—Required: 6 units from each of two fields (Economics, History, Political Science) selected with the approval of the adviser; Physical Education 143A-143B, 144A-144B, Social Welfare 106, 108, and Philosophy 136A; 11 units in the field of specialization according to interest, Art, Dramatic Art, Music, Physical Education. The total group major program comprises 36 units of specified courses together with two summers' field work (or the equivalent) to be taken without credit.

Completion of a major program for graduation will be certified only on the basis of at least a C average in the courses required in the group major. Stu-

dents who do not maintain such an average may be required at any time to withdraw from the group major in Recreation.

#### REGIONAL GROUP MAJORS

The following group majors are designed to combine studies in the geography, history, government, and ethnography of an important region or country with intensive study of the corresponding foreign language. Their purpose is to afford a liberal education through an integrated group of courses, while at the same time to provide persons trained for diplomatic, commercial, and cultural relations between the United States and other nations. These majors will be administered with reasonable flexibility in view of the various fields of study involved and the different directions from which they may be approached. The usual differentiation between lower and upper division work will not be insisted upon. Although it is desirable that the prerequisites for the required upper division courses be taken in the lower division, admission to the major will not be refused if the student's program is such as to leave room for such prerequisites in the upper division. The total of upper division credit in the major should normally be not less than 30 units.

#### Regional Group Major on China

*Advisers:* Mr. BINGHAM, Mr. BOODBERG, Mr. MAH.

*Preparation for the Major.*—Required: Oriental Languages 1A-1B, 17, History 19A-19B and one of the following: Anthropology 2A-2B, Economics 1A-1B, Geography 1, 2 or 5A-5B, Political Science 1, 2. Recommended: Oriental Languages 13, 42. The language requirement, including part of the upper division work, may be satisfied by one year intensive training in the Far Eastern and Russian Language School of the University Extension provided course Oriental Languages 17 or its equivalent be included in the student's program.

*The Major.*—Required: 24 units consisting of the following: 8-12 units of upper division Chinese, Geography 125B; History 193A-193B or 194A-194B; Political Science 135, and one or more of the following: Economics 190A, 190B, Geography 125A, History 191A, 191B, 192A, 192B, Oriental Languages 112, Political Science 136, 138. In addition, 6 units selected from upper division courses dealing with the Far East.

#### Regional Group Major on France and French Colonies

*Advisers:* Mr. FAY, Mr. PALM, Mr. RUSSELL.

*Preparation for the Major.*—Required: 16 units of French. (Minor shortages may be made up in the upper division.) Recommended: Economics 1A-1B; History 4A-4B; Political Science 1, 2.

*The Major.*—Required: One year upper division course in French; Economics 112; Geography 123A; History 134A-134B, 144A-144B or 145 and 146. Recommended: French 101A-101B, 134A-134B; Education 105; Political Science 123, 124, 127, 129, 185.

#### Regional Group Major on Germany and Central Europe

*Adviser:* Mr. KERNER.

*Preparation for the Major.*—Required: 16 units of German. (Minor shortages may be made up in the upper division); Anthropology 2A-2B; History 4A-4B; Economics 10. Recommended: Philosophy 10A-10B; Political Science 1, 2.

*The Major.*—Required: One year upper division course in German; Economics 112; Geography 123A-123B; History 143A-143B, 147A; Political Science 147. Recommended: Economics 117A-117B; German 112A; History 144A-144B or History 145 and 146.

#### Regional Group Major on Hispanic America

*Advisers:* Mr. MOSK, Mr. TORRES-RIOSECO.

*Preparation for the Major.*—Required: 10 units of Spanish and/or Portuguese; History 8A-8B. Recommended: Anthropology 2A-2B; Economics 1A-1B; Geography 1-2; History 4A-4B.

*The Major.*—Required: Spanish 104A-104B or Portuguese 121 and 131, and 9 units from Geography 122A-122B, Political Science 148A-148B, and Anthropology 141 or 142; History 161A-161B, 166A-166B. Recommended: Spanish 100B; Portuguese 131; Anthropology 123; Economics 190A-190B; Education 105; History 160A-160B, 181A-181B, 183.

#### Regional Group Major on Japan

*Advisers:* Mr. BINGHAM, Mr. BOODBERG, Mr. BROWN.

*Preparation for the Major.*—Required: Oriental Languages 9A-9B (or the equivalent), 17; History 19A-19B, and one of the following: Anthropology 2A-2B, Economics 1A-1B, Geography 1-2 or 5A-5B, Political Science 1-2. The language requirement, including part of the upper division work, may be satisfied by one year intensive training in the Far Eastern and Russian Language School of the University Extension provided course Oriental Languages 17 or its equivalent be included in the student's program.

*The Major.*—Required: 24 units consisting of the following: 8-12 units of upper division Japanese, Geography 125B, History 195A-195B, Political Science 145; and one or more of the following: Economics 190A, 190B, Geography 125A, History 191A, 191B, 192A, 192B, Political Science 136, 138. In addition, 6 units selected from upper division courses dealing with the Far East.

#### Regional Group Major on Russia and Eastern Europe

*Advisers:* Mr. MASLENIKOV, Mr. KERNER.

*Preparation for the Major.*—Russian 1, 2, 18A-18B; History 4A-4B; and one of the following: Anthropology 2A-2B; Economics 1A-1B; Geography 1, 2 or 5A-5B; Political Science 1, 2.

The language requirement, including part of the upper division work, may be satisfied by two semesters' intensive training in the Far Eastern and Russian Language School of the University Extension, provided Russian 103, or its equivalent, be included in the student's program.

*The Major.*—Required: 24 units comprising the following: Russian 103A-103B; History 150A-150B, or History 149A-149B; Geography 123B; Political Science 141; two of the following—Slavic Languages 130, 180A or 180B, History 137A-137B. Recommended: Anthropology 181; Economics 110, 112, 190A-190B, 197; History 138A-138B; Political Science 142; Slavic Languages 131, 132, 150, 152, 134, 138, 133A-133B.

#### RELIGION

Students interested in the study of religion, either from the standpoint of liberal education, or of preparation for the ministry or some other phase of religious education, may select a major in one of the departments germane to

the purposes of the student, or they may propose an individual group major (see page 69), or may elect a suitable combination of courses under the General Curriculum (see pages 61, 67).

Courses appropriate for such purposes may be found in a number of departments, such as Anthropology, Classics, Economics, Education, English, History, Oriental Languages, Philosophy, Psychology, Semitic Languages, Sociology and Social Institutions, Social Welfare. Particular attention is directed to the following courses: History 122, 131A-131B; Near Eastern Languages 13A-13B, 102A-102B; Philosophy 104, 112.

#### THE RENAISSANCE

*Group Major Adviser:* Mr. CLINE.

Study of that period of European civilization whose chronological limits may be set between the Middle Ages and the Counter-Reformation; or, more specifically, between the Age of Petrarch in Italy and that of Shakespeare in England.

*Preparation for the Major.*—Required: English 1A-1B, 46A; History 4A; Philosophy 10A-10B. Recommended: French 9A and a reading knowledge of Latin, French, German, Spanish, or Italian.

*The Major.*—Required: Art 176; English 117A, 117B, or 117E, 156; History 131A; Italian 151; Classics 178; and 6 or more units from the following: Classics 180B; French 109A, 118A; German 118B; History 131B; Music 30A; Philosophy 115, 116; Political Science 118A; Spanish 107A-107B, 111.

#### SCULPTURE

*Group Major Adviser:* Mr. SCHNIER.

*Committee in Charge of the Major:* Mr. PEPPER, Mr. SCHNIER, Mr. WELLINGTON.

A group major planned for students who seek a thorough understanding of the fundamental principles governing composition and design in sculpture. The proposed major is built around a nucleus of courses dealing with the elements of sculpture, its history, materials and interrelation with the other arts.

*Preparation for the Major.*—Architecture 14 (4), Art 2A-2B or equivalent at discretion of instructor and Art 1A or 1B or 1C. The choice of alternates should be made in consonance with upper division courses.

*The Major.*—Twenty-four units of upper division work including Architecture 113 (4), 114 (4), Art course from Group C (3), Decorative Art 180A (3), Philosophy 136A (3) and additional courses chosen from the following list to aggregate at least 7 units: Architecture 112 (1), 115 (1); Art course from Group A (2); Decorative Art 180B (3); Philosophy 136B (3).

The attention of the student is directed to the following courses as important in relation to certain aspects of their field: Architecture 1, 5A, 5B, 5C, 5D; Classics 170A; Decorative Art 127, 166.

#### SOCIAL WELFARE

*Group Major Advisers:* Mr. LOEB, Mr. FRIEDLANDER.

The group major in social welfare is designed to meet the needs of three classes of students:

- (a) Those who propose to take graduate professional training in social work, by providing for them an integrated program of preprofessional preparation for graduate study;

- (b) Those who look forward to positions in social insurance administration, employment service, or other branches of the social services for which graduate training in social work is not now required, by providing for them an orientation to the social services through a broad background in psychology and the social sciences;
- (c) Those who, having no specific vocational objectives, desire to become familiar with a wide range of social problems as a contribution to their general education, by offering them a general acquaintance with the contributions of psychology and several fields of social science.

*Preparation for the Major.*—Required: Economics 1A–1B; Psychology 1A and 1B or 2; Economics 40 or Psychology 5; and History 4A–4B.

*The Major.*—Required: 36 units of upper division work, including (a) the following courses, to the value of 13 units: Social Welfare 102, 104, 105, 110A–110B; (b) the following courses, to the value of 23 units, provided that not more than 12 units of upper division courses be substituted with the approval of the faculty adviser: Economics 130A, 150A, 180, 185; Political Science 150, 181; Psychology 160, 162.

Besides these required courses a number of other lower division and upper division courses are strongly recommended. The advisers will provide students with lists of the recommended courses.

Students who have completed the major successfully, and who have established their eligibility for admission in full graduate standing, will have fulfilled the requirements for admission to the School of Social Welfare, as well as the prerequisites imposed by practically all other university schools of Social Work.

#### WILDLIFE CONSERVATION

*Group Major Adviser:* Mr. LEOPOLD.

The curriculum in wildlife conservation ensures a broad and sound training for students intending to qualify as biologists with national agencies such as the Forest Service, Park Service, Fish and Wildlife Service, Soil Conservation Service, Public Health Service, and with state agencies such as the divisions of Forestry, Fish and Game, and Public Health. The curriculum is broadly conceived, yet it is not superficial. Emphasis is placed upon the fundamental roots of professional biology and forestry which lie in the pure sciences, yet not without adequate illustration of the application of physical and biological principles. The great collections of the University of California Herbarium and the California Museum of Vertebrate Zoölogy supplement the local flora and fauna as reference materials in botany and zoölogy.

*Preparation for the Major.*—Lower Division. Required: Chemistry 1A, 8; Mathematics C or 3A; Botany 1 or 12; Zoölogy 1A–1B; Economics 40 or Public Health 163A; Geology 1A; Engineering 1A. Recommended: Economics 1A–1B; Geography 1; Geography 4; Agricultural Economics 1; Agronomy 1.

*The Major.*—Required: Botany 108; Zoölogy 106, 111 or 140, 113, 116, 125, 145; Forestry 101, 102, 103, 125; Entomology 114 or 133; Poultry Husbandry 106. Recommended: Geography 111, 153; Soil Science 100 or 101; Zoölogy 106.

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

*At least 108 units offered for the degree of Bachelor of Arts must be in courses chosen from the Letters and Science List of Courses.*

*Thirty-six units of Upper Division Courses, selected from the following list, must be completed after the student has attained upper division standing.*

\* This list refers to the courses as given in this catalogue, beginning on page 155.

NOTE.—Any upper division course, either required or accepted as part of a major or upper division curriculum authorized for the A.B. degree, will, for students offering such major or curriculum for graduation, be considered as fulfilling this requirement.

- Agricultural Economics 100, 112A, 112B, 113.
- Anatomy. All undergraduate courses.
- Anthropology. All undergraduate courses.
- Architecture 5A, 5B, 5C, 5D, 6A, 6B, 6C, 6D, 14, 113, 114, 117, 120A, 120B.
- Art. All undergraduate courses.
- Astronomy. All undergraduate courses except 3, 11 and 114.
- Bacteriology. All undergraduate courses except 199 (Davis).
- Biochemistry. All undergraduate courses.
- Botany. All undergraduate courses.
- Business Administration 6A, 6B, 10, 107, 151.
- Chemistry. All undergraduate courses except 143, 144, 145A, 145B, 146A, 146B, 147, 149H.
- Classics. All undergraduate courses.
- Decorative Art. All undergraduate courses.
- Dramatic Art. All undergraduate courses except 20, 190, 191, 192, 193.
- Economics. All undergraduate courses.
- Education 110 and not more than 3 units from 101, 102, 105.
- English. All undergraduate courses.
- Entomology 1, 106, 112, 127, 129.
- Forestry 1, 103, 125.
- French. All undergraduate courses.
- Genetics. All undergraduate courses, except 104.
- Geography. All undergraduate courses.
- Geological Sciences. All undergraduate courses except 114.
- German. All undergraduate courses.
- Greek. All undergraduate courses.
- History. All undergraduate courses.
- Home Economics 1A, 1B, 7, 10, 14, 101A, 101B, 102A, 102B, 103, 106, 120A, 120B, 132, 134, 142, 160, 190.
- Italian. All undergraduate courses.
- Journalism 20A, 20B, 140, 141, 190.
- Latin. All undergraduate courses.
- Mathematics. All undergraduate courses except 107.
- Medico-Military Science and Tactics 121A, 121B.
- Military Science and Tactics. A total of not more than 8 units of lower division courses.
- Music. All undergraduate courses; a total of not more than eight units from the following courses will be accepted as Letters and Science credit: 25, 55 (formerly 15), 125, 155.
- Naval Science. A total of not more than 8 units of lower division courses.
- Near Eastern Languages. All undergraduate courses.
- Oriental Languages. All undergraduate courses.
- Paleontology. All undergraduate courses.
- Philosophy. All undergraduate courses.
- Physics. All undergraduate courses except 129 (Davis).
- Physiology. All undergraduate courses except 115.
- Plant Pathology 121.
- Political Science. All undergraduate courses except 167A, 167B, 168A, 168B, 183.
- Psychology. All undergraduate courses except 3, 104, 116, 117, 185, 186.
- Public Health 5A, 5B, 21, 163A, 163B.
- Public Speaking (see below under Speech).
- Sanskrit. All undergraduate courses.
- Scandinavian Languages and Literature. All undergraduate courses.
- Slavic Languages. All undergraduate courses.
- Social Welfare 100, 101A, 101B, 106, 110A, 110B.
- Sociology and Social Institutions. All undergraduate courses.
- Soil Science 110, 111, 112, 113, 114, 115.
- Spanish and Portuguese. All undergraduate courses.
- Speech. All undergraduate courses.
- Zoology. All undergraduate courses except 109 and 146.

## HONORS

Honors are granted only with the Bachelor's degree; honorable mention is given with the A.A.; and an honor list for upper division students is printed in normal times in the DIRECTORY OF STUDENTS.\*

The honor list includes the names of:

- (a) Students who have received honorable mention with the degree of Associate in Arts (or junior standing) and who are in their first semester of the upper division;
- (b) Upper division students who have an average of at least 2 grade points for each unit of undergraduate work undertaken at the University of California.
- (c) Other upper division students specially approved for listing in the honors status by the Committee on Honors, either on recommendation made to the Committee by departments of instruction, or on such other basis as the Committee may determine.

Any department is authorized to post a departmental honor list on its bulletin board at the beginning of a semester. Copies are sent by the departments to the Committee on Honors and to the Registrar.

Each department has freedom in determining the most efficacious method for the training of honors students.

Departments may offer special honors courses in reading and research with credit to be determined by the instructors in charge, according to the performance of the individual students, subject to such general restrictions as may be imposed by the department, the college, or the Committee on Courses of Instruction of the Northern Section of the Academic Senate. The work of the student in such an honors course may consist of additional work in connection with regular courses of instruction, or may be independent of such courses.

Special honors courses may not be taken by a student whose name is not on the honor list of the college in which he is registered except with the consent of the Committee on Honors.

Credit in a special study course for undergraduates may not exceed 5 units a semester.

At the discretion of the Dean, an honor student may make study-list changes involving honors courses under suspension of the regulations fixing the time during which such changes are ordinarily permissible and of the rules requiring fees for such changes, but if this is done, the student is expected to complete the reorganization of his program with all possible diligence, and to report promptly to the Dean concerning proposed changes.

Honor students may have (subject to the approval of the instructor concerned) the privilege of taking each semester one course not offered by the student in satisfaction of requirements for the major not related to the field of the major, in which they will be marked "passed" or "not passed." Units gained in

\* Publication of this list has been temporarily discontinued.



this way will be subtracted from the units required for graduation for which grade points are recorded. The status of a course taken on the "passed" or "not passed" basis may not be changed after the last day on which the student is permitted to add a course to the study list.

Honor students who have senior standing and have attained at least a B average in the junior year at the University of California have the following additional privileges:

- (a) The study-list total may be less than 12 units.
- (b) The number of units in upper division (or graduate) courses required after admission to the upper division may be less than 36.
- (c) The number of upper division units which may be taken in one department after admission to the upper division may exceed 30.
- (d) With the consent of the major department, requirements concerning specific courses or sequences in the major may be set aside.

Except as specifically provided, all existing regulations for students in the upper division apply to honor students.

#### Honors with the Bachelor's Degree

Honors at graduation are granted to those students only who have completed a major or the general (nonmajor) curriculum with distinction, and who have a general record satisfactory to the Committee on Honors.

Before Commencement each department and also the major adviser for each group major determine, by such means as they may deem best (for example, by means of a general final examination), which students are to be recommended to the Dean of the College for honors at graduation.

Students who, in the judgment of proper authorities, display marked superiority, may be recommended for the special distinction of highest honors.

The Committee on Honors will consider recommendations from the department, the group major advisers, and the Dean, confer with the several recommenders about doubtful cases, and transmit to the Faculty of the College of Letters and Science its recommendations concerning the award of Honors and Highest Honors.

The list of students to whom honors or highest honors in the various departments have been awarded is published in the annual COMMENCEMENT PROGRAMME.

## COLLEGE OF AGRICULTURE

The prospective student should note the requirements and recommendations for admission, as stated on pages 26-34. Intrants will be seriously handicapped in undertaking the lower division courses required in the various curricula of this College unless they have completed the following subjects in high school: algebraic theory,  $\frac{1}{2}$  or 1 unit; trigonometry,  $\frac{1}{2}$  unit; physics, 1 unit; chemistry, 1 unit; and in addition, for those proposing to major in landscape design, agricultural engineering, or forestry, geometrical drawing, 1 unit. Failure to take the proper subjects in high school may delay completion of the University course beyond the usual four-year period.

More detailed information concerning instruction in the College of Agriculture (at Berkeley, Davis, and Los Angeles) may be found in the PROSPECTUS OF THE COLLEGE OF AGRICULTURE, which may be obtained on application to the Dean of the College of Agriculture, University of California, Berkeley 4, California.

## Requirements for the Degree of Bachelor of Science

The degree of Bachelor of Science is awarded to those candidates who:

1. Satisfy the general University requirements as follows:
  - (a) *Subject A.*—The Subject-A examination in English composition is required of every undergraduate student at the time of his first registration in the University (see page 37).
  - (b) *Military or Naval Science* (for male students; see pages 39, 40).
  - (c) *American History and Institutions.*—The student may meet this requirement by the passing of an examination in American History and Institutions or by completion of courses prescribed by the University (see page 38).
  - (d) *Residence in the University during the senior years* in the college in which the degree is to be taken.
  - (e) *Attain at least as many grade points as units of credit* in courses undertaken at this University.
2. Satisfy the general requirements of the College of Agriculture as follows:
  - (a) *At least 124 units of University work.*—Not more than 4 units may be in lower division physical education courses.
  - (b) *Thirty-six units of the above total must be in upper division courses* (courses numbered 100-199).
  - (c) *Nine units of mathematics including trigonometry.*—Matriculation work may be offered toward this requirement, counting each year of high school work as 3 units. The student normally satisfies this requirement before the end of his sophomore year.
3. Satisfy the requirements of one of the following curricula in the College of Agriculture:

**Required:** CURRICULUM IN AGRICULTURAL ECONOMICS

(a)	Botany, Bacteriology, Chemistry, Geology, Physics, Physiology, Zoölogy, or additional Mathematics.....	18 units
	*Mathematics .....	6
	English or Speech.....	6
	Business Administration or Economics.....	15
	Anthropology, Geography, History, Philosophy, Political Science, Psychology, or Sociology and Social Institutions..	12
	Agriculture .....	15
	Military Science.....	8
		<hr/>
		80 units

(b) At least 15 units of work in upper division agricultural economics. For details of program, see page 91.

**Required:** CURRICULUM IN AGRICULTURAL EDUCATION  
(GENERAL AGRICULTURE)

(a)	Chemistry .....	13 units
	Botany .....	8
	Bacteriology .....	4
	Economics .....	6
	Soil Science.....	3
	Genetics .....	4
	Physics .....	6
	English .....	3
	Zoölogy .....	5
	Military Science.....	8
		<hr/>
		60 units

(b) At least 50 units of work distributed in the fields of animal science, plant science, agricultural engineering, and agricultural economics.

The CURRICULUM IN AGRICULTURAL ENGINEERING is offered in the College of Engineering. See page 104.

**Required:** CURRICULUM IN ANIMAL SCIENCE

(a)	Chemistry, including Biochemistry.....	16 units
	Botany .....	4
	Physics .....	6
	Economics .....	6
	English .....	3
	Genetics .....	4
	Bacteriology .....	4
	Animal Nutrition .....	3
	Animal Physiology .....	5
	Animal Pathology or Parasitology.....	3
	Zoölogy .....	10
	Geology or Soils.....	3
	Military Science.....	8
		<hr/>
		75 units

\* This requirement may not be satisfied by completion of Mathematics A, B, C, D, or 2.

*Undergraduate Departments*

(b) A minimum of 12 units of upper division work in one of the following majors, with the approval of the major adviser: animal husbandry, poultry husbandry, dairy industry, veterinary science, and genetics.

**Required:** CURRICULUM IN ENTOMOLOGY AND PARASITOLOGY

(a)	Chemistry .....	13 units
	Agriculture or Forestry, other than Entomology and Parasitology, but including Plant or Animal Pathology....	12
	Botany and Zoölogy.....	20
	Bacteriology .....	4
	English or Speech.....	6
	Genetics .....	3
	Physics .....	3
	Plant or Animal Physiology or Nutrition.....	6
	Military Science .....	8
		75 units

(b) The summer practice course, Entomology and Parasitology 49.

(c) At least 23 units in entomology and parasitology courses in addition to course 49. Courses 1, 106, 112, and 127 should be included.

**Required:** CURRICULUM IN FOOD TECHNOLOGY

(a)	Chemistry .....	19 units
	Microbiology (including Bacteriology 1).....	8
	Botany and/or Zoölogy.....	8
	Physics (with laboratory).....	8
	Biochemistry and/or Physiology.....	6
	Mathematics (including Differential Calculus).....	6
	English and/or Speech.....	6
	Military Science .....	8
		69 units

(b) At least 30 units of courses in food technology and allied subjects, selected with the approval of the major adviser.

**Required:** CURRICULUM IN PREFORESTRY\*

(a)	Botany (General Botany).....	4 units
	Chemistry (General Inorganic and Organic).....	8
	Engineering (Plane Surveying).....	6
	Economics (Elements of Economics).....	6
	Geology (Structural) .....	3
	Mathematics (Analytic Geometry and Differential Calculus).....	6
	Physics (General Physics with Laboratory).....	8
	Statistical Methods .....	3
	Zoölogy (General Biology).....	3
	Speech, English, or Philosophy.....	6
	Military Science .....	8
		61 units

\* More detailed information concerning the School of Forestry is contained in the ANNOUNCEMENT OF THE SCHOOL OF FORESTRY, which is available without charge from the College of Agriculture, University of California, Berkeley. Also see statement concerning SCHOOL OF FORESTRY, page 130.

**Required:**

(a)

## CURRICULUM IN HOME ECONOMICS

Chemistry .....	8 units
Economics .....	6
Psychology .....	3
Bacteriology (including laboratory).....	4
Physiology .....	3
English or Speech.....	6
Public Health, Botany, or Zoölogy.....	3
Statistics .....	3

---

 36 units

(b) At least 36 units of upper division work distributed among the allied fields of home economics, and chosen with the approval of the major adviser.

Required courses for each of the majors are as follows:

*General Home Economics Major:*

Home Economics 1A-1B, 5, 7, 102A-102B, 132 (or Psychology 112), 133, 140, 141 (or 142), 144, 162, 167; Decorative Art 16A-16B, 130A; Civil Engineering 125.

*Child Development Major:*

Home Economics 1A-1B, 102A-102B, 132 (or Psychology 112), 133, 134 (or Public Health 121), 135, 435; Psychology 160, 162; Physiology 102.

*Clothing and Textiles Major:*

Home Economics 5, 7, 141, 160, 162, 163, 167; Decorative Art 16A-16B, 176A-176B, 179, 193A-193B.

*Family Economics Major:*

Home Economics 7, 100, 140, 141, 142, 144 and 162; Civil Engineering 125; 6-9 units of upper division economics or business administration selected upon consultation with adviser.

*Food Chemistry and Technology Major:*

Home Economics 1A-1B, 100, 101A-101B, 106, 120A-120B, 141 (or Agricultural Economics 101A or Business Administration 123); Chemistry 1B; Biochemistry 103; 4 units of Food Technology courses.

*Nutrition and Dietetics Major:*

Home Economics 1A-1B, 100, 101A, 106, 120A-120B, 141 (or Agricultural Economics 101A or Business Administration 123), 196; Chemistry 1B; Biochemistry 103, Physiology 1C.

**Required:**

(a)

## CURRICULUM IN LANDSCAPE DESIGN

General Botany .....	4 or 8 units
English or Speech .....	6
Art and Architecture.....	27
Economics .....	6
Civil Engineering (Surveying).....	3
Social Institutions, History, Philosophy, or Political Science..	6
Engineering (other than Surveying), Geology, Mathematics, or Agriculture (other than Landscape Design).....	6
Military Science.....	8

---

 66 or 70 units

(b) The summer practice course, Landscape Design 49.

(c) At least 30 units of courses in the Division of Landscape Design in addition to course 49.

*Required:*

CURRICULUM IN PLANT SCIENCE

(a)		
	Chemistry, including Biochemistry . . . . .	16 units
	Botany and Plant Physiology . . . . .	12
	English or Speech . . . . .	3
	Physics . . . . .	6
	Bacteriology . . . . .	4
	Economics . . . . .	3
	Genetics . . . . .	4
	Soils and/or Irrigation . . . . .	6
	Plant Pathology . . . . .	4
	Entomology . . . . .	4
	Zoölogy . . . . .	3
	Military Science . . . . .	8

73 units

(b) A minimum of 12 units of upper division work in one of the following divisions or in a closely related division, with the approval of the major adviser: agronomy, genetics, horticulture, irrigation, plant pathology, pomology, subtropical horticulture, truck crops, and viticulture and enology.

The plant science curriculum with majors in horticulture, ornamental horticulture (including floriculture), and subtropical horticulture are offered on the Los Angeles campus. For detailed information, consult the PROSPECTUS OF THE COLLEGE OF AGRICULTURE and the GENERAL CATALOGUE, DEPARTMENTS AT LOS ANGELES.

(c) The summer practice course of six weeks also may be prescribed as a major division requirement.

*Required:*

CURRICULUM IN SOIL SCIENCE

(a)		
	Mathematics (Analytic Geometry and Calculus) . . . . .	6 units
	Chemistry (including Physical Chemistry) . . . . .	19
	Physics (including laboratory) . . . . .	8
	Botany (including Plant Physiology) . . . . .	12
	Baeteriology . . . . .	4
	Mineralogy . . . . .	3
	Economics . . . . .	6
	Geology (including Petrology) . . . . .	6
	English and/or Speech . . . . .	6
	Military Science . . . . .	8

78 units

(b) At least 24 units in soil science, selected with the approval of a major adviser. Courses 100, 101, 110, and 111 should be included.

(c) A summer field course (6 units; numbered 105) also may be prescribed as a major requirement.

## Freshman and Sophomore Years

The programs of study outlined below normally are followed in the freshman and sophomore years in each of the agricultural curricula. Examples of programs at Berkeley only are given. College requirements for graduation are the same whether the student registers at Berkeley, Davis, or Los Angeles, except that 4 units of physical education are required as a condition of residence at Los Angeles. For further information, see the PROSPECTUS OF THE COLLEGE OF AGRICULTURE which may be obtained from the Dean of the College of Agriculture, University of California, Berkeley 4.

## AGRICULTURAL ECONOMICS

<i>Freshman Year</i>		<i>Sophomore Year</i>		
	<i>Fall Units</i>	<i>Spring Units</i>		
Military Science .....	2	2	Military Science .....	2
Chemistry 1A, 8 .....	5	3	Business Adm. 6A-6B ...	3
Economics 1A-1B .....	3	3	Mathematics 11A-11B ...	3
English 1A-1B or Speech			Economics 40 .....	3
1A-1B .....	3	3	Agricultural Economics 1.	3
Zoology 10 .....	3	..	Geology 1A .....	3
Botany 12 .....	..	4	Animal Husbandry 7 ....	3
			Elective .....	3
	<hr/>	<hr/>		<hr/>
	16	15		17
				17

## AGRICULTURAL EDUCATION

<i>Freshman Year</i>		<i>Sophomore Year</i>		
	<i>Fall Units</i>	<i>Spring Units</i>		
Military Science .....	2	2	Military Science .....	2
Chemistry 1A-1B .....	5	5	Physics 2A-2B .....	3
Botany 1 .....	5	..	Bacteriology 2 .....	4
English 1A .....	..	3	Economics 1A-1B .....	3
Horticulture 2 .....	3	..	Poultry Husbandry 1....	3
Animal Husbandry 7....	..	3	Zoology 1A-1B .....	4
Elective .....	3	5	Elective .....	3
	<hr/>	<hr/>		<hr/>
	18	18		18
				18

## ANIMAL SCIENCE

<i>Freshman Year</i>		<i>Sophomore Year</i>		
	<i>Fall Units</i>	<i>Spring Units</i>		
Military Science .....	2	2	Military Science .....	2
Zoology 1A-1B .....	4	4	Chemistry 8 .....	3
Chemistry 1A-1B .....	5	5	Bacteriology 2 .....	4
Physics 2A-2B .....	3	3	Economics 1A-1B .....	3
Animal Husbandry 7....	..	3	Geology 1A .....	3
Poultry Husbandry 1....	3	..	Botany 12 .....	..
			Poultry Husbandry 106..	3
			Elective .....	3
	<hr/>	<hr/>		<hr/>
	17	17		17
				16

## Undergraduate Departments

## ENTOMOLOGY AND PARASITOLOGY

<i>Freshman Year</i>			<i>Sophomore Year</i>		
	<i>Fall Units</i>	<i>Spring Units</i>		<i>Fall Units</i>	<i>Spring Units</i>
Military Science .....	2	2	Military Science .....	2	2
Chemistry 1A-1B .....	5	5	Zoology 1A-1B .....	4	4
Botany 1 .....	5	..	Entomology 1 .....	4	..
English 1A-1B or Speech 1A-1B .....	3	3	Chemistry 8 .....	..	8
Bacteriology 2 .....	..	4	Physics 10 .....	8	..
Elective .....	8	8	Agronomy 1 .....	3	..
			Truck Crops 1 .....	..	8
			Elective .....	..	4
	<hr/>	<hr/>		<hr/>	<hr/>
	18	17		16	16

## FOOD TECHNOLOGY

<i>Freshman Year</i>			<i>Sophomore Year</i>		
Military Science .....	2	2	Military Science .....	2	2
Chemistry 1A-1B .....	5	5	Physics 2A-2B .....	3	3
Botany 1 .....	5	..	Physics 3A-3B .....	1	1
Horticulture 2 .....	3	..	Chemistry 8, 5 .....	3	3
Speech 1A .....	..	3	Bacteriology 1 .....	..	5
Elective .....	3	6	Mathematics 11A-11B ...	3	3
			Economics 1A .....	8	..
			Elective .....	2	..
	<hr/>	<hr/>		<hr/>	<hr/>
	18	16		17	17

## PREFORESTRY

<i>Freshman Year</i>			<i>Sophomore Year</i>		
Military Science .....	2	2	Military Science .....	2	2
Chemistry 1A, 8 .....	5	8	Physics 2A-2B, 3A-3B ...	4	4
Botany 1 .....	5	..	*Engineering 1A-1B .....	3	3
Speech 1A-1B or English 1A-1B .....	3	3	Economics 1A-1B .....	3	3
Zoology 10 .....	..	3	Geology 1A .....	3	..
Mathematics 8A-8B .....	3	3	Statistics .....	..	3
Physical Education .....	..	$\frac{1}{2}$	Physical Education .....	$\frac{1}{2}$	$\frac{1}{2}$
	<hr/>	<hr/>		<hr/>	<hr/>
	18	14 $\frac{1}{2}$		15 $\frac{1}{2}$	15 $\frac{1}{2}$

\* One year of geometrical drawing and one-half year of trigonometry are prerequisite to Engineering and also necessary for forestry courses. They should be taken in high school. The University does not offer a course in geometrical drawing.



## †HOME ECONOMICS

<i>Freshman Year</i>		<i>Sophomore Year</i>		
	<i>Fall Units</i>	<i>Spring Units</i>	<i>Fall Units</i>	<i>Spring Units</i>
Chemistry 1A, 8 .....	5	3	Physiology 1A .....	3
English or Speech .....	3	3	Home Economics 1A-1B..	3
Public Health 5A or Zoölogy 10 .....	3	..	Psychology 1A .....	3
Decorative Art 16A-16B..	2	2	Economics 1A-1B .....	3
Bacteriology 2 .....	..	4	Home Economics 5, 7....	3
Elective .....	3	4	Econ. 40 or Psychology 5. .	3
	<hr/>	<hr/>	Elective .....	4
	16	16		<hr/>
				15
				<hr/>
				16

## LANDSCAPE DESIGN

<i>Freshman Year</i>		<i>Sophomore Year</i>		
Military Science .....	2	2	Military Science .....	2
Botany 12 .....	..	4	Architecture 12 .....	1
Art 2A-2B .....	2	2	Architecture 50 .....	..
English 1A-1B or Speech 1A-1B .....	3	3	Engineering 21 .....	3
Architecture 1, 2 .....	3	3	Art 3A-3B .....	2
Economics 1A-1B .....	3	3	Landscape Design 1A-1B.	3
Elective .....	3	..	Landscape Design 2 .....	2
	<hr/>	<hr/>	History 17A-17B .....	3
	16	17	Elective .....	5
				<hr/>
				16
				<hr/>
				17

## PLANT SCIENCE

<i>Freshman Year</i>		<i>Sophomore Year</i>		
Military Science .....	2	2	Military Science .....	2
Botany 1 .....	5	..	Chemistry 5, 8 .....	3
Chemistry 1A-1B .....	5	5	Zoölogy 10 .....	3
Horticulture 2 .....	3	..	Bacteriology 2 .....	4
Truck Crops 1 .....	..	3	Agronomy 1 .....	3
English or Speech .....	..	3	Economics 1A .....	3
Elective .....	3	3	Truck Crops 1 .....	3
	<hr/>	<hr/>	Elective .....	4
	18	16		5
				<hr/>
				18
				<hr/>
				17

† This is a suggested program for the General Home Economics major only. See the PROSPECTUS OF THE COLLEGE OF AGRICULTURE, obtainable without charge from the College of Agriculture, Berkeley, for suggested programs in other majors in Home Economics.

## Undergraduate Departments

SOIL SCIENCE					
<i>Freshman Year</i>		<i>Sophomore Year</i>			
	Fall Units	Spring Units			
Military Science . . . . .	2	2	Military Science . . . . .	2	2
Botany 1 . . . . .	5	..	Chemistry 5, 8 . . . . .	3	3
Chemistry 1A-1B . . . . .	5	5	Economics 1A-1B . . . . .	3	3
Physics 2A-2B . . . . .	3	3	Geology 1A . . . . .	3	..
Physics 3A-3B . . . . .	1	1	Bacteriology 2 . . . . .	..	4
Elective . . . . .	2	6	Mineralogy 4A . . . . .	3	..
			Elective . . . . .	2	4
	—	—		—	—
	18	17		16	16

## Junior and Senior Years

The schedule for the junior and senior years is determined by the major subject requirements, as listed above, supplemented by optional courses selected by the student, with the advice and consent of the major adviser.

## Approval of Study Lists

The study lists of all students must be endorsed by the major subject adviser, and approved by the Dean or Assistant Dean of the College of Agriculture, before it may be filed with the Registrar.

## Study-List Limits

Regular students are limited to 18 units a semester. To this maximum may be added a lower division course in physical education of not more than  $\frac{1}{2}$  unit.

## Honors

*Honorable mention with junior standing.*—Students who have completed 64 units of work in a curriculum of the College of Agriculture will have attained junior standing.

Honorable mention is granted with junior standing to students who acquire at least an average of two grade points for each unit of credit undertaken. These students will remain in honor status unless their average at the end of any semester falls below two grade points for each unit of credit undertaken.

*Honors with the bachelor's degree.*—Honors at graduation are granted to the graduating student who has completed his major with distinction and whose general record is satisfactory to the Study-Lists Committee. The student who has done work of unusual excellence may be recommended for highest honors.

The list of students to whom honors or highest honors in the College have been awarded is published in the COMMENCEMENT PROGRAMME.

## COLLEGE OF CHEMISTRY

*Preparation.*—Students who propose to enter the College of Chemistry must include in their high school programs physics (1 unit), chemistry (1 unit), mathematics including trigonometry and two years of algebra ( $3\frac{1}{2}$  units), German or French (2 units). It is recommended also that solid geometry ( $\frac{1}{2}$  unit), geometrical drawing, and further work in German or French be included. Students without this preparation will ordinarily not be allowed to enroll in the College of Chemistry.

*Approval of programs.*—Students in the College of Chemistry are required to submit their proposed schedules to their advisers. A list of the advisers in the College of Chemistry is posted on the bulletin board in Gilman Hall. It is desirable that a complete schedule of courses, chosen with a definite purpose and free from conflicts, should be arranged at the earliest possible date.

*Graduation.*—The degree of Bachelor of Science is granted upon the completion of a curriculum approved by the Study-Lists Committee of the College of Chemistry. The equivalent of four years of residence and 124 units are minimum requirements. Unless the student in his first two years completes the normal sophomore requirements, additional units, or a further semester of residence, or both, will be required. The student must have obtained at least as many grade points as there are units of credit in all courses which he has taken in the University. The first two years may be completed in a junior college or in any college or university of approved standing.

*Study-list limits.*—Ordinarily, students will not be permitted to enroll for fewer than 12 or more than 17 units a semester.

*Language requirement.*—A reading knowledge of scientific German is essential before the work of the junior year is undertaken. The student is urged to acquire also a reading knowledge of French. Reasonable proficiency in the use of English is a requirement for graduation in the College of Chemistry. The determination of proficiency and the enforcement of the requirement are administered by the Dean of the College in cooperation with a committee appointed by him. Any student whose oral or written English is unsatisfactory will be notified not later than the end of his junior year. The committee, in conference with the student so notified, will outline a program of study designed to correct the deficiency.

*Honor students in the upper division.*—Students who in the first two years of their college work have attained an average of at least two grade points for each unit undertaken will receive honorable mention with junior standing. These students are entitled to register as candidates for honors. After the first term of the junior year, the Committee on Honors of the College of Chemistry will determine which students shall remain in the honors group and which students shall be promoted thereto. Honor students will be given a larger share of

personal instruction and a greater opportunity to choose courses and work within courses, in the manner best suited to individual needs and aims. Students not in the honors group will not, except in unusual circumstances and with the express permission of the instructor, be permitted to enroll for honors courses (marked H) or for undergraduate research. Students will not ordinarily be recommended for honors in chemistry at graduation unless their work includes courses 114H and 180H or other advanced courses approved by the Committee. Subject to the approval of the study-list adviser and of the instructor in the course concerned, students in honors status have the privilege of taking each semester one course not offered by them in satisfaction of subject requirements for the curriculum of the College of Chemistry in which they shall be marked "passed" or "not passed." In calculating the grade-point standing units gained in this way are not counted. Students in the honors group should confer with Professor Latimer, chairman of the Committee on Honors of the College of Chemistry, 110 Gilman Hall, with respect to their plans for the last two years of college work. The list of students upon whom honors and highest honors are conferred appears in the annual COMMENCEMENT PROGRAMME.

*Specific requirements.*—Before graduation the following specific requirements must be satisfied:

- (a) Mathematics 3A, 3B, 4A, 4B or 14A, 14B.
- (b) Physics 4A, 4B, 4C.
- (c) Chemistry 1A, 1B, 5, 12A, 12B, 110A, 110B, 111, and at least 6 additional units of advanced quantitative analysis or advanced inorganic chemistry.
- (d) A reading knowledge of German.
- (e) The general University requirements in Military Science, American History and Institutions.

*Freshman year.*—Students with normal preparation will complete the following program: Subject A\*, Military Science, Chemistry 1A–1B, Physics 4A, German 1–2, and Mathematics 3A–3B. Students with high school preparation in German may take German 3S, 4S or substitute free electives such as English 1A–1B, Speech 1A–1B, or Economics 1A–1B, and students with high records in Mathematics may take Mathematics 3 and 4A.

*Sophomore year.*—In order to attain full junior standing the program for the second year should include Military Science (4 units), Mathematics 4A–4B, Physics 4B, and Chemistry 5, a total of 17 units, and at least 10 units chosen from the following list: Physics 4C, Chemistry 12A, 12B, 105 and 110A. Students preparing for Chemical Engineering are advised to elect Engineering 22 and Chemistry 143.

\* For regulations concerning Subject A, see page 37.

*Upper Division.*—In addition to completing the specific requirements (a), (b) and (c) listed above, a sequence of electives must be chosen in accordance with some comprehensive plan and each program must be approved by the study-list officer of the College of Chemistry. Such programs will normally include a group of upper division courses totaling 24 units, of which half may be taken in closely related departments. Thus a student preparing for research in the field of physical chemistry should include at least 6 units of upper division courses in physics and 6 in mathematics. A course leading to research in organic chemistry should include work in biochemistry, bacteriology, or physiology.

Students who wish to receive the B.S. in Chemistry (Chemical Engineering Curriculum) or who wish to proceed to the M.S. in Chemical Engineering, should confer with Professor Vermeulen, Room 104, Gilman Hall. The following upper division program is recommended for students electing the Chemical Engineering Curriculum:

<i>Junior Year</i>			<i>Senior Year</i>		
	<i>Fall Units</i>	<i>Spring Units</i>		<i>Fall Units</i>	<i>Spring Units</i>
Chemistry 110B, 144.....	6	..	Chem. 104,* 145A, 146B..	8	..
Chemistry 111, 146A.....	..	6	Chemistry 145B .....	..	2
Engineering 35 .....	..	3	Civil Engineering 108A...	3	..
Mechanical Eng. 105A....	3	..	Civil Engineering 108F... ..	..	1
Mechanical Eng. 154*....	..	3	Electives .....	6	12
Electrical Eng. 101-102..	4	..			
Math. 110A (or 119A)....	3	..			
Math. 110B (or 119B)....	..	3			

It is recommended that senior electives be chosen from the following list:

Courses relating to industrial organic chemistry: Chemistry 102, 103, 119, 147, 180H; Food Technology 112A-112B; Petroleum Engineering 119, 133.

Courses relating to industrial inorganic chemistry: Chemistry 105, 120, 123, 180H; Metallurgy 102, 124, 150A, 150B; Civil Engineering 109A, 109B, 111.

Courses relating to unit operations and to equipment design: Chemistry 149H, 118; Mechanical Engineering 102B-106, 107, 111, 151, 161, 164; Electrical Engineering 106; Metallurgy 108.

Courses in business fields: Psychology 3, Economics 1A-1B; Mechanical Engineering 120; Business Administration 6A, 18, 107, 120, 123, 126, 127, 151.

\* Chemistry 105 may be substituted for 104 and Chemistry 114H may be substituted for Mechanical Engineering 154.

## COLLEGE OF DENTISTRY

The College of Dentistry offers two curricula, leading to the degree of Bachelor of Science and to the degree of Doctor of Dental Surgery. The student has the option, at the close of the second semester in the dental college, of registering in either one of two major curricula: (1) restorative dentistry, or (2) preventive dentistry. At the end of the sophomore year (fourth semester), a selected small group of students may enter the Honors Curriculum, which is designed to train outstanding students in the fields of dental research and teaching. In addition to these, there is a curriculum for the training of dental hygienists, leading to the degree of Bachelor of Science.

Classes are admitted to the College of Dentistry once a year, in September. Applications must be filed not later than May 1. Upon the satisfactory completion of six semesters the dental student will be eligible for the Bachelor of Science degree, and for the Doctor of Dental Surgery degree upon the completion of two additional semesters. The Bachelor of Science degree will be granted the student in the Dental Hygiene curriculum at the end of the fourth semester.

## Admission to Dental Curricula

All applicants for admission to the dental curricula must have completed at least 60 units of college work with a scholarship average satisfactory to the Admissions Committee (approximately a B average), including the requirements (2)-(5) listed below. The student will find himself more adequately prepared for the dental curricula 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.

## Requirements for First and Second Years

- |   |          |
|---|----------|
| (1) <i>General University requirements*</i>   |          |
| Subject A (see page 37).  |          |
| Military Science (men).....   | 8 units  |
| (2) English or Speech (1A-1B†).....   | 6        |
| (3) Science .....   | 28-32    |
| (a) Chemistry   |          |
| Inorganic (1A-1B) .....   | 10 units |
| Organic lecture (8) .....   | 3        |
| Organic laboratory (9) or quantitative analysis (5) .....   | 3        |
| (b) Physics with laboratory (2A-2B and 3A-3B or 4A-4B-4C) .....                                       | 6-8      |
| (c) Biology, including one full semester of vertebrate zoology, with laboratory (Zoology 1A-1B) ..... | 6-8      |

\* The requirement of American History and Institutions is also prerequisite to the bachelor's degree, page 38.

† Course numbers in parentheses refer to courses given at the University of California, Departments at Berkeley.

- (4) Trigonometry (Mathematics C)..... 3 units  
It is suggested that this requirement be completed in high school.
- (5) Electives selected as indicated from the following groups:..15-20
- (a) Group I: 2 year-courses selected from Anthropology (2A-2B), Economics (1A-1B), History (4A-4B, 8A-8B, 17A-17B), Mathematics, Political Science (1, 2), Psychology (1A-2), Public Health (5A-5B), Social Institutions (10A-10B) .....12-14 units
- (b) Group II: one year-course or year sequence selected from Group IIA, or any combination of two semester courses from Group IIB...3-6
- Group IIA: Any foreign language literature course in translation (French 9A-9B-9C, German 9A-9B-9C-9D), a year sequence of any foreign language, English (44A-44B, 46A-46B), Music (30A-30B), Philosophy (6A-6B, 10A-10B).
- Group IIB: Architecture (5A, 5B, 5C, 14), Art (1B, 1C, 19), English (30), Music (27A, 27B, 27C, 27D, 27E), any two semesters of a foreign language, provided a minimum of 6 units has been completed in the same language.

The applicant who wishes to qualify for the degree of Bachelor of Science in addition to the degree of Doctor of Dental Surgery must complete satisfactorily a special project and thesis in the field of his major interest under the supervision of a faculty committee, and receive passing grades in 4 units of special instruction selected by the committee.

The College of Dentistry reserves the right to limit enrollment on the basis of scholarship, recommendations, and interviews.

### Admission to the Dental Hygiene Curriculum

Applicants for admission to the dental hygiene curriculum must have completed at least 60 units of college work with a scholarship average of at least grade C, including the requirements (2)-(5) listed below. Students planning to enter this curriculum should make this fact known at the time of their first registration. A special adviser for these students will hold office hours in 1557 Life Sciences Building throughout the semester. 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, plane geometry, and trigonometry); chemistry, 1 unit; physics, 1 unit; foreign language, 3 or, preferably, 4 units).

(1) *General University Requirements:*

Subject A (examination in English composition).  
American History and Institutions (required for the bachelor's degree. The examination in American History and Institutions may be taken in the College of Dentistry, but it is preferable to satisfy the requirement in the pre dental program. See page 38).

(2) English or Speech ..... 6 units

(3) Chemistry (1A, 8\*) ..... 8

(4) Biology (Zoölogy 1A-1B) ..... 6-8

(5) *Either* the Associate in Arts degree from the University of California (or its equivalent), *or* the following program of courses:

(a) A year-course selected from each of the following groups:

*Group I:* Anthropology (2A-2B), Economics (1A-1B), History (4A-4B, 8A-8B, 17A-17B), Political Science (1, 2), Social Institutions (10A-10B),

*Group II:* Psychology (1A-2), Public Health (5A-5B), Home Economics (1A-1B),

*Group III:* Philosophy, Art, Music, Literature, Foreign Language ..... 18-20 units

(b) Six additional units selected from any of the three groups listed under (a) ..... 6

(c) Electives ..... 12-16

## COLLEGE OF ENGINEERING

*Matriculation requirements.*—A statement concerning matriculation requirements will be found on page 26. High school subjects prerequisite to college courses required in all engineering curricula include: plane geometry, 1 unit; algebra, 2 units; trigonometry,  $\frac{1}{2}$  unit; mechanical drawing, 1 unit; chemistry, 1 unit, or physics, 1 unit (both are desirable). Without this preparation it will be necessary for the student to take equivalent courses in college, thereby barring him from regular courses and delaying his graduation.

*Advanced standing.*—For general information, see page 30.

*Admission to the College of Engineering.*—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 on the results of an entrance examination and a consideration of the student's grades.

All persons applying for admission to the lower division must take the Pre-Engineering Inventory Examination. Admission to the lower division will be based upon results achieved in the test and the grade-point average achieved in University matriculation requirements.

\* Course numbers in parentheses refer to courses given at the University of California, Departments at Berkeley.



Admission to all upper division courses and continuation in the College of Engineering is based on satisfactory completion of the Junior Engineering Examination (which is given to all students just prior to the completion or at the end of the sophomore year) and a consideration of the student's grades in the freshman and sophomore required subjects.

The same examinations are required for admission to the College of Engineering at Berkeley or at Los Angeles. Places and times for the examinations may be obtained from the Dean of the College of Engineering at either campus. Application blanks for these examinations should be obtained by the prospective student several months before he plans to transfer to the University. A \$5 fee will be charged for each examination.

*Inter-campus Transfer.*—Students who wish to transfer from other colleges on the campus to the College of Engineering must make application to the Dean of the College of Engineering for such transfer no later than May 1 for the fall semester and December 15 for the spring semester. Petitions to change college may be secured from the Registrar. Students who wish to transfer to the College of Engineering are required to take the appropriate competitive examination noted above.

*Curricula in engineering.*—Students in the College of Engineering may elect any one of many curricula. All of the curricula are grouped under the 11 main curricula in Agricultural Engineering, Civil Engineering, Economic Geology, Electrical Engineering, Engineering Physics, Industrial Engineering, Mechanical Engineering, Metallurgy, Mining Engineering, Petroleum Engineering, and Process Engineering. Each is a four-year curriculum leading to the Bachelor of Science degree upon completion of the specified number of units, and, in addition, grade points equal to the number of units in the credit value of all courses undertaken.

For the guidance of students, details of the several curricula are presented on the following pages. The curricula printed in this bulletin apply only to students who began their college studies in July, 1946, or later. Students who have entered prior to this time should in general conform to the curricula in force at the time of entrance. Details of the curricula may be obtained at the office of the College of Engineering.

Each curriculum consists of a group of subjects, the study of which gives adequate preparation for the beginning of professional engineering work in the designated field. The subjects and units involved in the several curricula are as follows:

(1) Subjects common to all curricula in engineering:	Units
Chemistry .....	8
Physics .....	12
Mathematics (including differential and integral calculus) ..	12
Analytic mechanics and strength of materials.....	6
Applied thermodynamics and fluid mechanics.....	6

Applied electricity and magnetism.....	3
Properties of materials.....	3
Drawing and graphics.....	4
Engineering design.....	3
Engineering economics.....	3
Electives.....	12

(2) Subjects characteristic of the several curricula. In addition to the subjects and units common to all curricula in engineering, the several curricula include at least the number of units in each of the subjects shown in the following table. Each curriculum requires the total number of units shown at the top of the column, the totals in all cases including the 8 units of military science required of all male undergraduates. Students not required to study military science may substitute other subjects aggregating the same number of units. Credit in physical education may be used for this purpose up to a maximum of four units.

	Units		Units
<i>Agricultural Engineering:</i> .....	134	<i>Engineering Physics:</i> .....	128
Mechanics, Thermodynamics, Fluid		Chemistry .....	8
Mechanics .....	6	Physics .....	8
Irrigation, Soil Science, Agronomy	13	Mathematics .....	4
Agricultural Machinery and Structures .....	17	*Optional Subjects .....	20
*Optional Subjects .....	18	Foreign Language .....	8
<i>Civil Engineering:</i> .....	136	<i>Industrial Engineering:</i> .....	134
Mechanics, Strength of Materials,		Mechanics, Thermodynamics, Fluid	
Thermodynamics, Fluid Mechan-		Mechanics, Strength of Materials	10
ics .....	13	Electrical Circuits and Machinery.	5
Hydraulic, Structural, and Trans-		Business Administration .....	15
portation Engineering .....	13	*Optional Subjects .....	24
*Optional Subjects .....	30	<i>Mechanical Engineering:</i> .....	131
<i>Economic Geology:</i> .....	136	Mechanics, Thermodynamics, Fluid	
Chemistry .....	2	Mechanics, Strength of Materials	11
Dynamics .....	3	Mechanical Design and Manufac-	
Mineralogy, Geology, and Paleon-		turing Processes .....	10
tology .....	34	Electrical Circuits and Machinery.	5
Surveying and Map Drawing.....	6	*Optional Subjects .....	25
*Optional Subjects .....	11	<i>Metallurgy:</i> .....	134
<i>Electrical Engineering:</i> .....	132	Chemistry .....	5
Mathematics .....	4	Metallurgy .....	18
Mechanics, Thermodynamics, Fluid		*Optional Subjects .....	31
Mechanics, Strength of Materials	6		
Electrical Circuits and Machinery.	22		
*Optional Subjects .....	20		

\* To be chosen from sequences of scientific and professional courses giving emphasis to a particular phase of a general field.

	Units		Units
<i>Mining Engineering:</i> .....	134	<i>Process Engineering:</i> .....	134
Chemistry .....	2	Chemistry .....	16
Dynamics .....	3	Mathematics .....	4
Mineralogy and Geology.....	18	Heat Transfer and Unit Operations	9
Mining .....	10	Unit Processes .....	3
Metallurgy .....	5	Applied Thermodynamics and Fluid	
Analysis of Ores.....	6	Mechanics .....	3
*Optional Subjects .....	10	*Optional Subjects .....	23
<i>Petroleum Engineering:</i> .....	134		
Chemistry .....	8		
Mechanics, Thermodynamics, Fluid			
Mechanics .....	6		
Petroleum Technology and Econom-			
ics .....	16		
*Optional Subjects .....	24		

*Requirements for the Degree of Bachelor of Science.*—The degree of Bachelor of Science in the College of Engineering is awarded to those candidates who:

(1) Satisfy the general University requirements:

(a) Military Science. See page 39. Eight units credit toward the degree will be allowed those students who are required to take military science. Those who are exempt from this requirement must make up the 8 units by taking elective courses.

(b) Subject A. See page 37.

(c) American History and Institutions. See page 38.

(d) Residence during the senior year. See page 41.

NOTE: Students in the College of Engineering are required to take the final 32 units of work in residence rather than the minimum required by the University.

(e) Grade points. See page 42.

(2) Satisfactorily complete one of the engineering curricula. A student who gives full time to University responsibilities may enroll without special permission for the number of units required in his program of study (see pages 104–116). A student who engages in part-time employment should plan to spend more than four years by enrolling each semester for fewer than the required number of units. In such cases, course sequences must be carefully planned if delay is to be avoided.

(3) Satisfy the requirement in English. Each candidate for a degree must exhibit a reasonable degree of accuracy and facility in the use of English. Any student whose use of English is unsatisfactory may be reported to the Dean of the College of Engineering. The Dean may then assign supplementary course work which may cause a delay in graduation.

*Programs of study.*—For the guidance of students, courses satisfying the subject requirements of each curriculum have been selected and are listed on

\* To be chosen from sequences of scientific and professional courses giving emphasis to a particular phase of a general field.

the following pages. These have been arranged in sequences such that course prerequisites are satisfied. Other sequences are possible in some cases but should be carefully checked with the study-lists adviser in order to avoid delay caused by the lack of prerequisites.

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

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

*Selection of electives.*—There are 12 units of electives in each curriculum to provide for the study of nonengineering subjects which have been placed in the following groups:

1. English, speech.
2. Foreign languages.
3. Business administration, economics, political science.
4. Anthropology, history, sociology and social institutions, psychology.
5. Life sciences.
6. Fine arts and philosophy.

The elective units must be chosen from two of the above groups. If the curriculum contains more than 12 elective units, the remainder may be chosen from any department of the University.

Students in agricultural, industrial, and mechanical engineering must select 3 units from group 1, and a total of 9 additional units from two of the remaining groups.

#### PROGRAM OF STUDY IN AGRICULTURAL ENGINEERING

<i>Freshman Year</i>			<i>Sophomore Year</i>		
	<i>Fall Units</i>	<i>Spring Units</i>		<i>Fall Units</i>	<i>Spring Units</i>
Mathematics 3A-3B . . . . .	3	3	Mathematics 4A-4B . . . . .	3	3
Physics 4A . . . . .		4	Physics 4B-4C . . . . .	4	4
Chemistry 1A, 8 . . . . .	5	3	Engineering 40A-41 . . . . .	2	4
Engineering 22, 23 . . . . .	2	2	Engineering 24 . . . . .	2	..
Engineering 1A . . . . .		3	Engineering 35 . . . . .		3
§Military Science . . . . .	2	2	Agricultural Eng. 12 (not required of students en- tering with junior stand- ing) . . . . .	..	2
†Elective . . . . .	3	..	§Military Science . . . . .	2	2
			†Elective . . . . .	3	..
	15	17		16	18
Engin. 48 (recommended) 1		..	*(Agricultural Eng. 49) . . . (6)		

§ See page 39.

† For rules concerning selection of electives, see this page above.

\* Agricultural Engineering 49 (6 units, taken at Davis), a summer course, required, consists of a study of engineering problems on typical California farms.

<i>Junior Year</i>		<i>Senior Year (at Davis)</i>	
Mech. Eng. 105A-105B... 3	3	†Agricultural Eng. 114.... 3	..
Mechanical Eng. 102B.... 3	..	†Agricultural Eng. 118.... .. 4	..
Mechanical Engineering		†Agricultural Eng. 115.... 3	..
106 (or C.E. 107A)... .. 4	4	†Agricultural Eng. 180.... .. 1	..
Civil Engineering 108A.. 3	..	Mechanical Engineering	
Civil Engineering 108F.. 1	..	151 (or Physics 116).. 3	..
Electrical Eng. 100A-100B 3	3	Mechanical Eng. 152 (or	
Electrical Eng. 104A-104B 1	1	Chemistry 109) ..... 3	..
Mechanical Eng. 103..... 3	..	Irrigation 120 ..... 3	..
Agricultural Econ. 118.... .. 3	3	Soil Science 106 ..... .. 4	..
†Elective ..... .. 3	3	Agronomy 110 ..... 3	..
		†Elective ..... .. 3	3
17	17	15 <sub>e</sub>	15

Additional recommended electives: Agricultural Engineering 6, 199; Bacteriology 1; Botany 107 ..... 2-4

The curriculum in Agricultural Engineering is given in the College of Engineering with the cooperation of the College of Agriculture. Under the present plan a student may spend the first three years at the Berkeley or Los Angeles campuses (or the first two years in a junior college with the third year on the Berkeley or Los Angeles campuses). The last year and the summer field trip must be taken at Davis. The first three years are in fundamental and mechanical engineering, while at Davis the student takes courses in agricultural engineering, irrigation practice, soil technology, and general agriculture. The curriculum is designed to prepare the student to apply engineering principles in agricultural practice.

The courses given by the Division of Agricultural Engineering at Davis include the design, selection, operation, and maintenance of farm power and machinery equipment; the design and construction of farm structures; selection of building materials; design of farmstead sanitation, lighting and water supply; and theory of heat transfer, evaporation, and processing. The irrigation and soil science courses treat, respectively, hydraulic systems, ground water supplies, plant use of water; and soil profiles, properties, structure, classification and management. A special summer practice and travel course is offered which includes a study of engineering problems on typical farms in California, and laboratory and field practice in the operation of farming equipment.

The program outlined may be modified, with the approval of the Study-Lists Committee, to meet the needs of the student who is preparing for some special phase of Agricultural Engineering, such as rural electrification, pest control, and food processing.

† For rules concerning selection of electives, see page 104.

‡ These courses include engineering economics, but Agricultural Economics 118 is recommended in addition.

|| If Irrigation 120 is not given in the first semester, students should take Soil Science 110 the first semester which is an acceptable substitute for Soil Science 106.

## Undergraduate Departments

## PROGRAM OF STUDY IN CIVIL ENGINEERING

<i>Freshman Year</i>			<i>Sophomore Year</i>		
	<i>Fall Units</i>	<i>Spring Units</i>		<i>Fall Units</i>	<i>Spring Units</i>
Mathematics 3A-3B . . . . .	3	3	Mathematics 4A-4B . . . . .	3	3
Physics 4A . . . . .		4	Engineering 22, 23 . . . . .	2	2
Chemistry 1A-1B . . . . .	5	5	Physics 4B-4C . . . . .	4	4
Engineering 1A-1B . . . . .	3	3	Geology 1A . . . . .	3	..
*Electives . . . . .	3	..	Engineering 35 . . . . .		3
§Military Science . . . . .	2	2	Engineering 8 . . . . .		2
			*Electives . . . . .	2	..
			§Military Science . . . . .	2	2
	16	17		16	16

*To be given during the summer*

Engineering 3 (Surveying Camp) . . . . .	(4)
---	-----

<i>Junior Year</i>			<i>Senior Year</i>		
Mechanical Eng. 102B . . . . .	3	..	Civil Engineering 113 . . . . .	2	..
Civil Eng. 108A-108B . . . . .	3	2	Civil Engineering 1070 . . . . .	3	..
Civil Engineering 107A . . . . .		3	Civil Engineering 109A . . . . .		2
Civil Engineering 110-161 . . . . .	3	2	Civil Engineering 106 . . . . .	2	..
Civil Engineering 108E . . . . .		2	Electrical Engineering 101 . . . . .		3
			Civil Engineering 111A . . . . .	2	..
			Civil Engineering 116 . . . . .		2
			Civil Engineering 108C . . . . .	1	..

## Options

## CONSTRUCTION

Business Adm. 6A-6B . . . . .	3	3
Business Adm. 151 . . . . .	3	..
Business Adm. 153 . . . . .		3
Electives . . . . .	2	2
	17	17

## IRRIGATION

Mechanical Eng. 105A . . . . .	3	..
Civil Engineering 102A . . . . .	3	..
Irrigation 102A . . . . .		2
Irrigation 103 . . . . .	2	..
Electives . . . . .		6
	17	17

## Options

## CONSTRUCTION

Mechanical Eng. 120 . . . . .		3
Business Adm. 127 . . . . .	3	..
Business Adm. 118 . . . . .		3
Business Adm. 161 . . . . .		3
Mechanical Eng. 105A . . . . .	3	..
Electives . . . . .		1
	16	17

## IRRIGATION

Irrigation 101 . . . . .		2
Irrigation 102B . . . . .	2	..
Irrigation 104 . . . . .		2
Irrigation 112 . . . . .	2	..
Electives . . . . .	3	5
	17	16

\* For rules concerning selection of electives, see page 104.

§ See page 89.

SANITARY	
Civil Engineering 125....	2 ..
Civil Eng. 123 .....	4 ..
Bacteriology 2 .....	4
Zoölogy 109 .....	1
Electives .....	2 2
—	—
	17 16

STRUCTURAL	
Mech. Eng. 105A.....	3 ..
Civil Engineering 107G... ..	3 3
Electives .....	5 4
—	—
	17 16

TRANSPORTATION	
Mechanical Eng. 105A... ..	3 ..
Civil Engineering 102A... ..	3 ..
Civil Engineering 102B... ..	3 3
Astronomy 3 .....	1
Electives .....	2 4
—	—
	17 17

SANITARY	
Civil Engineering 111B... ..	2 ..
Civil Engineering 109B... ..	2
Civil Engineering 126.... ..	2
Irrigation 112 .....	2 ..
Mechanical Eng. 105A... ..	3 ..
Electives .....	6
—	—
	17 17

STRUCTURAL	
Mechanical Eng. 120.....	3 ..
Civil Engineering 107D... ..	3 3
Civil Engineering 114.... ..	3
Civil Engineering 108G... ..	2
Irrigation 112 .....	2 ..
Electives .....	2 2
—	—
	17 17

TRANSPORTATION	
Economics 170A .....	3 ..
Civil Engineering 108G... ..	2
Civil Engineering 107D... ..	3
Civil Eng. 104A-104B... ..	2 2
Electives .....	2 2
—	—
	17 16

## Undergraduate Departments

## PROGRAM OF STUDY IN ECONOMIC GEOLOGY

Freshman Year			Sophomore Year		
	Fall Units	Spring Units		Fall Units	Spring Units
Mathematics 3A-3B .....	3	3	Geology 1B .....	3	3
Physics 4A .....	4	4	Mathematics 4A-4B .....	3	3
Chemistry 1A-1B .....	5	5	Mineralogy 4A-4B .....	3	2
Engineering 22-23 .....	2	2	Engineering 1A-1B .....	3	3
Geology 1A .....	3	..	Physics 4B-4C .....	4	4
§Military Science .....	2	2	§Military Science .....	2	2
			†Elective .....	3	..
	15	16		18	17
Junior Year			Senior Year		
Metallurgy 2A .....	3	..	Mechanical Eng. 102B....	3	..
Geology 102A-102B .....	2	2	Geology 116 .....	..	2
Geology 103-108 .....	4	2	Mech. Eng. 108 .....	3	..
Geology 106 .....	3	..	Chemistry 109 .....	3	..
Engineering 85 .....	..	3	Civil Engineering 108A....	..	3
Mineralogy 103 .....	..	3	*Restricted Electives .....	6	6
Mining 113 .....	..	1	†Elective .....	..	6
Electrical Eng. 101.....	..	3			
*Restricted Electives .....	3	..			
Elective .....	..	3			
	15	17		15	17

To be given during the summer

\*\*Geology 118 .....

6

§ See page 39.

† For rules concerning the selection of electives, see page 104.

\* Options in mining geology and in petroleum geology may be arranged by the proper choice of restricted electives subject to the approval of the Committee on Study Lists. Lists of suggested courses for these options may be obtained from the faculty adviser or from the office of the Dean of the College.

\*\* Geology 118, 6 units, is a summer course in advanced field work.



## PROGRAM OF STUDY IN ELECTRICAL ENGINEERING

<i>Freshman Year</i>			<i>Sophomore Year</i>		
	<i>Fall Units</i>	<i>Spring Units</i>		<i>Fall Units</i>	<i>Spring Units</i>
Mathematics 3-4A . . . . .	6	3	Mathematics 4B-110 . . . . .	3	4
Chemistry 1A-8 . . . . .	5	3	Physics 4B-4C . . . . .	4	4
Physics 4A . . . . .		4	Engineering 35 . . . . .		3
Engineering 22-23 . . . . .	2	2	*Engineering 41 . . . . .	4	..
‡Elective . . . . .		3	‡Elective . . . . .	3	3
‡Military Science . . . . .	2	2	‡Military Science . . . . .	2	2
	<hr/>	<hr/>		<hr/>	<hr/>
	15	17		16	16
<i>Junior Year</i>			<i>Senior Year</i>		
Electrical Eng. 110A-110B	3	3	Electrical Eng. 116A . . . . .	3	..
Electrical Eng. 104A-104B	1	1	Electrical Engineering 113 . .		2
Electrical Eng. 105-106 . .	3	4	Electrical Eng. 111A . . . . .	3	..
Mech. Eng. 105A-105B . . .	3	3	Electrical Engineering 133	2	..
Mechanical Eng. 107 . . . . .		3	Electrical Eng. 132A . . . . .	2	..
Mechanical Eng. 102B . . . .		3	Mechanical Eng. 120 or		
Civil Engineering 108A . . . .	3	..	Business Adm. 107 . . . . .		3
Civil Engineering 108F . . . .	1	..	‡Elective . . . . .		3
‡English . . . . .	3	..	Restricted Electives . . . . .	7	9
	<hr/>	<hr/>		<hr/>	<hr/>
	17	17		17	17

NOTE.—Options in communications, illumination, industrial electronics and control, physics and power may be arranged by proper choice of restricted electives. Lists of courses suggested are available in Room 220, Engineering Building. Combinations of electrical engineering with other engineering curricula and with curricula in chemistry, geology, and other sciences will also be approved for students with special interests in those fields. A combination with business administration is available for students interested in the commercial aspects of electrical industries. The program may, if desired, be pursued through graduate study leading to the degree of Master of Business Administration.

All elective courses must fit into a comprehensive plan that meets the approval of the Study-Lists Committee of the College of Engineering. Although postponement of required courses will make it difficult to complete the required work in eight semesters, in special cases certain elective courses should be taken in the junior year to satisfy prerequisites for elective senior courses. For this reason, it is desirable that a tentative selection of all elective courses be made as early as possible.

‡ For rules concerning selection of electives, see page 104.

§ See page 39.

\* Engineering 10B in Fall Semester, 1947.

† Speech 1A, English 1A or 41, or other approved English course.

## PROGRAM OF STUDY IN ENGINEERING PHYSICS

<i>Freshman Year</i>			<i>Sophomore Year</i>		
	<i>Fall Units</i>	<i>Spring Units</i>		<i>Fall Units</i>	<i>Spring Units</i>
Mathematics 3A-3B . . . . .	3	3	Mathematics 14A-14B . . . . .	5	5
Chemistry 1A-1B . . . . .	5	5	Chemistry 8-5 or 109 . . . . .	3	3
Physics 4A . . . . .	..	4	Physics 4B-4C . . . . .	4	4
Engineering 22-23 . . . . .	2	2	*Elective . . . . .	3	3
*Elective . . . . .	3	..	**Military Science . . . . .	2	2
**Military Science . . . . .	2	2		—	—
	—	—		17	17
	15	16			
<i>Junior Year</i>			<i>Senior Year</i>		
Physics 105A-105B . . . . .	3	3	Physics 108B . . . . .	..	3
Physics 121 . . . . .	3	..	Mechanical Eng. 164 . . . . .	2	..
Physics 110A-110B . . . . .	3	3	Mechanical Eng. 120 . . . . .	..	3
Physics 112 . . . . .	..	3	Civil Engineering 108A . . . . .	3	..
Mechanical Eng. 103 . . . . .	3	..	§Restricted Electives . . . . .	10	10
†Foreign Language . . . . .	4	4		—	—
*Elective . . . . .	..	3		15	16
	—	—			
	16	16			

The Engineering Physics curriculum is given in the College of Engineering with the cooperation of the Physics Department. The purpose of this curriculum is to prepare students for positions requiring the industrial applications of physics. Students who complete this curriculum with a grade B average or better and who have selected the appropriate restricted electives will be prepared for graduate work in either physics or engineering.

It may be necessary in some cases to change the order of courses in the junior and senior years as set up in the program of study to allow the student to satisfy prerequisites for restricted electives in the senior year. The program outlined may be modified with the approval of the Study-Lists Committee to meet the needs of students in special cases.

\* For rules concerning selection of electives, see page 104.

\*\* See page 39.

† Foreign language must be either French or German. The first two years of high school work in a foreign language will be counted in satisfaction of 4 units of this requirement, and each year thereafter as 4 units. The satisfaction of requirements in high school does not, however, reduce the amount of work required in the University for the B.S. degree (128 units). If this requirement is satisfied through work taken in high school, the 8 units thus released become free electives.

§ Restricted electives are to be chosen with the approval of the study-list adviser from subjects in the fields of engineering, science, and mathematics. At least 10 of these units shall be in engineering subjects.

## PROGRAM OF STUDY IN INDUSTRIAL ENGINEERING

Freshman Year			Sophomore Year		
	Fall Units	Spring Units		Fall Units	Spring Units
Chemistry 1A, 8.....	5	3	Physics 4B-4C .....	4	4
Mathematics 3A-3B .....	3	3	Mathematics 4A-4B .....	3	3
Physics 4A .....	4	4	Engineering 24 .....	2	..
Engineering 22-23 .....	2	2	Engineering 40 .....	3	..
Engineering 1A .....	..	3	Engineering 41 .....	..	4
*Engineering 48 .....	1	..	Engineering 35 .....	..	3
†Elective .....	3	..	Economics 40 .....	3	..
‡Military Science .....	2	2	§Military Science .....	2	2
	16	17		17	16
Junior Year			Senior Year		
Civil Engineering 108A... 3	..	..	Mechanical Eng. 145.....	3	3
Civil Engineering 108F... 1	..	..	Mechanical Eng. 107.....	3	..
Electrical Eng. 100A-100B 3	3	3	Mechanical Eng. 113.....	2	..
Electrical Eng. 104A-104B 1	1	1	Mechanical Eng. 120.....	..	3
Mechanical Eng. 102B... 3	..	..	Mechanical Eng. 143.....	3	..
Mechanical Eng. 103.....	..	3	Mechanical Eng. 144.....	..	2
Mech. Eng. 105A-105B... 3	3	3	Business Adm. 107.....	3	..
Mechanical Eng. 106.....	..	4	Business Adm. 120.....	..	3
Business Adm. 6A-6B... 3	3	3	Business Adm. 127.....	3	..
	17	17	†Elective .....	3	6
				17	17

The Industrial Engineering curriculum is offered for those students who intend to enter fields of engineering which are closely related to management, or engage in activities, such as technical sales work, where a background of fundamental engineering training is desirable. The curriculum combines fundamental courses in engineering and business administration with specialized courses related to industrial engineering. Since the majority of students who graduate from this curriculum enter manufacturing plants, working in either industrial engineering or operating departments, it is recommended that they endeavor to obtain some experience in such plants during summer vacations.

\* Not required for students with advanced standing if the credit includes at least 20 units or more of the courses prescribed in the freshman year.

† For rules concerning selection of electives, see page 104.

‡ See page 39.

## Undergraduate Departments

## PROGRAM OF STUDY IN MECHANICAL ENGINEERING

<i>Freshman Year</i>			<i>Sophomore Year</i>		
	<i>Fall Units</i>	<i>Spring Units</i>		<i>Fall Units</i>	<i>Spring Units</i>
Mathematics 3A-3B . . . . .	3	3	Mathematics 4A-4B . . . . .	3	3
Chemistry 1A-8 . . . . .	5	3	Physics 4B-4C . . . . .	4	4
Engineering 1A . . . . .	3	3	Engineering 24 . . . . .	2	..
Physics 4A . . . . .	4	4	Engineering 40-41 . . . . .	3	4
Engineering 22-23 . . . . .	2	2	Engineering 85 . . . . .	..	3
**Engineering 48 . . . . .	1	..	*Elective . . . . .	3	..
*Elective . . . . .	3	..	‡Military Science . . . . .	2	2
‡Military Science . . . . .	2	2			
	<hr/>	<hr/>		<hr/>	<hr/>
	16	17		17	16
<i>Junior Year</i>			<i>Senior Year</i>		
Mech. Eng. 102B-106 . . . . .	3	4	Mechanical Eng. 113 . . . . .	2	..
Mechanical Eng. 103 . . . . .	..	3	Mechanical Eng. 120 . . . . .	..	3
Mech. Eng. 105A-105B . . . . .	3	3	Mech. Eng. 124A-124B . . . . .	3	3
Elec. Eng. 100A-100B . . . . .	3	3	Mech. Eng. 181A-181B . . . . .	4	4
Elec. Eng. 104A-104B . . . . .	1	1	†Restricted Electives . . . . .	6	6
Civil Engineering 108A . . . . .	3	..			
Civil Engineering 108F . . . . .	1	..			
*Elective . . . . .	3	3			
	<hr/>	<hr/>		<hr/>	<hr/>
	17	17		15	16

\*\* Not required for students with advanced standing if the credit includes at least 20 units or more of the courses prescribed in the freshman year.

\* For rules concerning selection of electives, see page 104.

‡ See page 39.

† Options in air conditioning and refrigeration, automotive, chemical, fluid mechanics (hydraulics), heat power, heat transfer and thermodynamics, marine, mechanical design and preparation for graduate study may be arranged by the proper choice of restricted electives, subject to the approval of the Committee on Study-Lists of the College of Engineering. Lists of suggested courses for these options may be obtained in Room 220, Engineering Building. A minimum of 5 units of approved senior courses in mechanical engineering must be included among the restricted electives.

## PROGRAM OF STUDY IN METALLURGY

## PHYSICAL METALLURGY

## PROCESS METALLURGY

		<i>Freshman Year</i>			
		<i>Fall</i>	<i>Spring</i>	<i>Fall</i>	<i>Spring</i>
		<i>Units</i>	<i>Units</i>	<i>Units</i>	<i>Units</i>
Chemistry 1A-1B	5	5	Mathematics 3A-3B	3	3
Mathematics 3A-3B	3	3	Physics 4A	4	4
Physics 4A	4	4	Chemistry 1A-1B	5	5
Engineering 22-23	2	2	Engineering 22-23	2	2
† Elective	3	..	Engineering 1A	3	..
‡ Military Science	2	2	‡ Military Science	2	2
	<u>15</u>	<u>16</u>		<u>15</u>	<u>16</u>
<i>Sophomore Year</i>					
Chemistry 110A	3	3	Mathematics 4A-4B	3	3
Physics 4B-4C	4	4	Physics 4B-4C	4	4
Mathematics 4A-4B	3	3	Metallurgy 2A-2B	3	3
Metallurgy 2A	3	..	Chemistry 110A	3	3
Eng. 35 (or Physics 105A)	3	3	Geology 1A	3	..
† Elective	3	..	Mineralogy 4A-4B	3	2
‡ Military Science	2	2	‡ Military Science	2	2
	<u>15</u>	<u>15</u>		<u>18</u>	<u>17</u>
<i>Junior Year</i>					
Chemistry 110B	3	..	Engineering 35	3	3
Civil Eng. 108A-108F	3	1	Chemistry 110B	3	..
Mechanical Eng. 102B or Physics 105B	3	..	Electrical Engineering 101	3	3
Mechanical Eng. 103	3	3	Electrical Engineering 102	1	1
Metallurgy 150A-150B	3	3	Geology 103-109	3	3
Metallurgy 102-106	2	2	Geology 106	3	..
Engineering 41	4	4	Mining 113	1	1
* Restricted Electives	4	3	Metallurgy 108-106	3	2
	<u>18</u>	<u>16</u>	Metallurgy 150A-110A	3	2
			† Elective	3	3
				<u>18</u>	<u>18</u>
<i>Senior Year</i>					
Mech. Eng. 120 or Bus. Adm. 107	3	3	Mech. Eng. 120	3	3
Mech. Eng. 106 or Physics 121	4 or 3	..	Civil Engineering 110	3	..
Metallurgy 170A-170B	3	3	Civil Engineering 108A	3	3
Metallurgy 174	3	3	Mining 103	3	..
Metallurgy 172	2	..	Mining 105A	4	..
Electrical Engineering 101	3	3	Metallurgy 112-114	3	3
Electrical Engineering 102	1	1	Metallurgy 110B	2	..
† Elective	3	..	* Restricted Electives	2	2
* Restricted Electives	6 or 7	5	† Elective	3	3
	<u>18</u>	<u>18</u>		<u>18</u>	<u>14</u>

† For rules concerning selection of electives, see page 104.

‡ See page 39.

\* Restricted electives are to be selected from subjects pertaining to science, engineering, or other fields which contribute to the student's professional skill. They must be chosen to form a consistent program acceptable to the adviser.

## PROGRAM OF STUDY IN MINING ENGINEERING

<i>Freshman Year</i>			<i>Sophomore Year</i>		
	<i>Fall Units</i>	<i>Spring Units</i>		<i>Fall Units</i>	<i>Spring Units</i>
Mathematics 3A-3B .....	3	3	Geology 1A .....	3	..
Physics 4A .....	..	4	Mathematics 4A-4B .....	3	3
Chemistry 1A-1B .....	5	5	Mineralogy 4A-4B .....	3	2
Engineering 1A-1B .....	3	3	Metallurgy 2A-2B .....	3	3
Engineering 22 .....	2	..	Engineering 35 .....	..	3
§Military Science .....	2	2	Mining 113 .....	..	1
			Physics 4B-4C .....	4	4
			§Military Science .....	2	2
	<hr/>	<hr/>		<hr/>	<hr/>
	15	17		18	18
 <i>Junior Year</i>			 <i>Senior Year</i>		
Engineering 23 .....	2	..	Mechanical Eng. 103 .....	3	..
Civil Engineering 108A .....	..	3	Metallurgy 108-110A .....	3	2
Electrical Engineering 101 .....	..	3	Metallurgy 106 or 124 .....	..	2
Electrical Engineering 102 .....	..	1	Mining 103 .....	3	..
Geology 102A-102B .....	2	2	Mining 105A-105B .....	4	4
Geology 103 .....	3	..	Mining 109-107 .....	2	3
Geology 106 .....	3	..	*Elective .....	..	6
Mechanical Eng. 102B .....	3	..			
Mechanical Eng. 105A .....	3	..			
Mining 1 .....	..	3			
*Elective .....	..	6			
	<hr/>	<hr/>		<hr/>	<hr/>
	16	18		15	17

\* For rules concerning selection of electives, see page 104.

§ See page 39.

## PROGRAM OF STUDY IN PETROLEUM ENGINEERING

<i>Freshman Year</i>			<i>Sophomore Year</i>		
	<i>Fall Units</i>	<i>Spring Units</i>		<i>Fall Units</i>	<i>Spring Units</i>
Mathematics 3A-3B . . . . .	3	3	Mathematics 4A-4B . . . . .	3	3
Physics 4A . . . . .	..	4	Physics 4B-4C . . . . .	4	4
Chemistry 1A-1B . . . . .	5	5	Engineering 23 . . . . .	2	..
Engineering 1A-1B . . . . .	3	3	Chemistry 5-8 . . . . .	3	3
Engineering 22 . . . . .	2	..	Engineering 35 . . . . .	..	3
§Military Science . . . . .	2	2	†Restricted Electives . . . . .	3	2
			§Military Science . . . . .	2	2
	<hr/>	<hr/>		<hr/>	<hr/>
	15	17		17	17
<i>Junior Year</i>			<i>Senior Year</i>		
Mechanical Eng. 102B . . . . .	3	..	Mech. Eng. 105A-105B . . . . .	3	3
Mechanical Eng. 103 . . . . .	..	3	Petrol. Eng. 121A-121B . . . . .	3	3
Civil Engineering 108A . . . . .	3	..	Petrol. Eng. 123A-123B . . . . .	2	2
Electrical Engineering 101 . . . . .	..	3	Petroleum Eng. 127-125 . . . . .	2	3
Petroleum Eng. 117-119 . . . . .	2	2	†Restricted Electives . . . . .	5	3
†Restricted Electives . . . . .	7	6	*Elective . . . . .	3	3
*Elective . . . . .	3	3			
	<hr/>	<hr/>		<hr/>	<hr/>
	18	17		18	17

§ See page 39.

† Restricted electives are chosen from a group of courses appropriate for one of the following options:

1. Development Option (emphasizing the geological sciences)
2. Production Option (emphasizing mechanical engineering)

\* For rules concerning selection of electives, see page 104.

## PROGRAM OF STUDY IN PROCESS ENGINEERING

<i>Freshman Year</i>			<i>Sophomore Year</i>		
	<i>Fall Units</i>	<i>Spring Units</i>		<i>Fall Units</i>	<i>Spring Units</i>
Mathematics 3A-3B . . . . .	3	3	Mathematics 4A-4B . . . . .	3	3
Chemistry 1A-1B . . . . .	5	5	Physics 4B-4C . . . . .	4	4
Engineering 22-23 . . . . .	2	2	Engineering 10B . . . . .	3	..
Engineering 48 . . . . .	1	..	Chemistry 5 . . . . .	..	3
Physics 4A . . . . .	..	4	Chemistry 8 . . . . .	3	..
Military Science . . . . .	2	2	Chemistry 9; Eng. 85 . . . . .	3	3
*Subject A . . . . .	..	..	Military Science . . . . .	2	2
**Electives . . . . .	3	..	**Electives . . . . .	..	3
	<hr/>	<hr/>		<hr/>	<hr/>
	16	16		18	18
 <i>Junior Year</i>			 <i>Senior Year</i>		
Civil Engineering 108A . . . . .	3	..	Mechanical Eng. 154 . . . . .	..	3
Chemistry 109 . . . . .	3	..	Mechanical Eng. 151 . . . . .	3	..
Mechanical Eng. 105A . . . . .	3	..	Mech. Eng. 152A-152B . . . . .	3	3
Chemistry 144 . . . . .	..	2	Engineering Design . . . . .	..	3
Electrical Eng. 101 . . . . .	3	..	Chemistry 147 . . . . .	..	3
Mechanical Eng. 107C . . . . .	..	3	Mechanical Eng. 120 . . . . .	3	..
Mechanical Eng. 108 . . . . .	..	3	Restricted Electives . . . . .	6	6
Metallurgy 150A . . . . .	3	..			
Mathematics 110A-110B . . . . .	2	2			
**Electives . . . . .	0	6			
	<hr/>	<hr/>		<hr/>	<hr/>
	17	16		15	18

NOTE.—Options in heat and thermodynamics, fluid mechanics, design, food technology, and preparation for graduate study may be arranged by the proper choice of restricted electives subject to the approval of the Committee on Study-Lists of the College of Engineering. Lists of suggested courses for this option may be obtained in Room 220, Engineering Building.

\* Concerning Subject A, see page 37.

\*\* For rules concerning selection of electives, see page 104.



### Degree of Master of Business Administration

Students with a B.S. degree in Engineering, curriculum in Industrial Engineering, may receive the M.B.A. degree by completing approximately one year of graduate study which is administered jointly by the School of Business Administration and the Department of Engineering. Graduates of other engineering curricula may usually complete the work for this degree in three semesters if they select the proper elective courses during their undergraduate study. Applicants should consult a graduate adviser in the Department of Engineering, or the Dean of the School of Business Administration.

### Honors

*Honors in the Upper Division.*—The University publishes annually a list of honor students in the upper division.† In the College of Engineering the list includes the names of undergraduates in junior and senior standing who have maintained an average scholarship record of at least grade B.

*Honors with the Bachelor's Degree.*—In the College of Engineering students may receive honors with the bachelor's degree for high scholarship in the curriculum, or for distinction in the advanced work in any curriculum of the College of Engineering.

Students who, in the judgment of proper authorities, display marked superiority, may be recommended for the special distinction of highest honors.

## COLLEGE OF PHARMACY

The College of Pharmacy offers a curriculum leading to the degree of Bachelor of Science in Pharmacy.

Information concerning the courses offered in the College of Pharmacy will be found in the ANNOUNCEMENT OF THE COLLEGE OF PHARMACY which may be obtained by addressing the Dean of the College of Pharmacy, University of California, Medical Center, San Francisco 22, California.

The first year of the curriculum may be taken in the University at Berkeley, Davis, or Los Angeles, or in another institution of approved standing. The courses of the final three years are given in the College of Pharmacy in San Francisco (with one exception—Physics 3A-3B is taken in Berkeley). Students who plan to take the first year's work in an institution other than the University of California, should consult the ANNOUNCEMENT OF THE COLLEGE OF PHARMACY in order to make certain that the requirements will be fulfilled.

Students who have completed the requirements of the first year cannot be assured of admission to the second year on the Medical Center campus. When the number of qualified applicants exceeds the available facilities, selection of students will be made on a basis of scholarship as determined from the transcript of record, or by examination, or both, at the discretion of the Admission Committee. A personal interview may be required. Application blanks for admission to the College of Pharmacy on the Medical Center campus may be obtained from the Office of the Dean of the College of Pharmacy, Medical Center, San Francisco 22, California.

† Publication of this list has been temporarily discontinued.

*Matriculation requirements.*—Requirements for admission to the academic departments of the University will be found on pages 26–34. High school subjects prerequisite to courses required in the College of Pharmacy curriculum include: mathematics, including trigonometry and two years of algebra (3½ units); chemistry, 1 unit. Without this preparation, it will necessary for the student to take equivalent courses in the University which may prolong the time necessary to complete requirements for graduation. It is recommended that applicants present credit in Subject A (English composition); English, 4 units; history, 1 unit; Latin, 1 unit; German or French, 2 units; biology, 1 unit; in addition, a year of freehand drawing is recommended.

*Graduation.*—The degree of Bachelor of Science in Pharmacy is granted upon completion of four years of residence and 129 units of credit. In order to receive the degree, the student must have obtained at least as many grade points as the total number of units undertaken. (For other requirements, the ANNOUNCEMENT OF THE COLLEGE OF PHARMACY should be consulted.)

## CURRICULUM

## Program of First Year

(At Berkeley, Davis, or Los Angeles)

	Fall Units	Spring Units
Zoölogy 1A–1B .....	4	4
Botany 12 (or equivalent) <sup>1</sup> .....	..	4
Chemistry 1A–1B .....	5	5
English 1A–1B or Speech 1A–1B .....	3	3
Mathematics <sup>2</sup> .....	3	..
Military Science .....	2	2
Subject A (English Composition) .....	..	..
	17	18

Dr. John J. Eiler, pharmacy adviser to the first-year students in the College of Pharmacy at Berkeley, will hold regular office hours in 1557 Life Sciences Building, Berkeley, during the registration period and also at regularly announced periods during each semester.

## SCHOOL OF ARCHITECTURE

Students in good standing having a minimum of 60 units of University credit will be admitted to the School upon formal application. 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.

<sup>1</sup> Botany 1 may be substituted for Botany 12.

<sup>2</sup> Students should have completed two years of algebra and one-half year of trigonometry in high school. If these requirements have not been satisfied equivalent courses (Mathematics C, Mathematics D) must be taken. Students who have satisfied the high school requirements should take one of the following courses: Mathematics 1 or 3A, 2 or 11A.

Freshmen who plan to enter the School later should, upon entering the University, register in the College of Letters and Science where they will normally remain for two years. Successful completion of the curriculum given below will lead to the degree of Associate in Arts in the College of Letters and Science and satisfy the prerequisites for the courses in the curriculum of the School.

New students requesting advanced standing in architectural design or graphic art courses offered by the School must present a representative exhibit of their work for evaluation by the Faculty.

*Advisers:* Freshman and Sophomore Years—Mr. S. L. JORY, Mr. H. A. STUMP; Junior, Senior, and Graduate Years—Mr. W. C. PERRY, Mr. R. W. JEANS.

<i>Freshman Year</i>		<i>Sophomore Year</i>	
	<i>Fall Units</i>	<i>Spring Units</i>	
Subject A (see page 37) . . . . .	0	..	Military Science . . . . . 2
American History and In- stitutions (see page 38) 0 . . . . .	0	..	Mathematics 4A . . . . . 3
Military Science . . . . .	2	2	Engineering 18A . . . . . 3
<sup>2</sup> Mathematics 3A-3B . . . . .	3	3	<sup>2</sup> Architecture 5A-5B, 6A-6B . . . . . 3
<sup>2</sup> Physics 2A-2B or . . . . .	3	3	Architecture 3-4 . . . . . 3
Physics 3A-3B . . . . .	1	1	Architecture 12 . . . . . 1
<sup>3</sup> Year Course . . . . .	3	3	Architecture 13 . . . . . 1
Architecture 1-2 . . . . .	3	3	<sup>1</sup> Foreign Language . . . . . 4
Architecture 18 . . . . .	..	1	
Art 2A . . . . .	2	..	
	<hr/>	<hr/>	
	17	16	<hr/>
			16
			<hr/>
			17

The degree of Bachelor of Arts will be recommended for students of the School who have complied with the rules for candidacy for this degree and have successfully completed the prescribed undergraduate curriculum in Architecture (or other training considered equivalent by the Faculty of the School).

Besides the prescribed curriculum, in the absence of the Associate in Arts degree, the following will be required for the A.B. degree: 16 units of foreign language; three year courses; 11 units of natural science (see requirements (b), (d) and (e) College of Letters and Science, pages 61-68).

The degree of Master of Arts will be recommended for students of the School who have been in residence for at least one year after obtaining the A.B. degree, who have completed the prescribed curriculum for the first graduate year with an average grade of B or better, who have been duly advanced to candidacy, and who have passed the comprehensive final examination.

<sup>1</sup> See requirement (b), College of Letters and Science. (Students entering with only 4 units of high school credit in a foreign language, will need to take an additional 4 units.)

<sup>2</sup> See requirement (c), College of Letters and Science.

<sup>3</sup> See requirement (e), College of Letters and Science.

## Undergraduate Departments

NOTE.—Students expecting to follow architecture as a profession must have received the M.A. degree in order to be recommended to the Licensing Boards of the various states. (See the ANNOUNCEMENT OF THE GRADUATE DIVISION, NORTHERN SECTION.)

The degree of Graduate in Architecture will be recommended for students in the School who have been in residence for at least two years after obtaining the A.B. degree, who have completed the prescribed curriculum for the first and second graduate years with the average grade of B or better, including the thesis, and who have been duly advanced to candidacy.

## PRESCRIBED CURRICULUM

<i>Junior Year</i>			<i>Senior Year</i>		
	<i>Fall Units</i>	<i>Spring Units</i>		<i>Fall Units</i>	<i>Spring Units</i>
Engineering 21 .....		3	Civil Eng. 107E-107F....	3	3
Engineering 18B .....	3	..	Civil Engineering 108F ..	..	1
Civil Engineering 112 ...	..	2	Architecture 102A-102B .	5	5
Architecture 101A-101B..	5	5	Architecture 108A-108B .	3	3
Architecture 5C-5D .....	2	2	Architecture 112 .....	..	1
Architecture 6C-6D .....	1	1	Architecture 114 .....	2	..
Architecture 12 .....	1	..	Elective .....	3	3
Architecture 13 .....	1	..			
Architecture 14 .....	..	2			
Architecture 115 .....	..	1			
Elective .....	3	..			
	<hr/>	<hr/>		<hr/>	<hr/>
	16	16		16	16
<i>First Graduate Year</i>					
				<i>Fall Units</i>	<i>Spring Units</i>
Architecture 200 .....				5	..
Architecture 201A .....				1	..
Architecture 201B .....				..	7
Architecture 207 .....				3	..
Architecture 208 .....				..	8
Architecture 209 .....				..	2
Elective .....				3	..
Comprehensive Final Examination .....				..	..
				<hr/>	<hr/>
				12	12
<i>Second Graduate Year</i>					
Architecture 202 .....				6	..
Electives .....				..	..
Thesis for the degree of Graduate in Architecture .....				..	..
				<hr/>	<hr/>
				6	..

For description of courses named above, see under Courses of Instruction, in later pages of this catalogue,

*Honors.*—Honors with the A.B. degree may be recommended by the Faculty for students graduating from the School. Honors in architecture are not recommended except for students who have done distinguished work in design and satisfactory work in construction.

*Thesis for the degree of Graduate in Architecture.*—This must be done under the supervision of the Dean of the School and the Staff. It consists of the serious study of a major building problem, with the emphasis not only upon design but upon construction as well. Preferably, it will be based upon actual conditions of site and use, the final study being carried to a point where no doubt exists of its reality. Preliminary studies providing a sound basis for the thesis should be completed during the first semester of the second graduate year so that the second semester may be devoted entirely to the development and presentation of the design itself.

### SCHOOL OF BUSINESS ADMINISTRATION

The School of Business Administration, which replaced the College of Commerce July 1, 1943, offers undergraduate and graduate curricula leading to the degrees of Bachelor of Science and Master of Business Administration.

*Admission.*—To be admitted to the School students must have attained at least junior standing and a C average in one of the colleges of the University of California, or the equivalent elsewhere. The bachelor's degree from an accredited institution is required for admission to candidacy for the degree of Master of Business Administration.

*Preparation.*—An organized program of work fulfilling the requirements for admission to the upper division in any of the colleges of the University will provide sound preparation for work in the School. Most students meet the requirements of the College of Letters and Science, thus building a broad general foundation. Students who had completed more than one term in the lower division of the College of Commerce prior to July 1, 1943, may substitute the Associate in Arts degree requirements of the College of Commerce for the Associate in Arts degree in Letters and Science, if they wish. Students may, however, if they prefer, elect to take their lower division work in the technical colleges. For instance, those looking forward to employment in the agricultural industries or in business based closely upon these industries, might well take their lower division work in the College of Agriculture. Likewise those wishing to work in the technical aspects of manufacturing or in industrial management could profitably spend their first two years in the College of Engineering. In general, students should choose that lower division preparation which is most closely related to the particular field and division of business administration they wish to enter.

It is highly desirable for candidates for admission to the School to complete the lower division prerequisites prior to entrance (see below). In addition to

the minimum specific requirements, introductory work in economic geography and economic history is highly recommended. Students wishing to take advanced work in Mathematics may elect Mathematics 3A-3B, Plane Analytic Geometry and Calculus, or Mathematics 11A-11B, Analytic Geometry and Calculus, instead of Mathematics 2, Mathematics of Finance and Business. Normally, however, students will take Mathematics 2, Mathematics of Finance and Business, which provides the minimum essentials for the courses in accounting, corporation finance, investments, and business administration in general.

### **The Requirements for the Degree of Bachelor of Science**

The requirements for the degree of Bachelor of Science are intended to provide for all students not only a broad knowledge of the background and chief functions of modern business enterprise, but also elementary training in the use of the professional tools of accounting, statistics, and economic analysis. Since many students are unable to decide upon the specific field or position for which they wish to train, and since some shift into other positions than those anticipated, it is highly important that all have the common basis of fundamental training. On this foundation they can readily build for specific types of needs. But students are normally expected to begin to specialize by electing 9 units of concentration beyond the introductory course in one field (see below). Under the advisory procedure of the School, concentration may be approved in other fields than those listed below if the total program of the student is soundly conceived in terms of his future interests and needs. It is hoped that some students will wish to propose programs integrating work in other fields of training, such as Agricultural Economics, Public Administration, and Mechanical Engineering (see below).

In order to qualify for the degree of Bachelor of Science in the School, the student must have received 120 units of credit with at least a C average. All candidates for the degree of Bachelor of Science entering the School of Business Administration after attendance at other colleges or schools of this University or other institutions, with senior standing at the time of admission, are required to have been enrolled during the senior or final year in resident courses of instruction at this University in the School of Business Administration. At least 24 units (12 units each semester) must be completed in this period. It is permissible to offer 12 units completed in two consecutive summer sessions as equivalent to one semester; but the student must complete in resident instruction at least one regular semester of his senior year. The candidate must have maintained a scholarship average of at least grade C in the courses taken during the period of study in the School of Business Administration.

Below are listed the specific requirements for the degree of Bachelor of Science. For further information see the ANNOUNCEMENT OF THE SCHOOL OF BUSINESS ADMINISTRATION.

### I. Prerequisite Courses:

#### A. Required:

Economics 1A-1B (Elements of Economics).....	6 units
Economics 40 (Elementary Statistics).....	3
Mathematics 2 (Mathematics of Finance and Business)	3
(See page 122 for possible substitutions)	

#### B. Recommended:

Geography 5A-5B (Economic Geography) .....	6
(Required of all foreign trade majors)	
Economics 10 (Economic History) .....	3

### II. Basic Courses:

#### A. Required of all:

American History and Institutions.....	0
Business Administration 6A-6B (Accounting) .....	6
Business Administration 18, 118 (Commercial Law) ...	6
Business Administration 107 (Economics of Enterprise)	3
Business Administration 108 (Business Fluctuations and Forecasting) .....	3
Business Administration 120 (Industrial Organization and Management) .....	3
Business Administration 123 (Marketing) .....	3
Business Administration 134 (Corporation Finance)...	3
Business Administration 151 (Industrial Relations) ...	3
	<hr/>
	30 units

#### B. A semester course from one of the following courses:

Economics 135 (Money and Credit)	
Economics 143 (Economics of Insurance)	
Economics 170A (Inland Transportation)	
Economics 190A (International Trade and Commercial Policies) .....	3 units

### III. Concentration:

Nine units beyond the introductory course in one field..... 9 units

The following fields of concentration are approved: accounting, banking and finance, foreign trade, insurance, marketing (including advertising, retailing, and agricultural marketing), industrial relations and personnel administration, production management and control, industrial procurement, transportation, and public utilities.

Students who do not wish to elect one of the above fields of concentration may receive permission to (1) fulfill the requirements of the major in the Economics Department, (2) elect special programs with the permission of the Dean (such programs may be in other fields, for example: agricultural economics, civil engineering, electrical engineering, forestry, geography, journalism, mathematics, mechanical engineering, political science, psychology, and public administration).

### Honors

*Honors at graduation.*—Students whose work has been of marked excellence receive honors at graduation.

### The Degree of Master of Business Administration

Normally, students should not undertake full specialization until after the completion of work for the bachelor's degree. The programs of work for the degree of Master of Business Administration will give opportunity for advanced and specialized training based upon the fundamental curriculum for the degree of Bachelor of Science. The master's degree will require a minimum residence of two full semesters after the receipt of the bachelor's degree.

For detailed information concerning the requirements see the ANNOUNCEMENT OF THE SCHOOL OF BUSINESS ADMINISTRATION, or the ANNOUNCEMENT OF THE GRADUATE DIVISION, NORTHERN SECTION.

## SCHOOL OF EDUCATION

The School of Education offers professional courses intended for students preparing for educational service in elementary, junior high, secondary schools, and colleges; for graduates of state colleges who are fitting themselves for supervisory or administrative positions in elementary schools; and for students who propose to engage in school administration, to teach in state colleges or in university departments of education, or to carry on research work in the field of education.

### GENERAL REQUIREMENTS

#### Teacher-Training Curricula

The students must satisfy the following general requirements to complete a teacher-training curriculum leading to a recommendation for a Teaching Credential.

*Scholarship.*—The School of Education will admit to candidacy for recommendation only those students who have maintained a grade-point average of not lower than 1.5 in the work undertaken in the junior and senior years. Candidates with grade-point shortages may apply to the Dean of the School for consideration and advice.

*Oral English.*—The student must prove that he has a command of spoken English adequate to the purposes of instruction. He may satisfy this requirement by examination, by completing suitable courses in the Department of Public Speaking, or by any other test satisfactory to the committee.

*Health Certificate.*—The student must submit to medical examination and obtain a satisfactory certificate from the University Physician.



*Citizenship.*—Each applicant for a credential is required by the State Department of Education to be a citizen of the United States. Noncitizens who have filed their first papers are eligible to apply for short-term credentials. Failure to complete the naturalization process within six months of the date of eligibility will result in the revocation of the credential. After a foreign student has become naturalized he may apply for a long-term credential.

*Oath of Allegiance.*—The State Department of Education also requires each applicant for a credential to take an oath of allegiance to the United States.

*American History.*—All persons planning to teach are required to take a course in United States History in college.

*American Institutions.*—See statement on page 38 concerning this requirement.

*Approval of Schedules.*—As early as possible in his academic year, the student should consult Miss Murdock, Credentials Assistant, 107 Haviland Hall.

Each prospective candidate for a teaching credential first must file an application for admission to graduate standing with the Dean of the Graduate Division, 207 Administration Building. This application must be accompanied by a bank draft or money order for the \$5 application fee, which is payable to The Regents of the University of California, and official transcripts of his high school and college or university records. (The transferred graduate student must also furnish a transcript of his college or university work to the Dean of the School of Education when he files his preliminary application.) On the basis of transferred records the Dean of the Graduate Division issues a statement of the student's official status. The student must present this statement when he files his preliminary application for the teaching credential. His study list cannot be approved until this application has been made.

*Application for Credential and for Supervised Teaching.*—Detailed schedules of procedures may be obtained from 107 Haviland Hall.

*State Credential Fee.*—An application to the State Department of Education for a teaching credential must be accompanied by a fee of \$3. The health certificate fee is \$2 for all applicants.

## SPECIFIC REQUIREMENTS

### The General Secondary Credential

*Requirements.*—The candidate for the recommendation for this credential must satisfy the following specific requirements, in addition to the general requirements described on page 124.

1. He must spend two graduate semesters at this University during which he completes a minimum of 24 units of upper division and graduate work with a grade-point average of not lower than 1.75. At least 6 of these units must be in graduate courses, or in upper division courses accepted by the School of

Education as substitutes for graduate courses, in the fields of the teaching major or minor, or both. (In order to maintain graduate residence for higher degrees, the student must take at least 4 units in upper division or graduate courses in the semester in which he is enrolled in Education 320c.)

2. He must complete with a scholarship average of at least one grade point the following 18 units in Education (the State Department of Education requires that at least 6 units in Education be completed in the graduate year):

Education 110 (educational psychology).....	3 units
Education 170 (secondary education).....	2
Education 111 (growth and development of the child) .	2
Electives .....	3
Education 320A (supervised teaching).....	1
Education 320B (supervised teaching).....	2
Education 320C (supervised teaching).....	3
Education 320E (professional methods).....	2
Total.....	18 units

NOTE:—

- (a) Psychology 1A or its equivalent is prerequisite to these courses. The student is advised to distribute this work over the junior, senior, and graduate years.
- (b) Credit in courses offered in the Department of Education for a teacher's credential may not be obtained by examination.

3. He must complete a teaching major and a teaching minor selected from at least two of the following fields of University studies:\*

- |   |                        |
|---|------------------------|
| (1) Agriculture   | (3) Business Education |
| (2) Art   | (4) English or Speech  |
| (5) Foreign Language (French or German or Italian or Latin or Spanish). |                        |

NOTE.—Under certain circumstances both a major and a minor in foreign language may be allowed. Consult Mr. J. U. MICHAELIS concerning this or concerning the use of other foreign languages as a major or minor.

- |                   |                         |
|-------------------|-------------------------|
| (6) Home Making   | (10) Music              |
| (7) Librarianship | (11) Physical Education |
| (8) Life Science  | (12) Physical Science   |
| (9) Mathematics   | (13) Social Studies     |

*The Teaching Major.*†—There are two kinds of teaching majors. The first consists of 18 to 24 units of upper division and/or graduate work, the precise amount to be agreed upon by the School of Education in consultation with the

\* For requirements for the teaching majors and teaching minors consult the ANNOUNCEMENT OF THE SCHOOL OF EDUCATION.

† A combination teaching major and minor may be worked out in certain fields utilizing the basic courses as fundamental to both the teaching major and teaching minor.

subject representative in the department or departments concerned (ordinarily 18 units of the teaching major shall be selected from the departmental major or departmental majors for the bachelor's degree). The second consists of a minimum of 36 units of upper division and/or graduate work in two or more related subjects (e.g., Social Studies), this major being fixed by the School of Education in consultation with the subject representatives of the departments concerned. In addition to the foregoing minimum requirements, the School of Education will prescribe such graduate courses designed for teachers as may be organized by the various departments; and, in agreement with the subject representative, such other courses, either graduate or undergraduate, as may be found necessary, provided the total number of units required for any subject does not exceed 36.

*The Teaching Minor.*—The teaching minor in any subject consists of not less than 18 units, ordinarily in a department or field of studies other than the teaching major, and not less than 9 units of this total shall consist of upper division and/or graduate courses (except as recommended by the department or departments concerned to the School of Education).

4. He must maintain the following scholarship ratings in the various classifications of this work:

Upper division work: a grade-point average of at least 1.50

Postgraduate work: a grade-point average of at least 1.75

Education courses: a grade-point average of at least 1.00

Work for the major: a grade-point average of at least 1.75

Work for the minor: a grade-point average of at least 1.00

### The Junior College Credential

*Requirements.*—The candidate for the recommendation for this credential must fulfill the specific requirements listed below, in addition to the general requirements described on pages 124–125.

1. He must complete two semesters of work in residence at this University.

2. He must hold a master's or doctor's degree from this University, or from another institution recognized as equivalent by the Graduate Division, in one of the following fields of study: agriculture, anatomy, anthropology, architecture, art, astronomy, bacteriology, botany, business administration, chemistry, decorative art, economics, engineering, English, French, geography, geology, German, Greek, history, home economics, Italian, Latin, librarianship, mathematics, mining and metallurgy, music, paleontology, philosophy, physical education, physics, physiology, political science, psychology, sociology and social institutions, Spanish, zoölogy.

3. He must complete a teaching minor in one of the above fields or in a field chosen from the list of teaching majors for the general secondary credential (page 126).

4. He must complete with a scholarship average not lower than one grade point at least 12 units in Education courses, including:

Educational Psychology—Education 110.....	2-3 units .
The Junior College—Education 279.....	2
Supervised Teaching and Professional Methods:	
(a) Teaching Assistants on the campus will take Education 320B, 324 and Education 320E, Section 16 .....	8
(b) All other students will take Education 320A, 320B, 320C, and 320E, Section 16.....	8
	12-13 units

5. He must maintain the following scholarship ratings in the various classifications of his work:

Upper division work: a grade-point average of at least 1.50  
 Postgraduate work: a grade-point average of at least 1.75  
 Education courses: a grade-point average of at least 1.00  
 Work for the major: a grade-point average of at least 1.75  
 Work for the minor: a grade-point average of at least 1.00

6. Before final action is taken by the School of Education concerning the recommendation for the junior college credential, the candidate must present a report concerning his attainments and fitness from the professor in charge of his higher degree program. In the case of students transferring with higher degrees from other institutions, the chairman of the department in question at the University of California should be asked for such a recommendation.

#### The General Junior High School Credential and General Elementary Credential

*Requirements.*—The candidate for the recommendation for either or both of these credentials must satisfy the following specific requirements, in addition to the general requirements described on page 124.

1. He must hold a bachelor's degree from one of the academic colleges of this University or its equivalent.

2. He must take one semester of graduate work.

3. He must maintain the following scholarship ratings in the various classifications of his work:

Upper division work: a grade-point average of at least 1.50  
 Postgraduate work: a grade-point average of at least 1.50  
 Education courses: a grade-point average of at least 1.00  
 Work for the major: a grade-point average of at least 1.00  
 Work for the minor: a grade-point average of at least 1.00

4. He must complete with a scholarship average of not lower than one grade point the following courses in education:

*For the General Elementary Credential:*

	Units
Educational Psychology—Education 110.....	3
Elementary Education—Education 130.....	3
Psychology of Elementary School Subjects—Education 118.	2
Special Problems of Teaching in Elementary Schools—	
Education 131 .....	2
Reading and Literature in the Elementary School—	
Education 134 .....	2
Social Studies in the Elementary School—Education 138....	2
Growth and Development of Children—Education 111.....	2
Supervised Teaching—Education 320A, C, and Education 321	6
Professional Methods Course—Education 320E, Section 15..	2

5. He must complete, with a scholarship average of at least one grade point, a major and a minor in the following fields of university studies:

- |                        |   |
|------------------------|---|
| (a) Art                | (g) Natural Science   |
| (b) English and Speech | (h) Physical Education  |
| (c) Foreign Language   | (i) Psychology, with emphasis on<br>child and clinical psychology |
| (d) Home Economics     | (j) Social Studies  |
| (e) Mathematics        |   |
| (f) Music              |   |
- (k) Group Majors chosen from: American Civilization, American Literature, Far Eastern Studies, International Relations, Physical Education, Recreation, Sociology. In each case the major must be approved by the Director of Supervised Teaching.
- (l) Regional Group Majors chosen from: China, Hispanic America, Russia and Eastern Europe, Social Welfare, Wildlife Conservation. In each case the major must be approved by the Director of Supervised Teaching.

A major for this credential consists of the 24-unit departmental major offered in satisfaction of requirements for the A.B. degree. In addition, the 36-unit general (nonmajor) curriculum offered in satisfaction of requirements for the A.B. degree may be offered in lieu of the departmental major provided certain requirements for this major are included in addition to the "36 upper division units named in the Letters and Science List and distributed through not more than three departments with a maximum of 30 units in any one department." The major for this credential must include at least 12 upper division units in one of the above fields of university studies and a total of 24 units in that field. A minor consists of 12 units, at least 6 of which are in upper division courses.

*For the General Junior High Credential:*

The student must have the courses specified above for the General Elementary Credential and in addition the following course with a scholarship average of not less than one grade point:

Junior High School Education—Education 172..... 2 units

## SCHOOL OF FORESTRY

The School of Forestry, which replaced the Curriculum in Forestry of the College of Agriculture, July 1, 1946, offers undergraduate and graduate curricula leading to the degrees of Bachelor of Science, Master of Forestry, and Master of Science.

## ADMISSION TO THE SCHOOL OF FORESTRY

Candidates for admission to the School of Forestry must qualify in the following ways:

- A. Completion of at least 60 units of work in one of the colleges of the University of California, preferably the preforestry curriculum of the College of Agriculture; or admission to the University in junior standing. In all cases junior standing requires the completion of 60 units of work acceptable to the Board of Admissions of the University.
- B. The candidate must have the following preparation for courses in the curriculum of the School of Forestry:

	Units
1. Botany (general botany) .....	4 or 5
(This requirement is based on Botany 1 or 12 as given at Berkeley. In institutions where such concentrated courses are not available, a course in general botany is required.)	
2. Chemistry (general inorganic, and organic) .....	8
3. Engineering (plane surveying) .....	6
4. Economics (elements of economics) .....	6
5. Geology (structural) .....	3
6. Mathematics (analytic geometry and differential calculus) ..	6
7. Physics (general physics with laboratory) .....	8
8. Statistical methods .....	3
9. Zoölogy (general biology) .....	3
10. A choice of English, speech, or philosophy .....	6
Total .....	53 or 54

- C. No student with a grade-point average of less than one (C average) in the subjects listed in Section B above will be admitted.

Minor shortages in the subject requirements may be waived by the Study List Committee of the School of Forestry if the committee feels that the candidate can successfully proceed with the normal program of study in the School.

## REQUIREMENTS FOR THE DEGREE OF BACHELOR OF SCIENCE

Undergraduate students must complete the following requirements for a bachelor's degree:

1. The equivalent of eight semesters' residence, the senior year of which must be spent at this University.
2. One hundred twenty-four units of study with 124 grade points, exclusive of the Field Laboratory Course, Forestry 105A-105B. Thirty-six of the 124

units must be in upper division courses, and at least 60 units must be completed in the School of Forestry. This total of 60 units, however, may be reduced in the case of students admitted to the School with advanced standing.

3. The removal of any deficiencies in the following courses usually taken in high school: mathematics, 3 years, including plane geometry, algebra, and trigonometry.

4. An examination in English composition known as Subject A. Students who fail in this examination are required to take the course in Subject A, which yields no unit credit toward the degree and for which a fee of \$15 is charged.

5. The University requirement of American History and Institutions, either by examination or by passing certain specified courses.

6. The University requirement of 8 units of Military Science and Tactics.

7. The Field Laboratory Course, Forestry 105A-105B, in camp at Meadow Valley, near Quincy, in the Plumas National Forest.

8. In addition to requirements 3 and 5 above, University preforestry courses as listed above for admission to the School, and courses in the School of Forestry as follows:

	Units
1. Botany (plant physiology with laboratory).....	6
2. Economics or business administration (other than statistics) .....	3
3. Plant pathology or taxonomic botany.....	3
4. Soil science .....	4
5. Zoölogy, upper division, or entomology.....	3
6. Forestry courses at Berkeley (including Forestry 100, 103, 104, 108, 110, 120, and 128).....	30

#### PLAN OF STUDY

##### The Curriculum of the School of Forestry

A single curriculum is offered in the School of Forestry, arranged to give a solid broad training and at the same time to permit specialization. In view of the limited number of specialized positions that are annually available, undergraduate work should remain broad and general; otherwise a man may prepare himself for a particular field in which there may be no opening for many years. There are certain exceptions, however, to this recommendation. Range management, for example, is a highly specialized field, for which the student should start to prepare himself in the junior year. The closely allied study of wildlife management (fish and game), may be undertaken best by taking the new curriculum in wildlife conservation in the College of Letters and Science, which includes 18 units of forestry in its requirements.

##### Preforestry

The schedule of study offers a broad basic training in the first four semesters. To complete his work for the degree of Bachelor of Science in the normal eight-semester period, the student should adhere closely to the recommended program,

which follows. It enables him to complete the maximum number of lower division courses in an orderly manner and without conflicts. Much of this work is prerequisite to necessary courses in the School of Forestry and thus the student is prepared to make an advantageous selection of electives and a logical arrangement of requirements in the School of Forestry.

## Freshman Year

FALL SEMESTER		SPRING SEMESTER	
Course	Units	Course	Units
Chemistry 1A .....	5	Chemistry 8 .....	3
Botany 1* .....	5	Zoölogy 10 .....	3
Speech 1A or English 1A .....	3	Speech 1B or English 1B .....	3
Mathematics 3A .....	3	Mathematics 3B .....	3
Military .....	2	Military and Physical Education .....	2½
	18		14½

## Sophomore Year

FALL SEMESTER		SPRING SEMESTER	
Course	Units	Course	Units
Physics 2A, 3A .....	4	Physics 2B, 3B .....	4
Engineering 1A† .....	3	Engineering 1B .....	3
Economics 1A .....	3	Economics 1B .....	3
Geology 1A .....	3	Statistics .....	3
Military and Physical Education .....	2½	Military and Physical Education .....	2½
	15½		15½

All of these courses except Physical Education are required.

## Junior Year

FALL SEMESTER		SPRING SEMESTER	
Course	Units	Course	Units
Forestry 100 .....	3	Forestry 110 .....	3
Forestry 103 .....	3	Forestry 128 .....	3
Forestry 108 .....	4	Botany 120B .....	2
Botany 120A .....	2	Plant Pathology 100 or Botany .....	
Botany 121A .....	2	108 .....	3
Elective .....	3	Elective .....	6
	17		17

In the summer following his junior work, the student must attend the field laboratory course, Forestry 105A-105B. This course is prerequisite to all senior forestry courses. See below for further information.

\* Students who prepare for forestry at other institutions which do not offer a one-semester course in general botany (equivalent to Botany 1 or 12) should take a general botany course. This does not take the place of 6 units of plant physiology with laboratory (Botany 120A-120B and 121A).

† One year of geometrical drawing and one-half year of trigonometry are prerequisite to engineering and also necessary for forestry courses. They should be taken in high school. The University does not offer a course in geometrical drawing.



Senior Year			
FALL SEMESTER		SPRING SEMESTER	
<i>Course</i>	<i>Units</i>	<i>Course</i>	<i>Units</i>
Forestry 104 .....	4	Forestry 120 .....	4
Soil Science 100.....	4	A course in economics.....	3
Zoölogy 116 or Entomology 114.	3	Elective .....	9
Elective .....	6		
	17		16

The student specializing in range management must include in his 30 units of forestry at Berkeley, Forestry 101 and Forestry 102 (in the junior year) and Forestry 123 (in the senior year). He must, of course, also fulfill the prerequisites for Forestry 123, namely, Forestry 101, 102, Engineering 1A-1B, and Botany 108 and 120A.

#### Field Laboratory Course

Students majoring in forestry are required to attend, after completing their junior work, the summer course (Forestry 105A-105B), which is conducted in the Summer Camp of the School of Forestry, at Meadow Valley, near Quincy, in the Plumas National Forest, a leading timber-producing area of the State. The twelve weeks are spent in field work—land surveying, timber surveying, timber estimating, forest mapping, and scaling; in the study of silviculture and tree growth; and in examining logging and milling operations.

### GRADUATE STUDY

#### The Master's Degree

Opportunity is offered for graduate study in forestry leading to the degree of Master of Science, under Plan I, or Master of Forestry, under Plan II.

The degree of Master of Science requires 20 units of upper division and graduate courses, of which at least 8 units must be strictly graduate work in the major subject, and the satisfactory completion of a thesis. The degree of Master of Forestry requires 24 units of upper division and graduate courses, of which at least 12 units must be in strictly graduate courses in the major subject, and a comprehensive final examination.

Advancement to candidacy for either degree also presupposes the completion of undergraduate requirements in forestry equivalent to those prescribed at the University of California. Except for making up deficiencies in the undergraduate requirements, the graduate student's program may be planned largely to meet his individual needs and interests. The arrangement is flexible enough so that the student may either include a broad preparation for professional work or specialize and give a greater part of his time to a specific problem.

#### **The Doctor's Degree**

Study and research on a suitable problem in forestry leading to the degree of Doctor of Philosophy may also be undertaken. For training in silviculture, forest ecology, range management, or forest influences, the program ordinarily would be administered by the Plant Physiology or Soil Science Groups, which include members of the forestry teaching staff. For training in forest economics or management, the candidate would usually work with the Division of Agricultural Economics. The program would include the fulfillment of the minimum requirements of the group or division, together with research and a dissertation on a forest problem appropriate to the combined fields of forestry and plant physiology, or forestry and soil science, or forestry and economics, depending on the individual student's choice.

### **SCHOOL OF JURISPRUDENCE**

#### **Admission to the Professional Curriculum**

Applicants for admission to the professional curriculum of the School of Jurisprudence, leading to the degree of Bachelor of Laws, must have received the degree of Bachelor of Arts or Bachelor of Science from the University of California, or an equivalent degree from a college or university of approved standing. For exceptions made in the case of veteran applicants, see "Admission of Veterans."

Applicants for admission to the professional curriculum must also have pursued a program of prelegal study in substantial conformity with the essentials of a satisfactory prelegal education (see page 74), and must have achieved a minimum grade-point average of 2.0 (B average) in the work of the last two prelegal years. Applicants having somewhat less than the B average but otherwise qualified, and applicants having the B average but with respect to whose records the School's Committee on Admissions is otherwise in doubt, may achieve admission by examination only. See "Admission by Examination." Such applicants will be notified of their status and advised concerning examination procedures as soon as possible after receipt and appraisal of their applications. Applicants having substantially less than the B average may be denied admission without examination.

Applicants must also submit satisfactory references as to character, including the names and addresses of not fewer than three disinterested and responsible persons to whom the applicant is well known and to whom the faculty may appropriately address inquiries with respect to the applicant's character. Wherever possible, the character references should include a member of the Bar who is a graduate of the School of Jurisprudence or of another law school approved by the American Bar Association.

Applicants may be admitted to the second year of the professional curricu-

lum with credit for not more than one year of work in another law school if (1) the applicant would have been eligible for admission to the first year in this School, (2) the work has been completed in a school which is a member of the Association of American Law Schools, and (3) the work for which credit is sought has been of superior grade. The faculty reserves the privilege of prescribing further conditions for the granting of such credit and may, in its discretion, require examinations in subjects for which credit is sought.

Students who have been disqualified at another law school will not be admitted to the School.

The professional curriculum is so arranged that beginning students must enter the school at the opening of the fall semester. To be assured of satisfactory programs, students transferring from other law schools should also plan to enter at the opening of the fall semester.

#### Admission of Veterans

Veteran applicants may be admitted to the School if otherwise qualified and eligible for admission to senior standing in the University of California. A veteran applicant is defined as one who is eligible for and entitled to receive education or training as provided in Section 400 of the Servicemen's Readjustment Act of 1944 (Public Law 346, Seventy-eighth Congress) or who has been released from active duty with the armed forces of the United States under conditions other than dishonorable after not less than the period of service therein provided.

#### Admission Procedure\*

1. The initial application for admission to the School of Jurisprudence should be made on forms which will be supplied by the School and should be addressed to the School of Jurisprudence, University of California, Berkeley 4. It should be accompanied by transcripts of all college, university or professional school records other than the records of work completed at the University of California, Berkeley. Where the applicant is currently in college or university, the transcripts should cover all work completed to date and should be accompanied by a statement indicating the time when it is expected that the work pending will be completed and the necessary supplemental transcripts supplied. To insure consideration of an application for admission in September, 1948, the initial application must be received by the School not later than May 1, 1948. Actual receipt of the initial application by the School is the applicant's responsibility. In no circumstances should the initial application be addressed to another department or office of the University.

2. Applicants who receive or who expect to receive the bachelor's degree before entering the School are also required to apply for admission to the Graduate Division. This application should be made on forms which will be supplied by the Graduate Division and should be addressed to the Graduate

\* Applications for admission to the September class, 1947, closed May 1, 1947. The procedure herein applies to the class entering in the fall semester of 1948.

Division, University of California, Berkeley 4, accompanied by a remittance in the sum of \$5 payable to The Regents of the University of California. The remittance of \$5 is not required of veteran applicants who expect to enroll under the provisions of Public Law 346 (the G.I. Bill of Rights) or Public Law 16. This application must also be accompanied by official transcripts of records other than the records of work completed at the University of California, Berkeley. Such transcripts are in addition to those accompanying the initial application to the School of Jurisprudence. Since applicants in this category cannot be admitted to the School until they have been admitted to graduate standing, the application should be filed at the earliest possible date.

3. Veteran applicants who qualify or who expect to qualify for admission to the School on senior standing on the basis of work taken elsewhere than at the University of California are also required to apply for admission to such standing through the office of the Director of Admissions. This application should be made on forms which will be supplied by the Director of Admissions and should be addressed to the Director of Admissions, University of California, Berkeley 4. Complete official transcripts of all preparatory and college work, together with a statement of honorable dismissal from the last college attended, must be furnished in addition to the records accompanying the initial application to the School of Jurisprudence. Since applicants in this category cannot be admitted to the School until they have been admitted to senior standing, the application should be filed at the earliest possible date.

#### **Admission by Examination\***

Two examinations or tests may be required of applicants who seek admission by examination. The first is the Graduate Record Examination. This examination is given by the Graduate Record Office four times each year at examination centers conveniently distributed throughout the United States. The schedule for 1948 and a list of examination centers may be obtained upon request addressed to the Graduate Record Office. Applications to take the examination must be obtained from the Office in time to permit their return on or before the last date for mailing applications and should be addressed to the Graduate Record Office, 437 West 59th Street, New York 19, N. Y., accompanied by a remittance of the examination fee of \$5. An official report of the examination will be forwarded directly to the School at the applicant's request.

The second consists of Law Aptitude and related tests given by the School at the University of California, Berkeley, and the University of California, Los Angeles, on June 18, 1948. The tests may be repeated at a later date if repetition should prove necessary for the convenience of qualified applicants. There is no fee for the tests. Only those applicants notified by the School are permitted to take the tests.

Intending applicants should be warned that the School's accommodations and

---

\* Applications for admission to the September class, 1947, closed May 1, 1947. The procedure herein applies to the class entering in the fall semester of 1948.

facilities are limited, that an increasing proportion of its applicants are qualifying for admission without examination, and that opportunities for admission by examination are correspondingly reduced. The School must reserve the privilege of accepting no applications for admission by examination in any year in which its applicants qualifying without examination may require all available accommodations.

#### **Admission to the Graduate Curriculum**

The student who wishes to extend and deepen his knowledge of law or to prepare himself for legal research or law teaching may become a candidate for the degree of Master of Laws (LL.M.) or the degree of Doctor of the Science of Law (Juris Scientiae Doctor, J.S.D.).

Admission to the graduate curriculum leading to the degree of LL.M. may be granted to graduates of an approved college or university who also hold a professional degree from a law school approved by the American Bar Association and who, in the opinion of the faculty, give evidence of capacity to continue their studies in law with superior achievement.

Admission to the graduate curriculum leading to the degree of J.S.D. may be granted to graduates of an approved college or university who also hold a professional degree from a law school approved by the American Bar Association and who, in the opinion of the faculty, give evidence of ability to conduct with distinction a program of research in a selected field of the law.

If the previous training of an applicant for admission to the graduate curriculum has been received in foreign educational institutions, he must present evidence that his preparation is substantially equivalent to that required for graduation from an American college or university.

#### **SCHOOL OF LIBRARIANSHIP**

The School of Librarianship is organized to offer a two-year curriculum. To students completing the first year with an average grade of at least C, the Bachelor of Library Science degree is awarded. The degree of Master of Library Science is granted to students who complete with an average grade of at least B the second-year curriculum.

The A.B. degree of the University of California or its equivalent, a grade-point average of at least 1.5 (C+) in the last two years of academic work, full graduate standing in the University, and a college year each of two modern languages are required for admission. German and French are particularly recommended for those preparing for university library positions. Applications for admission to the first-year curriculum will ordinarily not be considered from persons over 35; exceptions may be made for those holding advanced degrees or for those who have had successful library experience. Applicants for admission must submit to the Dean of the School complete transcripts of their

academic records so that their qualifications for admission to the School may be determined.

*Curriculum for the bachelor's degree.*—In order to insure adequate opportunity for students who enroll in the School, only a limited number will be accepted for the first-year curriculum. No one should come to Berkeley without having made advance application to the School and having received notice of acceptance. Early application is desirable and after the class has been selected, opportunity to enter is dependent on withdrawal of someone previously accepted.

The curriculum in librarianship is planned to occupy a student's entire time and only the superior student who has had considerable library experience should expect to do any outside work. It is highly desirable that students come to Berkeley with sufficient funds to meet all first-semester expenses and that they refrain from outside work until their first-semester grades demonstrate that such additional work can be carried without detriment to their studies.

*Curriculum for the master's degree.*—Candidates for the master's degree must be accepted in full graduate status in the University of California and must have completed with a scholarship grade of at least B the first-year curriculum in a graduate (Type I or II) library school, accredited by the American Library Association and approved by the University of California.

Any course in the second-year curriculum is open to any graduate student who satisfies the instructor of his ability and preparation to undertake the work, even though he is not a candidate for a master's degree in this School and cannot qualify for it.

Candidates for the master's degree are subject to all general University regulations governing that degree (see ANNOUNCEMENT OF THE GRADUATE DIVISION, NORTHERN SECTION).

## MEDICAL SCHOOL

*Matriculation.*—For matriculation in the Medical School—the four-year curriculum leading to the degree of Doctor of Medicine—the student must have attained senior standing in the premedical curriculum in the College of Letters and Science (see page 76).

All applicants for admission to the Medical School are required to take the Professional Aptitude Test (Graduate Record Examination). This examination is given at various colleges and universities, including the University of California. The date upon which the examination is to be held in Berkeley will be announced later.

Applications for admission to the Medical School should be filed with the Director of Admissions, University of California, Berkeley 4. Applications for the September, 1948, first-year class may be filed between November 1, 1947, and February 1, 1948. It will not be possible to give a statement of tentative acceptance to any applicant.

Enrollment in the Medical School is limited. Candidates for admission to the first-year class are accepted primarily on the basis of scholarship, particular emphasis being placed on the required subjects. Personal interviews are also held. In addition, as stated above, each applicant must take the Professional Aptitude Test.

Not more than five students will be accepted who have taken their pre-medical work outside of the State of California.

- (a) Of these five, four will ordinarily be selected from the following Western states not having medical schools: Nevada, Arizona, Idaho, Montana, Wyoming, and New Mexico. To be considered an applicant from one of these states *an applicant must be a legal resident of one of them.*
- (b) Ordinarily not more than one applicant will be accepted from a foreign country, and this applicant will be the one selected for the University of California Medical School under the plans now under consideration by the World Health Organization.

The Committee on Admissions to the Medical School is authorized to refuse admission to students who have low academic records and to those of obvious physical, mental, or moral disability.

An accepted applicant who finds it impossible to begin his work in the Medical School in September, 1948, or a student who actually enters at that time and begins his work, but finds it necessary to withdraw in his first year, loses his place and is required, in the event he desires to begin his work later, to reapply with a subsequent group of applicants. Applicants for admission to the Medical School are required to pass a satisfactory medical examination for physical and mental fitness prior to the time of first registration in the School. Students in attendance in San Francisco are examined annually.

The state law governing the practice of medicine in California prescribes that every person, before practicing medicine or surgery, must produce satisfactory testimonials of good moral character and a diploma issued by some legally chartered medical school, the requirements of which shall have been, at the time of granting such diploma, in no particular less than those prescribed by the laws of the State, and which shall have received the approval of the Board of Medical Examiners that year. The requirements for matriculation in the University of California Medical School cover also the requirements of the Association of American Medical Colleges, provided that the high school program includes physics and chemistry.

All of the above is subject to change by such emergencies as may arise.

For further information see the annual ANNOUNCEMENT OF THE MEDICAL SCHOOL, to be obtained from the Dean's office, University of California Medical School, Medical Center, San Francisco 22, California.

#### Training Courses for Technicians

Training courses for technicians in laboratory technique, physical therapy, and X ray are offered at the Medical Center, San Francisco.

**MEDICAL TECHNICIANS**

The Clinical Laboratories of the University of California Hospital offer a training program to students preparing to be medical technicians. This training program is part of the curriculum given by the School of Public Health, leading to the degree of Bachelor of Science.

For further information, write to the Dean's Office, School of Public Health, University of California, Berkeley 4, California.

**PHYSICAL THERAPY**

The curriculum in physical therapy is given at the Medical School of the University of California in San Francisco, and covers a period of one year, divided into two semesters and two summer sessions of six weeks each. The fall and spring semesters include all theory, seminars, and demonstration. The summer sessions are devoted to practical training which is completed in the Department of Physical Medicine at the University of California Hospital and at other hospitals. A certificate or a degree is issued when the course has been satisfactorily completed.

Applicants for admission must satisfy one of the following requirements:

1. Bachelor's Degree from an accredited institution.

Candidates for admission on this basis must have completed 26 semester units of biological and physical science. (Biological science includes general biology, anatomy, physiology, zoölogy, kinesiology, bacteriology. Physical science includes chemistry and physics.) Upon satisfactory completion of the course, the student is awarded a certificate.

2. Three years of college or university training.

Candidates for admission on this basis must have completed courses that fulfill the general undergraduate requirements of the University of California, and the requirements in the basic sciences of the Curriculum in Physical Therapy. The student may matriculate into the Medical School in his fourth year of college and obtain the degree of Bachelor of Science from the Medical School with a major in physical therapy.

An applicant for admission must present transcripts of record from his college or university. Such records must show the satisfactory completion of the following courses, or their equivalent:

Chemistry 1A. . . . . 5 units or 5 semester hours (general inorganic chemistry)  
 Physics 2A-2B, 3A-3B. 8 units or 8 semester hours (general physics)  
 Anatomy 102 . . . . . 3 units or 3 semester hours (general human anatomy)  
 Physiology 1A, 10. . . . . 5 units or 5 semester hours (introductory physiology)  
 Psychology 168 . . . . . 3 units or 3 semester hours (abnormal psychology)

For further information, write to the Director of the Curriculum in Physical Therapy, University of California Medical School, San Francisco 22, California.



**X-RAY TECHNICIANS**

A year course for X-ray technicians is given at the University of California Hospital and the Langley Porter Clinic.

*Admission.*—The minimum prerequisite is graduation from high school. Preference will be given to graduate nurses and to students with university training, especially those having training in physics (equivalent to Physics 2A-2B), and anatomy (equivalent to Anatomy 102).

Women students are preferred, but men are not excluded.

Acceptance in the course is made after personal interview with the director.

*Curriculum.*—A student technician spends from 8:30 A.M. to 4:40 P.M. each day in the various divisions of the X-ray Department, so that when he has completed his course, he is able to do any part of the work demanded of an X-ray technician. This includes training in taking all kinds of X-ray films, working in the fluoroscopic room, filing room, darkroom, dental department, and in therapy. There are weekly lectures and seminars.

*Certificate.*—A certificate of completion of the curriculum will be given at the end of the course.

For further information, write to the Director, X-Ray Technicians' Course, Division of Radiology, University of California Medical School, San Francisco 22, California.

**SCHOOL OF NURSING**

The School of Nursing offers three curricula leading to the bachelor's degree and certificates of completion in nursing, public health nursing, and nursing education.

**UNDERGRADUATE CURRICULUM**

The undergraduate curriculum is designed to prepare young women for participation in community health programs.

The nurse of today is expected to be able to assist with the care of the sick, the prevention of disease, and the maintenance of health. Through class work, conferences, and supervised practice the student is given an opportunity to learn the care of patients in the hospital and in the home, the measures which are used to teach health and prevent disease, and the community resources for the handling of the health problems of its citizens.

**Requirements for Admission**

The completion of the requirements for the degree of Associate in Arts as prescribed by the College of Letters and Science or the College of Applied Arts is required for admission to the School of Nursing. The work taken to satisfy this requirement must include the specified courses outlined on page 64 of this catalogue.

Enrollment in the School of Nursing is limited, and candidates for admission are accepted on the basis of scholarship in the prenursing program and on

physical fitness as determined by careful examination. The Committee on Admissions to the Nursing School is authorized to refuse admission to a student with a low academic record, and reserves the right to reject any applicant on the ground of obvious physical, mental, or moral disability.

Students completing the course in the School of Nursing must take the State Board Examination in order to secure their licenses to practice in this State. An applicant for this examination must either be a citizen of the United States or have declared his intention to become a citizen of the United States.

The following program, if satisfactorily completed, will meet the requirements for the degree of Associate in Arts in the College of Letters and Science at the end of the fourth semester.

<i>First Year</i>			<i>Second Year</i>		
	<i>Fall Units</i>	<i>Spring Units</i>		<i>Fall Units</i>	<i>Spring Units</i>
Subject A .....	..	..	Physiology 1A and 10 .....	5	..
Chemistry 1A .....	5	..	Anatomy 102 .....	..	3
Bacteriology 2 .....	..	4	Psychology 1A .....	3	..
English or Speech (year course) .....	3	3	Year Course .....	3	3
Year course .....	3	3	‡Electives .....	4	9
‡Electives .....	4	5			
	<hr/>	<hr/>		<hr/>	<hr/>
	15	15		15	15

American History and Institutions examination, or courses in satisfaction of the requirement, should be completed. See page 38.

For information concerning the program in the School of Nursing see the ANNOUNCEMENT OF THE SCHOOL OF NURSING.

#### CURRICULA FOR GRADUATE NURSES

##### *Public Health Nursing and Nursing Education*

The courses comprising the Curricula for Graduate Nurses are given in the College of Letters and Science and in the School of Nursing. Graduates of approved nursing schools who have met the matriculation requirements of the University may obtain the Bachelor of Science degree on completion of the following:

1. The requirements for the degree of Associate in Arts in the College of Letters and Science at Berkeley or at Los Angeles, or for the degree of Associate in Arts in the College of Applied Arts, including such special requirements as may be prescribed by the Faculty of the School of Nursing.

2. At least 60 units of such additional work as may be prescribed by the Faculty of the School of Nursing. Not more than 30 units of work completed in a school of nursing other than that of the University of California will be accepted in partial satisfaction of this requirement.

‡ Must include foreign language if necessary to satisfy Associate in Arts requirements.

The final year must be spent in study in the academic departments of the University of California.

The first two years are spent in satisfying the requirements for the degree of Associate in Arts in the College of Letters and Science or the College of Applied Arts. The degree of Associate in Arts is required prior to admission to professional courses and specialization. The requirement of 60 units of work beyond the degree of Associate in Arts may be met in part by credit for work taken in an accredited school of nursing prior to entrance to the University. Not more than 30 units may be so credited. The remainder of the units may be obtained in one of several fields of specialization: public health nursing, nursing administration, and supervision and teaching of nursing.

The following program leading to the degree of Associate in Arts is suggested for graduate nurses:

**SUGGESTED LOWER DIVISION PROGRAM FOR THE  
DEGREE OF ASSOCIATE IN ARTS**

(For graduates of approved schools of nursing)

*First Year*

	<i>Fall Units</i>	<i>Spring Units</i>
Subject A (English Composition) .....	..	..
Foreign Language .....	4	4
*Natural Science .....	5	5
English or Speech (year course) .....	3	3
Year Course .....	3	3
	15	15

*†Second Year*

Psychology 1A .....	3	..
Natural Science .....	4	..
Year Course .....	3	3
‡Electives .....	5	12
	15	15

\* Chemistry 1A (5), Physiology 1A, 1C (5) and Anthropology 1 (4) recommended.

† For a complete statement of the requirements for the degree of Associate in Arts in the College of Letters and Science, see page 64.

‡ Must include foreign language if necessary to satisfy Associate in Arts requirements.

**PROGRAM IN THE SCHOOL OF NURSING LEADING TO THE  
DEGREE OF BACHELOR OF SCIENCE**

*§Third Year*

	<i>Mini- mum Fall Units</i>	<i>Maxi- mum Spring Units</i>		<i>Mini- mum Fall Units</i>	<i>Maxi- mum Spring Units</i>
15 units selected from:			15 units selected from:		
Medical Nursing . . . . .	2	3	Nutrition . . . . .	3	6
Surgical Nursing . . . . .	2	3	Social Aspects of Nursing	2	3
Obstetrical Nursing . . . . .	2	3	History of Nursing . . . . .	2	3
Pediatric Nursing . . . . .	2	3	Preventive Medicine . . . . .	3	3
Communicable Disease			Public Health Nursing . . . . .	3	3
Nursing . . . . .	1	2	Child Hygiene . . . . .	2	3
Psychiatric Nursing . . . . .	1	2	Child Psychology . . . . .	2	3
Pharmacology . . . . .	1	2	Principles of Health		
Principles and Practice of			Teaching . . . . .	1	3
Nursing . . . . .	2	3	Professional Adjustments		
Pathology . . . . .	1	2	of Graduate Nurse . . . . .	1	3

*Fourth Year*

**General Requirements**

Education (including one course in Educational Psychology) . . . . . 5 units  
 Socio-Economics (including Social Welfare 100) . . . . . 5 units  
 ‡American History and Institutions . . . Courses or Examinations

**Major in Nursing Education**

	<i>Units</i>
Nursing 432 . . . . .	2
Nursing 434 . . . . .	3
Electives . . . . .	15

**Major in Public Health Nursing**

	<i>Units</i>
Public Health 145 . . . . .	3
Public Health 105 . . . . .	3
Education 151 or 152 . . . . .	2
Nursing 416 . . . . .	3
Nursing 418-419 . . . . .	6
Electives . . . . .	3

The degree of Bachelor of Science will be conferred upon completion of the program set forth above. An additional semester of field work (Nursing 420 or Nursing 433) must precede the granting of the Certificate in Public Health Nursing or the Certificate in Nursing Education.

For more detailed information regarding this program, students should refer to the ANNOUNCEMENT OF THE SCHOOL OF NURSING.

‡ Requirements of this year can be met wholly or in part through courses taken in another school of nursing. Courses which do not meet the minimum credit are not accepted in meeting these requirements.

‡ For list of courses accepted in fulfillment of the requirement of American History and Institutions, or for other means of satisfying the requirement, see page 38.

**Fees and Expenses**

While the student is in residence at Berkeley, she will be required to meet all the expenses outlined in earlier pages of this circular.

For expenses of students at the University of California Medical Center in San Francisco, see the ANNOUNCEMENT OF THE SCHOOL OF NURSING.

For further information address the Dean of the School of Nursing, University of California Medical Center, San Francisco 22, California, or the Chairman of the Department of Nursing, Life Sciences Building, University of California, Berkeley 4, California.

**SCHOOL OF OPTOMETRY**

The School of Optometry offers a curriculum leading to a Bachelor of Science degree and to a Certificate of Completion in Optometry.

Admission to the School of Optometry is limited. Candidates for admission are accepted primarily on the basis of scholarship, particular emphasis being placed on the required subjects.

The number of students who may be admitted to each class from institutions outside the State of California, at the time of their admission to the University of California, is limited to five. Of these five, not more than one will be accepted from institutions of any one state, and not more than three from foreign countries.

Applications for admission for the fall semester of any year should be filed with the Dean of the School of Optometry by May first of that year in order to receive consideration. The application for admission must be accompanied by a certificate from a physician which states in detail the physical condition of the applicant based upon a thorough medical examination; any physical or mental handicap of the applicant should be indicated.

For admission to the School of Optometry the applicant is required to show completion of the requirements for the degree of Associate in Arts as prescribed by the College of Letters and Science or the equivalent. The courses taken for the degree of Associate in Arts should include the following specific subjects required by the School of Optometry: plane analytic geometry, chemistry, physics, physiology, bacteriology, psychology, and speech.

The following program if satisfactorily completed will meet the requirements for the degree of Associate in Arts in the College of Letters and Science at the end of the fourth semester, and the prerequisite subjects for the study of optometry,\* provided the following high school subjects have been offered for matriculation: algebra, plane geometry, trigonometry, chemistry, physics, and three years of foreign language. The Degree of Bachelor of Science and the

\* The expansion of the Curriculum in Optometry to a five-year program is under consideration. Ample notice will be given later as to the exact date on which any change in the program is to become effective.



## SCHOOL OF PUBLIC HEALTH

*Admission.*—To be admitted to the School of Public Health, students must have completed at least 60 units in one of the colleges of the University or an equivalent thereof satisfactory to the Faculty of the School of Public Health. In order to complete the work in the minimum number of semesters, students should also have completed the prerequisite courses listed below.

SUGGESTED LOWER DIVISION PROGRAM PREPARATORY TO  
ADMISSION TO THE SCHOOL OF PUBLIC HEALTH(1) *General Requirements.*

Subject A. (See page 37.)

Military Science and Tactics (men). (See page 39.)

(2) *Preparation for the Major.*—These courses are prerequisite to upper division Public Health courses.

Science.

Bacteriology 2.

Chemistry 1A, 1B, 5, 8.

Zoölogy 1A or Physiology 1A, 1C.

Public Health 5A–5B.

Psychology 1A.

At least one of the following sequences:

Anthropology 2A–2B.

Economics 1A–1B.

Geography 1, 2.

Political Science 1, 2.

Social Institutions 10A–10B.

(It is recommended that an additional year sequence be taken in English or speech, or in mathematics, and that a minimum of 16 units in not more than two languages be taken. The first two years of high school work in a foreign language may be counted in satisfaction of 4 units of this requirement and each year thereafter as 4 units.)

## PROGRAM IN THE SCHOOL OF PUBLIC HEALTH

## Undergraduate Curricula

Candidates for the degree of Bachelor of Science must have completed at least 120 units of college work, at least 60 units of which shall have been in upper division courses as prescribed by the curriculum, not less than 24 units of which shall have been completed in the School of Public Health. The student must have obtained at least as many grade points as there are units in the total credit value of all courses undertaken by him in the University of California. He must have satisfied the Requirement of American History and Institutions. (See page 38.)

## The Majors

(1) *Major for Public Health Laboratory Technicians:*

Bacteriology 101.

Biochemistry 103, 104.

Public Health 105, 147A, 151, 158, 163A, 164A.

At least 7 units from the following:

Biochemistry 110.

Entomology (Agriculture) 117, 126.

Home Economics 106.

Physiology 110A-110B, 112.

Public Health 105, 147A, 151, 158, 163A, 164A.

Zoölogy 110, 111, 140.

Upper division electives to make a total of 60 upper division units.

(2) *Major for Public Health Sanitarians:*(In addition to courses required under *Preparation for the Major*, Physics 2A-2B, 3A-3B, and Speech 2A-2B will be required. Speech 2A-2B may be used to satisfy the year sequence under *Preparation for the Major*.)

Public Health 105, 111, 112, 113A-113B, 145, 147A, 153, 163A, 164A, 198.

Bacteriology 101.

Civil Engineering 124.

Entomology 126.

Political Science 181.

Upper division electives to make a total of 60 upper division units.

(3) *Major for Public Health Statisticians:*

Bacteriology 101.

Biochemistry 103, 104.

Public Health 105, 147A, 147B, 151, 163A, 163B, 164A, 164B.

At least 3 units chosen from:

Public Health 148.

Public Health 168.

Public Health 169.

Upper division electives to make a total of 60 upper division units.

Recommended upper division electives:

Agricultural Economics 113.

Anthropology, any upper division course.

Architecture 117.

Economics 101A-101B, 106, 150A-150B, 180, 185.

Education 111.

Geography 121, 122A, 122B, 142, 143.

Mathematics 120A-120B.

Political Science 181, 183.

Public Health 111, 121, 122, 163C, 170, 199.

Social Institutions 101A, 101B, 121A, 131A, 151A

Social Welfare 104, 105, 106.

Zoölogy 114.

## Honors

Students whose work has been of marked excellence may receive Honors or Highest Honors at graduation.



**Graduate Curricula**

**DEGREE OF MASTER OF PUBLIC HEALTH**

*Admission.*—To be admitted to the curriculum leading to the degree of Master of Public Health, the student must have graduated from an approved medical school or college of dentistry, or have received a bachelor's degree with adequate training in mathematics and the natural sciences including chemistry, biology, and the social sciences; he must be qualified in some professional capacity for postgraduate education in public health; and must have, in addition, either

- (1) Professional academic qualification in engineering, nursing, education, or postgraduate work in other fields of public health; or
- (2) Three years of experience in responsible public health practice.

Those seeking the M.P.H. degree in the field of public health education are required to have had basic courses in education. Applicants for the M.P.H. degree in the field of public health laboratory, public health statistics, and public health sanitation who do not have a doctoral degree must have completed the requirements of the major in his respective field at the University of California or the equivalent elsewhere. A student who has undergraduate deficiencies must remove them before he may complete the requirements of his curriculum.

*General requirements for the degree:*

- (1) At least one academic year of graduate residence at the University of California and a program including not less than 24 units of acceptable course work, in which an average of not less than two grade points per unit has been maintained. Those electing to do so may 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 students supervisory faculty committee.
- (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.

**DEGREE OF DOCTOR OF PUBLIC HEALTH**

*Admission.*—To be admitted to the curriculum leading to the degree of Doctor of Public Health the student must ordinarily hold the M.D. degree. In exceptional cases, however, a candidate may be admitted who holds from an approved university a doctoral degree other than that of M.D. The candidate must have completed with a B average, or better, basic courses equivalent to those required for the degree of Master of Public Health at the University of California.

*General requirements for the degree:*

- (1) The candidate must complete at least one academic year in residence at the University of California. The program must include advanced specialization in the particular field of public health for which the student is preparing.
- (2) The candidate must give evidence of his capacity to make a substantial contribution to the advancement of the science and art of public health by submitting a dissertation on a subject chosen by himself and bearing on his principal subject of study, and of such character as to show power to prosecute independent investigation. The dissertation must receive the approval of a special committee in charge of the dissertation, to be appointed by the Dean of the School of Public Health with the approval of the Graduate Council, and must be defended by the candidate before a committee appointed in the same manner and including the members of the special committee in charge of the dissertation. Special emphasis will be laid upon the requirement of a dissertation, and the degree will in no case be given merely for the faithful completion of a course of study, however extensive.
- (3) The candidate must demonstrate ability for practical leadership in his field, either
  - (a) By providing evidence of prior successful professional experience in a post involving the exercise of substantial initiative and responsibility, or
  - (b) By such other means as the Faculty of the School of Public Health may prescribe.

**Curriculum for Medical Technicians\***

The need and demand for well-trained personnel for service as medical technicians has led the University of California to establish a four-year curriculum in this field, leading to the degree of Bachelor of Science through the School of Public Health in cooperation with the University Medical School. Instruction will be offered on the Berkeley campus with the exception of the final semester which will be given on the San Francisco campus.

Enrollment for the final semester is limited to twelve students.

<i>(1) Lower Division Requirements:</i>	Units
Bacteriology 2 .....	4
Chemistry 1A-1B .....	10
Chemistry 5 .....	3
Chemistry 8 .....	3
Physics 2A-2B .....	6

\* Beginning with the school year 1947-1948, it is expected that the curriculum for medical technicians will be modified. Students completing their program after June, 1948, should follow the new curriculum which is to be announced.

Physics 3A-3B .....		2
Public Health 5A-5B .....		6
Zoölogy 1A .....		4
English 1A-1B or Speech 2A-2B .....		6
A year course from one of the following departments: lan- guages, mathematics, history, economics, anthropology, psy- chology, political science, sociology and social institutions..		
Free Electives (Physiology 1A, 1C recommended) .....		10

60

(2) *Upper Division Requirements:*

Given at Berkeley:

Bacteriology 101 .....	6	6
Biochemistry 103, 104, 110 .....	4-4-5	13
Public Health 151, 152 .....	8-3	11
Zoölogy 140 .....	4	4
Electives .....		9

43

Given at San Francisco:

Public Health 408, Medical Bacteriology .....		3
Public Health 409, Medical Chemistry .....		3
Public Health 410, Medical Microscopy .....		3
Public Health 411, Medical Parasitology .....		2
Public Health 412, Medical Serology .....		2
Public Health 413, Tissue Technique .....		2
Public Health 414, Medical Mycology .....		1
Public Health 415, Basal Metabolism .....		1

17

Total ..... 120

SCHOOL OF SOCIAL WELFARE

The School of Social Welfare offers a graduate curriculum leading to the degree of Master of Social Welfare (M.S.W.). Some students prefer to enroll for only one academic year, two semesters of work, and to take junior professional positions at the conclusion of their first year of work. No credential is given at the end of the first year, but those who have satisfactorily completed the first year are eligible for junior membership in the American Association of Social Workers.

*Requirements for Admission.*—Admission to the School of Social Welfare is limited to students who:

- (A) Hold the degree of Bachelor of Arts or Bachelor of Science from the University of California or an equivalent degree from a college or university of recognized standing, and who have established their eligibility for admission in full graduate standing at the University of California.

*Undergraduate Departments*

- (B) Are not over 35 years of age; however, for persons who, through experience in the field, have demonstrated good capacity for social work, this requirement may be waived.
- (C) Are in good health, as indicated by a thorough medical and physical examination conducted by the University of California Student Health Service at time of registration.
- (D) Comply with either of the following requirements:
- a. Completion of the group major in social welfare offered at the University of California, Berkeley, or of an equivalent group major.
  - b. Completion of the University of California courses listed below, or their equivalents, or presentation of satisfactory evidence (ordinarily by writing noncredit qualifying examinations) that they have adequate knowledge of the subject matter of such courses:
    1. Economics 1A-1B (elements of economics).
    2. Psychology 1A (general psychology).
    3. Economics 150A (labor economics) or some other course in social economics, such as Economics 150B (labor economics), Economics 180 (the problems of poverty), or Economics 185 (social insurance).
    4. Psychology 160 (mental deficiency) or some other course in clinical or abnormal psychology.
    5. Economics 40 (elementary statistics), Psychology 5 (introduction to psychological measurements), or some other course in elementary statistical methods.

This requirement may be fulfilled, with respect to items 3, 4, and 5, by applicants submitting a plan satisfactory to the School whereby the requirement will be fully met within one calendar year after the date on which they enroll; and in the case of students who have completed one academic year of study at a graduate school of social work the requirement may be modified at the discretion of the School; but in no case will students be formally advanced to candidacy for the master's degree until the full requirement, or any modified requirement for students transferring from other graduate schools of social work, has been satisfied.

- (E) Satisfy the Admissions Committee of the School that they are also suitable in other respects for the profession of social work.

*Undergraduate preparation.*—The group major in social welfare, described on page 81, is strongly recommended for students preparing for admission to the School of Social Welfare. Alternatively, they may take undergraduate majors in economics, psychology, political science, or sociology, or a group

major in social science, these majors to include the prerequisite courses listed above. Students looking toward social work training should consult the School of Social Welfare as early as possible in their college careers for advice.

*Requirements for the master's degree.*—The degree of Master of Social Welfare (M.S.W.) will be granted to students who:

- (a) Have been admitted to the School of Social Welfare in accordance with the regulations of the Academic Senate.
- (b) Have spent two years of graduate study in social welfare, including at least one year in residence at the University of California (Berkeley).
- (c) Have completed a program of study approved by the School, according to one of the following plans:

*Plan 1.* There are required at least 40 units and in addition a thesis. The courses must be professional, graduate or upper division courses. They must include, as a minimum, 20 units of *graduate* and *upper division* courses completed with an average grade not lower than B.

*Plan 2.* There are required at least 44 units and in addition a comprehensive final examination in the field of social welfare. The courses must be professional, graduate or upper division courses. They must include, as a minimum, 24 units of *graduate* and *upper division* courses completed with an average grade not lower than B.

- (d) Students who have completed courses which are part of the social welfare curriculum in an accredited school of social welfare elsewhere than at the University of California, *may* be granted credit for such courses to the value of not more than 24 units. Such students must have maintained an average grade not lower than B in all those upper division and graduate courses undertaken in graduate residence at the University of California.

*Dates for Filing Applications.*—Admission to the School of Social Welfare is possible only in the fall of each year. Applications should be submitted not later than the fifteenth day of April of the year in which the student wishes to begin his work. Application forms may be obtained at the School of Social Welfare, 2400 Allston Way, Berkeley 4, California.

For further information see the ANNOUNCEMENT OF THE SCHOOL OF SOCIAL WELFARE.

**CURRICULUM IN HOSPITAL DIETETICS**

The Department of Home Economics of the College of Agriculture, with the approval of the Graduate Council, is authorized to issue a Certificate in Hospital Dietetics to students who complete with an average grade of at least B the curriculum described below, and an internship of 4 months approved by the curriculum adviser.

*Requirements for Admission.*—Applicants must hold a bachelor's degree with a major in the field of food and nutrition, including quantitative techniques, from a university or college of recognized standing, must present satisfactory certificates of health, and, in addition, must have the approval of the departmental committee concerned with the training in hospital dietetics.

*Course of Study.*—The curriculum extends over a period of at least one calendar year, including one semester of residence at the University of California Hospital in San Francisco and one semester of residence at the University of California in Berkeley. During the residence in San Francisco the student must complete 8 units of instruction and supervised practice in hospital dietetics, and during the residence in Berkeley 10 to 15 units of work, partly in graduate courses, and ordinarily including courses in human nutrition or diet in disease, laboratory methods in metabolism or advanced biochemistry, marketing or business administration, and hospital dietetics.

All inquiries should be addressed to the Chairman of the Department of Home Economics, University of California, Berkeley 4.

COURSES OF INSTRUCTION OFFERED IN THE  
DEPARTMENTS AT BERKELEY  
FOR THE FALL AND SPRING SEMESTERS  
ACADEMIC YEAR 1947-1948

EXPLANATORY NOTE

THE CREDIT VALUE of each course in semester units is indicated for each semester by a number in parentheses following the title. A semester unit 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 as follows: I, first semester (September to February); II, second semester (February to June); Yr., throughout the first and second semesters. When no hours are stated it is understood that these are to be arranged later. Final information concerning class hours will be found in the SCHEDULE AND DIRECTORY.

*Year courses; double numbers.*—A course designated by a double number (for example, History 4A-4B) is continued through two successive semesters, ordinarily from September to June; occasionally, however, the first part of a year course may begin in February. The student should use the first number in registering for the course during its first semester, and the second number during its second semester. The first half of such a course is prerequisite to the second half unless there is an explicit statement to the contrary. A final report is made by the instructor at the end of each semester. The student may discontinue the course at the end of the first semester, with final credit for the first half of the course, except as otherwise noted.

*Classification and Numbering of Courses*—

Courses are classified and numbered as follows:

(1) *Lower division courses* (numbered 1-49, or sometimes indicated by letters if in subjects usually given in high school). A lower division course is one open to freshmen and to sophomores; such courses do not count as upper division work in any department.

(2) *Upper division courses* (numbered 100-199). An upper division course in any department is one which is open to those students only who have completed a lower division course, or courses, in that department; or is an elementary course in a subject of such difficulty as to require the maturity of upper division students.

Special study courses for advanced undergraduates are numbered 199. Credit in a special study course for undergraduates may not exceed 5 units a semester, except in the case of honor students.

Departments may offer special *honors courses* (marked H) in reading and

research, with credit to be determined by the instructors in charge, according to the performance of the individual students, subject to such general restrictions as may be imposed by the department, the College, or the Committee on Courses of Instruction of the Academic Senate. The work of the student in an honors course may consist of additional work in connection with other courses of instruction, or may be independent of such courses.

(3) *Graduate courses* (numbered 200-299). As a condition for enrollment in a graduate course the student must submit to the instructor in charge of the course satisfactory evidence of preparation for the work proposed; adequate preparation normally consists of the completion of at least 12 units of upper division work basic to the subject of the graduate course, irrespective of the department in which such basic work may have been completed.

(4) *Professional teacher-training courses* in the Department of Education and courses in other departments that are specially intended for teachers or prospective teachers (numbered 300-399).

(5) *Certain professional courses* in anthropology, art, home economics, music, nursing, optometry, public health, and social welfare (numbered 400-499).

Courses are further classified as follows:

*Resident courses.*—Courses of resident instruction are given either during regular sessions or summer sessions or (by special arrangement) as extra session courses. Laboratory, field, or other individual work, done out of session under the direction of a department of instruction, may be accepted upon the recommendation of the department in partial fulfillment of the residence requirement for the bachelor's degree. All such work is in the form of upper division or graduate extra session courses, and these courses must be approved in advance by the Committee on Courses of Instruction. Moreover, in pursuance of existing regulations, students must register in advance for all such work, and this registration must be approved by the proper faculty before the work is undertaken.

*University extension courses.*—In the curricula leading to the A.B. and B.S. degrees, credit is allowed for courses in University of California Extension that bear numbers prefixed by X, XB, XL, or XSB. 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.

For information concerning University Extension courses, apply to the Director, University Extension, University of California, Berkeley 4, California.



## AGRICULTURE††

RICHARD L. ADAMS, M.S., Sc.D. (hon.c.), Professor of Farm Management.

FRANK W. ALLEN, M.S., Professor of Pomology, Davis.

VIGFUS S. ASMUNDSON, Ph.D., Professor of Poultry Husbandry, Davis.

ROY BAINER, M.S., Professor of Agricultural Engineering, Davis.

HORACE A. BARKER, Ph.D., Professor of Soil Microbiology.

ELBERT T. BARTHOLOMEW, Ph.D., Professor of Plant Physiology, Riverside.

LEON D. BATCHELOR, Ph.D., Professor of Horticulture, Riverside.

HORACE BELSHAW, Ph.D., Professor of Agricultural Economics, Davis.

MURRAY R. BENEDICT, Ph.D., Professor of Agricultural Economics.

JAMES P. BENNETT, Ph.D., Professor of Plant Physiology.

GEOFFREY B. BODMAN, Ph.D., Professor of Soil Physics.

ALFRED M. BOYCE, Ph.D., Professor of Entomology, Riverside.

FRED N. BRIGGS, Ph.D., Professor of Agronomy, Davis.

\* FREDERICK A. BROOKS, M.E., D.Sc., Professor of Agricultural Engineering, Davis.

HUGH S. CAMERON, D.V.M., Ph.D., Professor of Veterinary Science, Davis.

HOMER D. CHAPMAN, Ph.D., Professor of Agricultural Chemistry, Riverside.

ROY E. CLAUSEN, Ph.D., Professor of Genetics (Chairman of the Division).

HAROLD H. COLE, Ph.D., Professor of Animal Husbandry, Davis.

JOHN P. CONRAD, Ph.D., Professor of Agronomy, Davis.

\* ALDEN S. CRAFTS, Ph.D., Professor of Botany, Davis.

BERTRAM H. CROCHERON, M.S.A., Professor of Agricultural Extension.

WILLIAM V. CRUESS, Ph.D., Professor of Food Technology (Chairman of the Division).

LUTHER D. DAVIS, Ph.D., Professor of Pomology, Davis.

JOHN E. ECKERT, Ph.D., Professor of Entomology, Davis.

HENRY E. ERDMAN, Ph.D., Professor of Agricultural Economics.

EDWARD O. ESSIG, M.S., Professor of Entomology (Chairman of the Division).

STANLEY B. FREEBORN, Ph.D., Professor of Entomology (Vice-Chairman of the Department).

MAX W. GARDNER, Ph.D., Professor of Plant Pathology (Chairman of the Division).

HAROLD GOSS, Ph.D., Professor of Animal Husbandry, Davis.

† Herein are described the courses in the Department of Agriculture to be given at Berkeley, fall and spring semesters, 1947-1948, with lists of courses to be given at the College of Agriculture at Davis, and at the Citrus Experiment Station at Riverside, that are likely to be of interest to students in the College of Agriculture, resident in Berkeley, in planning their programs for the degree of Bachelor of Science. For description of courses given at Davis, Los Angeles, and Riverside refer to the PROSPECTUS OF THE COLLEGE OF AGRICULTURE for 1947-1948, to be obtained from the Dean of the College of Agriculture, University of California, Berkeley 4.

‡ The designation "Davis" or "Riverside," etc., following the title of officers of instruction indicates that instruction is offered by the instructor named on that campus. Otherwise instruction is on the Berkeley campus.

\* In residence spring semester only, 1947-1948.

\* Absent on leave, 1947-1948.

- PAUL W. GREGORY, Sc.D., Professor of Animal Husbandry, Davis.  
 HAROLD R. GUILBERT, M.S., Professor of Animal Husbandry, Davis.  
 HANS N. HANSEN, Ph.D., Professor of Plant Pathology.  
 GEORGE H. HART, M.D., D.V.M., Professor of Animal Husbandry, Davis.  
 WILLIAM Z. HASSID, Ph.D., Professor of Plant Nutrition.  
 WILLIAM R. HINSHAW, D.V.M., Ph.D., Professor of Veterinary Science, Davis.  
 DENNIS R. HOAGLAND, M.A., Professor of Plant Nutrition (Chairman of the Division).  
 ROBERT W. HODGSON, M.S., Professor of Subtropical Horticulture, Los Angeles.  
 WILLIAM M. HOSKINS, Ph.D., Professor of Entomology.  
 ELMER H. HUGHES, Ph.D., Professor of Animal Husbandry, Davis.  
 CLAUDE B. HUTCHISON, M.S., LL.D., D.Agr. (hon.c.), Professor of Agriculture (Chairman of the Department).  
 HANS JENNY, Sc.D., Professor of Soil Chemistry and Morphology (Chairman of the Division).  
 WALTER P. KELLEY, Ph.D., Professor of Soil Chemistry.  
 JAMES B. KENDRICK, Ph.D., Professor of Plant Pathology, Davis.  
 MAX KLEIBER, Sc.D., Professor of Animal Husbandry, Davis.  
 LEO J. KLOTZ, Ph.D., Professor of Plant Pathology, Riverside.  
 JAMES E. KNOTT, Ph.D., Sc.D. (hon.c.), Professor of Truck Crops, Davis.  
 LYSLE D. LEACH, Ph.D., Professor of Plant Pathology, Davis.  
 SAMUEL LEPKOVSKY, Ph.D., Professor of Poultry Husbandry.  
 † BEN A. MADSON, B.S.A., Professor of Agronomy, Davis.  
 ROBERT F. MILLER, M.S., Professor of Animal Husbandry, Davis.  
 COURTLAND S. MUDGE, Ph.D., Professor of Bacteriology, Davis.  
 STUART A. PEOPLES, M.D., Professor of Comparative Pharmacology, Davis.  
 RUSSELL L. PERRY, M.E., Professor of Agricultural Engineering, Davis.  
 EDWARD L. PROEBSTING, Ph.D., Professor of Pomology, Davis.  
 THOMAS E. RAWLINS, Ph.D., Professor of Plant Pathology.  
 WILLIAM M. REGAN, M.A., Professor of Animal Husbandry, Davis.  
 \* CHESTER L. ROADHOUSE, D.V.M., Professor of Dairy Industry, Davis.  
 WILFRED W. ROBBINS, Ph.D., Professor of Botany, Davis.  
 KNOWLES A. RYERSON, M.S., Professor of Horticulture, Davis.  
 HARRY W. SHEPHERD, B.S., Professor of Landscape Design.  
 HARRY S. SMITH, M.A., Professor of Entomology, Riverside.  
 G. LEDYARD STEBBINS, JR., Ph.D., Professor of Genetics.  
 MORRIS A. STEWART, Ph.D., Professor of Parasitology.  
 TRACY I. STOREE, Ph.D., Professor of Zoölogy, Davis.  
 LEWIS W. TAYLOR, Ph.D., Professor of Poultry Husbandry (Chairman of the Division).  
 DOROTHY S. THOMAS, Ph.D., Professor of Rural Sociology.  
 H. EARL THOMAS, Ph.D., Professor of Plant Pathology.

† Absent on leave in residence, 1947-1948.

\* In residence spring semester only, 1947-1948.

- JAMES M. TINLEY, Ph.D., Professor of Agricultural Economics.  
 WARREN P. TUFTS, Ph.D., Professor of Pomology, Davis.  
 FRANK J. VEIHMEYER, Ph.D., Professor of Irrigation, Davis.  
 EDWIN C. VOORHIES, B.S., Professor of Agricultural Economics.  
 HARRY B. WALKER, C.E., Professor of Agricultural Engineering, Davis.  
 SIEGFRIED V. WANTRUP, D.Agr., Professor of Agricultural Economics.  
 DAVID WEEKS, Ph.D., Professor of Agricultural Economics.  
 HARRY R. WELLMAN, Ph.D., Professor of Agricultural Economics (Chairman of the Division).  
 EDWARD E. WILSON, Ph.D., Professor of Plant Pathology, Davis.  
 JAMES F. WILSON, M.A., LL.D., Professor of Animal Husbandry, Davis.  
 ALBERT J. WINKLER, Ph.D., Professor of Viticulture, Davis.  
 HERBERT A. YOUNG, Ph.D., Professor of Chemistry, Davis.  
 FRANK ADAMS, M.A., Professor of Irrigation, Emeritus.  
 ERNEST B. BABCOCK, M.S., Professor of Genetics, Emeritus.  
 JAMES T. BARRETT, Ph.D., Professor of Plant Pathology, Emeritus.  
 JOHN S. BURD, B.S., Professor of Plant Nutrition, Emeritus.  
 HOWARD S. FAWCETT, Ph.D., Professor of Plant Pathology, Emeritus, Riverside.  
 WILLIAM B. HERMS, Sc.D., Professor of Parasitology, Emeritus.  
 WALTER L. HOWARD, Ph.D., Professor of Pomology, Emeritus, Davis.  
 HENRY J. QUAYLE, M.S., Professor of Entomology, Emeritus, Riverside.  
 HOWARD S. REED, Ph.D., Professor of Plant Physiology, Emeritus.  
 RALPH E. SMITH, D.Sc., Professor of Plant Pathology, Emeritus.  
 EDWIN C. VAN DYKE, M.D., Professor of Entomology, Emeritus.  
 \*MAYNARD A. AMERINE, Ph.D., Associate Professor of Enology, Davis.  
 PETER A. ARK, Ph.D., Associate Professor of Plant Pathology.  
 \*DANIEL I. ARNON, Ph.D., Associate Professor of Plant Nutrition.  
 STANLEY F. BAILEY, Ph.D., Associate Professor of Entomology, Davis.  
 LAWRENCE L. CLAYPOOL, Ph.D., Associate Professor of Pomology, Davis.  
 IRA J. CONDIT, Ph.D., Associate Professor of Subtropical Horticulture, Riverside.  
 RODERICK CRAIG, Ph.D., Associate Professor of Insect Physiology.  
 LANNES E. DAVIS, Ph.D., Associate Professor of Soils, Davis.  
 KATHERINE ESAU, Ph.D., Associate Professor of Botany, Davis.  
 FREDERICK L. GRIFFIN, M.S., Associate Professor of Agricultural Education, Davis.  
 TRIMBLE R. HEDGES, Ph.D., Associate Professor of Agricultural Economics, Davis.  
 SIDNEY S. HOOS, Ph.D., Associate Professor of Agricultural Economics.  
 EUGENE L. JACK, Ph.D., Associate Professor of Dairy Industry, Davis.  
 HARRY E. JACOB, M.S., Associate Professor of Viticulture, Davis.  
 CLARENCE N. JOHNSTON, M.E., Associate Professor of Irrigation, Davis.

<sup>2</sup> In residence spring semester only, 1947-1948.

\* Absent on leave, 1947-1948.

- MAYNARD A. JOSLYN, Ph.D., Associate Professor of Food Technology.  
 GEORGE M. KUZNETS, Ph.D., Associate Professor of Agricultural Economics.  
 I. MICHAEL LERNEER, Ph.D., Associate Professor of Poultry Husbandry.  
 ROBERT M. LOVE, Ph.D., Associate Professor of Agronomy, Davis.  
 JOHN H. MACGILLIVRAY, Ph.D., Associate Professor of Truck Crops, Davis.  
 \* GORDON MACKINNEY, Ph.D., Associate Professor of Food Technology.  
 SYLVESTER W. MEAD, M.S., Associate Professor of Animal Husbandry, Davis.  
 BEN D. MOSES, B.S., Associate Professor of Agricultural Engineering, Davis.  
 EMIL M. MRAK, Ph.D., Associate Professor of Food Technology.  
 IVER N. NELSON, Ph.D., Associate Professor of Spanish, Davis.  
 HAROLD P. OLMO, Ph.D., Associate Professor of Viticulture, Davis.  
 ROY OVERSTREET, Ph.D., Associate Professor of Soil Chemistry.  
 EDGAR P. PAINTER, Ph.D., Associate Professor of Chemistry, Davis.  
 VERNON J. PURYEAR, Ph.D., Associate Professor of History, Davis.  
 HAROLD G. REIBER, Ph.D., Associate Professor of Chemistry, Davis.  
 GEORGE A. RICHARDSON, Ph.D., Associate Professor of Dairy Industry, Davis.  
 EDWARD B. ROESSLER, Ph.D., Associate Professor of Mathematics, Davis.  
 LAUREN E. ROSENBERG, Ph.D., Associate Professor of Zoölogy, Davis.  
 WILLIAM C. SNYDER, Ph.D., Associate Professor of Plant Pathology.  
 PERRY R. STOUT, Ph.D., Associate Professor of Plant Nutrition.  
 H. LELAND VAUGHAN, B.S., Associate Professor of Landscape Design (Chairman of the Division).  
 REESE H. VAUGHN, Ph.D., Associate Professor of Food Technology.  
 THOMAS E. WEIER, Ph.D., Associate Professor of Botany, Davis.  
 \* CELESTE TURNER WRIGHT, Ph.D., Associate Professor of English, Davis.  
 CECIL E. YARWOOD, Ph.D., Associate Professor of Plant Pathology.  
 FREDERICK P. ZSCHELLE, JR., Ph.D., Associate Professor of Agronomy, Davis.  
 ROBERT W. ALLARD, B.S., Assistant Professor of Agronomy, Davis.  
 LAWRENCE J. ANDREWS, Ph.D., Assistant Professor of Chemistry, Davis.  
 GEORGE A. BAKER, Ph.D., Assistant Professor of Mathematics, Davis.  
 RICHARD E. BAKER, Ph.D., Assistant Professor of Pomology, Davis.  
 RICHARD M. BOHART, Ph.D., Assistant Professor of Entomology, Davis.  
 REID M. BROOKS, Ph.D., Assistant Professor of Pomology, Davis.  
 ALBERT C. BURDETTE, Ph.D., Assistant Professor of Mathematics, Davis.  
 JOHN G. B. CASTOR, Ph.D., Assistant Professor of Viticulture, Davis.  
 JULIAN C. CRANE, Ph.D., Assistant Professor of Pomology, Davis.  
 PERRY T. CUPPS, Ph.D., Assistant Professor of Animal Husbandry, Davis.  
 HERBERT B. CURRIER, Ph.D., Assistant Professor of Botany, Davis.  
 GLEN N. DAVIS, Ph.D., Assistant Professor of Truck Crops, Davis.  
 PAUL R. DAY, Ph.D., Assistant Professor of Soil Physics.  
 EVERETT R. DEMPSTER, Ph.D., Assistant Professor of Genetics.  
 JAMES R. DOUGLAS, Ph.D., Assistant Professor of Parasitology, Davis.  
 SOLOMON FISHMAN, Ph.D., Assistant Professor of English, Davis.

\* In residence spring semester only, 1947-1948.

- JULIUS H. FREITAG, Ph.D., Assistant Professor of Entomology.  
ORVAL C. FRENCH, M.S., Assistant Professor of Agricultural Engineering, Davis.  
DEANE P. FURMAN, Ph.D., Assistant Professor of Parasitology.  
MILTON E. GARDNER, Ph.D., Assistant Professor of Physics, Davis.  
CHARLES M. GILBERT, Ph.D., Assistant Professor of Geology, Davis.  
JAMES F. GUYMON, Ph.D., Assistant Professor of Viticulture, Davis.  
JAMES F. HARRINGTON, Ph.D., Assistant Professor of Truck Crops, Davis.  
HUBERT HEITMAN, JR., Ph.D., Assistant Professor of Animal Husbandry, Davis.  
WILLIAM B. HEWITT, Ph.D., Assistant Professor of Plant Pathology, Davis.  
BYRON R. HOUSTON, Ph.D., Assistant Professor of Plant Pathology, Davis.  
JAMES A. JENKINS, Ph.D., Assistant Professor of Genetics.  
DILWORTH D. JENSEN, Ph.D., Assistant Professor of Entomology.  
RAYMOND M. KEELER, Ph.D., Assistant Professor of Chemistry, Davis.  
JOHN R. KING, Ph.D., Assistant Professor of Pomology, Davis.  
F. HOWARD KRATZER, Ph.D., Assistant Professor of Poultry Husbandry, Davis.  
HORTON M. LAUDE, Ph.D., Assistant Professor of Agronomy, Davis.  
\* E. GORTON LINSLEY, Ph.D., Assistant Professor of Entomology.  
FREDERICK W. LORENZ, Ph.D., Assistant Professor of Poultry Husbandry, Davis.  
OSCAR A. LORENZ, Ph.D., Assistant Professor of Truck Crops, Davis.  
LOUIS K. MANN, Ph.D., Assistant Professor of Truck Crops, Davis.  
GEORGE L. MARSH, M.S., Assistant Professor of Food Technology.  
GEORGE L. MEHREN, Ph.D., Assistant Professor of Agricultural Economics.  
ABE E. MICHELbacher, Ph.D., Assistant Professor of Entomology.  
WOODROW W. MIDDLEKAUFF, Ph.D., Assistant Professor of Entomology.  
MILTON A. MILLER, Ph.D., Assistant Professor of Zoölogy, Davis.  
LEONARD L. MORRIS, Ph.D., Assistant Professor of Truck Crops, Davis.  
LOREN W. NEUBAUER, M.S. in C.E., Assistant Professor of Agricultural Engineering, Davis.  
JOHN W. OSWALD, Ph.D., Assistant Professor of Plant Pathology, Davis.  
CHARLES G. PATTEN, Ph.D., Assistant Professor of Physics, Davis.  
HERMAN J. PHAFF, Ph.D., Assistant Professor of Food Technology.  
ARTHUR E. PRITCHARD, Ph.D., Assistant Professor of Entomology.  
NOEL P. RALSTON, Ph.D., Assistant Professor of Animal Husbandry, Davis.  
CHARLES M. RICK, JR., Ph.D., Assistant Professor of Truck Crops, Davis.  
JAMES H. SHIDELEB, Ph.D., Assistant Professor of History, Davis.  
PAUL G. SMITH, Ph.D., Assistant Professor of Truck Crops, Davis.  
ERNEST H. STANFORD, Ph.D., Assistant Professor of Agronomy, Davis.  
EDWARD A. STEINHAUS, Ph.D., Assistant Professor of Insect Pathology.  
CLIFFORD R. STOCKING, Ph.D., Assistant Professor of Botany, Davis.

\* Absent on leave, 1947-1948.

SIDNEY S. SUTHERLAND, M.S., Assistant Professor of Education, and Supervisor of Teacher Training in Agriculture, Davis.  
NIKITA P. TARASSUK, Ph.D., Assistant Professor of Dairy Industry, Davis.  
ROBERT L. USINGER, Ph.D., Assistant Professor of Entomology.  
LINDA VAN NORDEN, Ph.D., Assistant Professor of English, Davis.  
DAVID H. VOLMAN, Ph.D., Assistant Professor of Chemistry, Davis.  
NORMAN B. AKESSON, M.S., Instructor in Agricultural Engineering, Davis.  
SPENCER W. BROWN, Ph.D., Instructor in Genetics.  
DAVID T. BUTTS, JR., B.S., Instructor in Military Science and Tactics, Davis.  
WALTER D. FISHER, Ph.D., Instructor in Agricultural Economics.  
CHARLES R. GRAU, Ph.D., Instructor in Poultry Husbandry.  
LEONORA A. HOHL, Ph.D., Instructor in Food Technology.  
PAUL A. JORGENSEN, Ph.D., Instructor in English, Davis.  
RICHARD E. KEPNER, Ph.D., Instructor in Chemistry, Davis.  
DANIEL J. LEVINSON, Ph.D., Instructor in Education, Davis.  
HARLAN K. PRATT, Ph.D., Instructor in Truck Crops, Davis.  
CHARLES W. SCHALLER, Ph.D., Instructor in Agronomy, Davis.  
RAY F. SMITH, Ph.D., Instructor in Entomology.  
WILLIAM N. TAKAHASHI, Ph.D., Instructor in Plant Pathology.

---

EVERETT D. HOWE, M.S., Professor of Mechanical Engineering.  
PAUL S. TAYLOR, Ph.D., Professor of Economics.  
HERBERT L. BELTON, Associate in Agricultural Engineering, Davis.  
ARTHUR D. BORDEN, M.A., Lecturer in Entomology.  
J. BURDETTE BROWN, C.E., Lecturer in Irrigation, Davis.  
PHOEBE J. CHAPMAN, B.S., Associate in Zoölogy, Davis.  
MARIE M. DAVIS, A.B., Associate in Mathematics, Davis.  
WALTER H. DORE, B.S., Lecturer in Plant Nutrition.  
THOMAS S. DOTY, B.S., Associate in Animal Husbandry, Davis.  
JAMES P. FAIRBANK, B.S., Associate in Agricultural Engineering, Davis.  
CLINTON C. GORHAM, B.S., Associate in Dairy Industry, Davis.  
MARYLIN F. GRACE, A.B., Associate in Zoölogy, Davis.  
GORDIE C. HANNA, B.S., Lecturer in Truck Crops, Davis.  
CARL J. HANSEN, M.S., Associate in Pomology, Davis.  
WILLIAM A. HARVEY, M.S., Associate in Botany, Davis.  
VERNARD B. HICKEY, A.B., Associate Supervisor of Physical Education, Davis.  
CARROLL E. HOWELL, M.S., Associate in Animal Husbandry, Davis.  
WILLIAM H. LANGE, JR., Ph.D., Lecturer in Entomology, Davis.  
HAROLD D. LEWIS, B.S., Associate in Agricultural Engineering, Davis.  
COBY LORENZEN, JR., B.S., Associate in Agricultural Engineering, Davis.  
WILLIAM C. MAILLARD, A.B., Associate in Mathematics and Physics, Davis.  
GWENDOLYN B. NEEDHAM, Ph.D., Lecturer in English, Davis.  
THADDEUS C. OLSON, A.B., Associate in Bacteriology, Davis.  
CLEMENT A. PHILLIPS, M.S., Associate in Dairy Industry, Davis.

- GUY L. PHILP, M.S., Lecturer in Pomology, Davis.  
MARGARET M. RAVENSCROFT, A.B., Associate in Mathematics, Davis.  
KATHERYN B. ROLFE, M.S., Associate in Mathematics, Davis.  
MYRON R. SCHALL, A.B., Assistant Supervisor of Physical Education, Davis.  
PATRICIA G. SIKES, M.A., Associate in English, Davis.  
FRANCIS L. SMITH, Ph.D., Lecturer in Agronomy, Davis.  
LESLIE M. SMITH, Ph.D., Lecturer in Entomology, Davis.  
JOHN L. STAHL, A.B., Associate in Landscape Gardening, Davis.  
RAYMOND E. STORIE, B.S., Lecturer in Soil Technology.  
GEORGE A. STROMGREN, A.B., Assistant Supervisor of Physical Education,  
Davis.  
JAMES R. TAVERNETTI, M.S., Lecturer in Agricultural Engineering, Davis.  
IRVING F. TOOMEY, B.S., Supervisor of Physical Education, Davis.  
EUGENE S. WILSON, B.S., Associate Supervisor of Physical Education, Davis.  
WILBOR O. WILSON, M.S., Associate in Poultry Husbandry, Davis.

*Letters and Science List.*—The following courses are included in the Letters and Science List of Courses: Agricultural Economics 100, 112A–112B, 113; Entomology 1, 106, 112, 127; Forestry 1, 103, 125; all undergraduate courses in genetics except 104; Home Economics 1A–1B, 7, 10, 14, 101A–101B, 102A–102B, 103, 106, 120A–120B, 132, 134, 142, 160, and 190; Plant Pathology 121; Soil Science 110, 111, 112, 113, 114, 115. For regulations governing this list, see page 82.

*Upper Division Courses.*—All upper division courses announced by this department presuppose at least junior standing in the College of Agriculture. Juniors and seniors in other colleges may elect such courses in the Department of Agriculture as they are qualified to pursue.

*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.

*Graduate Work.*—Concerning conditions for admission to graduate courses see page 156 of this CATALOGUE. Students who intend to become candidates for higher degrees in the Department of Agriculture will be required to give evidence of the completion of an amount of work equivalent, in its value, to that required by the College of Agriculture for the degree of Bachelor of Science. The student is referred to the ANNOUNCEMENT OF THE GRADUATE DIVISION, NORTHERN SECTION, for details of graduate work in the various fields of agriculture.

(GIVEN AT BERKELEY)

## AGRICULTURAL CHEMISTRY

## GRADUATE COURSE

201A-201B. Research in Agricultural Chemistry. (1-6; 1-6) Yr.

The STAFF and members of the group in Agricultural Chemistry.† The research work will ordinarily be under the direction of a member of the instructing staff who is in the field of agriculture in which the student's preparation has been found to be adequate.

## AGRICULTURAL ECONOMICS

An average grade of at least C in all courses undertaken is prerequisite to all upper division courses in agricultural economics.

1. The Agricultural Industry. (3) I.

Mr. VOORHIES

Comparison of agriculture with other industries: population, production, improvements, trends, etc. Historical sketch of the development of agriculture. Types of farming and their geographical distribution. Movements of agricultural products. Institutional aids to agriculture.

100. Comparative Agriculture. (3) I.

Mr. VOORHIES

Prerequisite: Economics 1A-1B.

The agriculture of the principal countries of the world, with special reference to the influence of food supply upon the development of man.

101A. Principles of Marketing Agricultural Products. (3) I. Mr. ERDMAN

Prerequisite: Economics 1A-1B.

Nature of the problems, types of marketing agencies, principal marketing functions and their combination, marketing costs and margins, price quotations and speculation in farm products; government in its relation to marketing; consideration of proposals for improvement.

101B. Coöperation in Agriculture. (3) I.

Mr. ERDMAN

Prerequisite: Agricultural Economics 101A or Business Administration 123.

Farmers' coöperative organizations.

102. Land Economics. (3) II.

Mr. WEEKS

Prerequisite: Economics 1A-1B.

The utilization of agricultural land, economic rent, land appraisal, political and economic problems of land development, land settlement, land policies; the relation of population growth to economic utilization of land and to land value.

104. Agricultural Economics. (3) I.

Mr. HOOS

Prerequisite: Economics 1A-1B.

The application of economic principles to the problems of agriculture.

105. Agricultural Economics Measurements. (3) I.

Mr. KUZNETS

Lectures and laboratory.

Prerequisite: Economics 40, Mathematics 11A-11B.

Sources; collection of data; and analysis of selected measurements, including parity prices, parity income, employment, wages, production, and national income.

† See the ANNOUNCEMENT OF THE GRADUATE DIVISION, NORTHERN SECTION.



107. Market Prices. (3) II. Mr. MEHREN  
Prerequisite: Agricultural Economics 104, 105.  
Application of economic principles and measurements in the analysis of the behavior of agricultural prices.
110. Agricultural Finance. (3) II. Mr. VOORHIES  
Prerequisite: Economics 1A-1B.  
Farmers' credit needs, methods of financing the agricultural industry, and the agencies supplying agricultural credit.
- 112A-112B. Rural Sociology. (2-2) Yr. Mr. TAYLOR  
112A is prerequisite to 112B.  
The forms of human association in rural environment, including their origins, development, structures, functions, and cultural products. Rural population, social organization and institutions, social psychology, ecology patterns, social change, social pathology.
- \*113. Population Problems. (3) I. Mrs. THOMAS  
Prerequisite: Economics 40.  
Urban, rural, and regional variation in population phenomena; differential fertility and mortality; selective migration.
116. Agricultural Policy. (3) II. Mr. BENEDICT  
Prerequisite: Economics 1A-1B.  
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.
118. Farm Organization. (3) II. Mr. TINLEY  
Prerequisite: at least one course in agriculture.  
The place, purpose, and scope of organization; farm enterprises; selecting farms; planning and equipping; capital needs; earnings.
119. Farm Management. (3) II. Mr. ADAMS  
Prerequisite: Agricultural Economics 118.  
Methods of handling properties; duties and qualifications of managers; bookkeeping and accounting; marketing methods; farm labor; tenancy; farm law.
122. Coöperative Management. (3) II. Mr. TINLEY  
Prerequisite: Agricultural Economics 101A-101B and Business Administration 6A.  
Analysis of organizational and operational problems and policies of agricultural coöperative associations.
199. Special Study for Advanced Undergraduates. (1-5) I and II.  
The STAFF (Mr. VOORHIES in charge)  
Prerequisite: senior standing and approval of the Division. Limited to agricultural economics majors.

## GRADUATE COURSES

202. Seminar in Agricultural Policy. (2) II. Mr. WELLMAN  
A study of public and semipublic activities pertaining to agriculture as an industry.

---

\* Not to be given, 1947-1948.

203. Research in Agricultural Economics. (1-6) I and II.  
The STAFF (Mr. WELLMAN in charge)
- 204A-204B. Analytical Methods in Agricultural Economics. (3-3) Yr.  
I: Wellman; II: Kuznets. Mr. WELLMAN, Mr. KUZNETS  
Evaluation and treatment of economic data in agriculture, with emphasis on methods of analyzing relations between two or more variables.
205. Seminar in the Marketing of Agricultural Products. (2) II.  
Mr. MEHREN  
An analysis of the economic effects of state and federal activity in the marketing of agricultural products.
- 206A. Economics of Agricultural Production. (3) I. Mr. HOOS  
A detailed study of the basic principles of the economics of production.
- 206B. Economics of Agricultural Production. (3) II. Mr. BENEDICT  
The application of economic principles to problems of production adjustment.
207. Advanced Land Economics. (2) II. Mr. WEEKS  
Land policies; planning; rent; tenure appraisal, development, and utilization.
208. Seminar in the Conservation of Natural Resources. (2) II.  
Mr. WANTRUP  
The economic and social aspects of the conservation of natural resources in the United States and foreign countries with particular reference to agriculture.
209. Seminar in Agricultural Market Organization. (3) I. Mr. ERDMAN  
An analysis of the economic factors influencing organization and operating efficiency, price and sales policies, and the financial structure of different marketing organizations.
212. Seminar in Farm Management. (2) II. Mr. ADAMS, Mr. TINLEY  
An analysis of economic factors, trends, and relationships which bear upon farm organization and administration; farm management techniques.
299. Special Study for Graduate Students. (1-4) I and II.  
The STAFF (Mr. WELLMAN in charge)  
Any properly qualified graduate student may investigate a special field of study if his proposed program is acceptable to the member of the staff with whom he works.

#### AGRICULTURAL ENGINEERING

12. Survey and Problems in Agricultural Engineering. (2) II.  
Mr. WALKER, Mr. BAINER  
The development and the application and use of farm machinery; the utilization of power on the farm; elements of hydrology in relation to agricultural engineering; the economics of farm buildings; elementary problems in the mechanics of agriculture.

## AGRONOMY

- \*1. Introduction to Agronomy. (3) I. Mr. F. L. SMITH  
Principles underlying the distribution and culture of field crops, with emphasis upon seed selection, maintenance of soil fertility, and the theory and practice of dry farming. The production of typical cereal, forage, fiber, and root crops is briefly discussed.
199. Special Study for Advanced Undergraduates. (1-5) I and II.  
The STAFF (Mr. MADSON in charge)  
Prerequisite: 6 units of upper division agronomy.

## GRADUATE COURSE

- 200A-200B. Research in Agronomy. (1-6; 1-6) Yr.  
Mr. MADSON, Mr. BRIGGS, Mr. LOVE, Mr. LAUDE

## ANIMAL HUSBANDRY

7. Introduction to Animal Husbandry. (3) II.  
The STAFF (Mr. HART in charge)  
A survey of the sources of the world's supply of animal products; the distribution of domestic animals in the U. S.; the origin, characteristics, and adaptations of the more important breeds and the influence of environment upon their development.

## ENTOMOLOGY AND PARASITOLOGY

1. General Entomology. (4) I. Mr. FREEBORN  
Lectures and laboratory.  
The classification, life history, structure, and physiology of insects.
49. Summer Practice and Observation Course. (No credit)  
Six weeks, daily, except Sunday. The STAFF (Mr. ESSIG in charge)  
Required of all students with a major in entomology or parasitology.
106. Insect Morphology and Histology. (4) I. Mr. CRAIG  
Lectures and laboratory.  
Prerequisite: Entomology 1.
110. Insect Physiology. (3) II. Mr. CRAIG  
Lectures and laboratory.  
The general principles of insect physiology with experimental studies on nutrition, digestion, excretion, circulation, respiration, and the nervous and hormonal systems.
112. Systematic Entomology. (4) I. Mr. LINSLEY  
Lecture and laboratory. Weekly field trips on Saturday mornings.  
Prerequisite: Entomology 1.  
The classification of insects; taxonomic categories and procedure; bibliographical methods; nomenclature; museum practices.
114. Forest Entomology. (3) I. Mr. LINSLEY  
Lectures and laboratory.  
Insects affecting forest, shade, and ornamental trees.

\* Not to be given, 1947-1948.

117. Helminthology. (4) I. Mr. STEWART  
 Lectures and laboratory.  
 Helminthic infections of man and domestic animals. The biology, prophylaxis, and treatment of the various parasites are dealt with in detail. Laboratory exercises are devoted to the taxonomy and identification of parasites and to diagnostic laboratory methods.
124. Economic Entomology. (4) II. Mr. ESSIG  
 Lectures and laboratory.  
 Life histories, habits, distribution, economics, and control of insects attacking agricultural crops and stored products.
125. Insect Vectors of Plant Diseases. (4) I. Mr. FREITAG  
 Lectures and laboratory.  
 The role of insects in the transmission and causation of plant virus diseases. Greenhouse insect rearing and virus-transmission experiments.
126. Medical Entomology. (4) II. Mr. STEWART  
 Lectures and laboratory.  
 The role of insects and other arthropods in transmission and causation of diseases of humans and domesticated animals.
127. Insect Ecology. (3) II. Mr. CRAIG, Mr. USINGER  
 Principles of ecology; animal communities; insect behavior.
128. Insect Toxicology. (4) I. Mr. HOSKINS  
 Lectures and laboratory.  
 Chemical composition and reactions of insecticides and fungicides, and their physiological effects on plant and animal tissues.
129. Biological Control of Insect and Weed Pests. (3) I. Mr. H. S. SMITH  
 Prerequisite: upper division standing.  
 Lectures and laboratory.  
 Principles and methods of biological control; biology of entomophagous insects; critical discussion of important projects of world-wide scope.
130. Agricultural Entomology. (2) II. Mr. BORDEN  
 Lecture and laboratory.  
 An advanced course in the principles and practices of experimental field entomology.
131. Insect Pathology. (4) II. Mr. STEINHAUS  
 Lecture and laboratory.  
 General insect pathology and microbiology, including the biological relationships between all types of microorganisms and insects. Detailed study of bacterial, fungous, virus, and protozoan diseases of insects; non-infectious diseases of insects; histopathology.
132. History of Entomology. (3) II. Mr. ESSIG, Mr. LINSLEY  
 Outline of the development of world entomology, new world and old world entomology alternating. Students may register for both presentations without duplication of credit.

133. Biology of Aquatic and Littoral Insects. (4) II. Mr. USINGER  
Lecture and laboratory.  
Habits and ecology of aquatic and semiaquatic insects with emphasis on their relations to problems of wildlife management. It is expected that this course will satisfy the entomological requirements for students of the Wildlife Curriculum in the College of Letters and Science.
199. Special Study for Advanced Undergraduates. (1-5) I and II.  
The STAFF (Mr. ESSIG in charge)

## GRADUATE COURSES

- 200A-200B. Seminar in Systematic and Economic Entomology, Insect-borne Plant Diseases and Biological Control. (1-1) Yr.  
Mr. BORDEN, Mr. ESSIG, Mr. FREITAG, Mr. JENSEN, Mr. LINSLEY, Mr. MICHELbacher, Mr. MIDDLEKAUFF, Mr. PRITCHARD, Mr. R. F. SMITH, Mr. USINGER
- 201A-201B. Research in Entomology and Parasitology. (1-6; 1-6) Yr.  
Mr. CRAIG, Mr. ESSIG, Mr. FREEBORN, Mr. FREITAG, Mr. FURMAN, Mr. HOSKINS, Mr. JENSEN, Mr. LINSLEY, Mr. MIDDLEKAUFF, Mr. MICHELbacher, Mr. PRITCHARD, Mr. H. S. SMITH, Mr. R. F. SMITH, Mr. STEINHAUS, Mr. STEWART, Mr. USINGER
- 202A-202B. Seminar in Medical Entomology and Parasitology. (1-1) Yr.  
Mr. STEWART, Mr. FURMAN
- 203A-203B. Seminar in Insect Toxicology, Insect Physiology, and Insect Pathology. (1-1) Yr.  
Mr. CRAIG, Mr. HOSKINS, Mr. STEINHAUS

## FOOD TECHNOLOGY

- 112A-112B. Food Technology. (3-3) Yr.  
Mr. CRUICK, Mr. JOSLYN, Mr. MRAK, Mr. PHAFF  
Prerequisite: Chemistry 1A-1B and Bacteriology 1 or 2. Course 112A is not prerequisite to 112B.  
Physical, chemical, bacteriological, and economic principles and technological processes, involved in the preparation, preservation, and examination of fruit and vegetable products, including canned, dried, and fermented products.
- 115A-115B. Food Technology. (4-4) Yr.  
Lectures and laboratory. Mr. JOSLYN, Mr. MACKINNEY, Mr. MARSH  
Prerequisite: Chemistry 1A-1B, 5 and 8; Bacteriology 1 and 4.  
Application of quantitative, physical, chemical, and bacteriological methods of analysis to fruit and vegetable products; interpretation of results in relation to manufacturing methods and commercial standards; experimental study of industrial fermentations and food processing.
116. Biology of Yeast. (4) II. Mr. MRAK, Miss HOHL, Mr. PHAFF  
Lectures and laboratory.  
Prerequisite: Chemistry 1A-1B, 5, and 8; Botany 1 or 12; Bacteriology 1.  
Morphology, development, and classification of yeasts; relation to other fungi; growth requirements; metabolic and other activities of yeast including their zymological and industrial aspects.

- 127A-127B. Proseminar in Food Technology. (1-1) Yr.  
The STAFF (Mr. CRUESS in charge)  
Assigned topics, reports, and discussions.

199. Special Study for Advanced Undergraduates. (1-5) I and II.  
The STAFF (Mr. CRUESS in charge)  
Particularly the opportunity for the study of yeasts and bacteria, plant pigments, oxidation reduction, and plant enzymes. Also offered are 3 to 4 units in zymology (the science of fermentation) and 2 to 4 units in plant pigments, for properly qualified students.

## GRADUATE COURSE

- 237A-237B. Research in Food Technology. (1-6; 1-6) Yr.  
The STAFF (Mr. CRUESS in charge)

## FORESTRY

(For courses in Forestry, see pages 306-309)

## GENETICS

100. Principles of Genetics. (4) I. Mr. DEMPSTER  
Lectures and laboratory.  
Prerequisite: general botany (Courses 1, 12, or equivalent) and general zoölogy (Course 1A or equivalent).  
Introduction to genetics with some consideration of its applications in agriculture, biology, and human welfare.
101. Cytogenetics. (3) II. Mr. CLAUSEN  
Prerequisite: Genetics 100, and general cytology.  
Genetics as related to cytological conditions, with particular reference to plant materials. A laboratory course, Botany 131, may be taken concurrently.
102. Advanced Genetics. (3) I. Mr. JENKINS  
Lectures and laboratory.  
Prerequisite: Genetics 100.  
With special reference to methods. Intended to supplement course 100 for students whose major is genetics.
103. Organic Evolution. (3) II. Mr. STEBBINS  
Prerequisite: Genetics 100 or its equivalent.  
The principles of evolution with particular reference to the evolutionary processes in plants.
104. Nature and Functions of Hereditary Materials. (3) I. Mr. S. W. BROWN  
Prerequisite: Genetics 100 and Chemistry 8 or their equivalents. Recommended: general cytology.  
An introduction to modern concepts in biochemical and physiological genetics and their applications in related fields.
199. Special Study for Advanced Undergraduates. (1-5) I and II.  
The STAFF (Mr. CLAUSEN in charge)

## GRADUATE COURSES

- 200A-200B. Research in Genetics. (1-6; 1-6) Yr.  
Mr. ASMUNDSON, Mr. BRIGGS, Mr. S. W. BROWN, Mr. CLAUSEN,  
Mr. DEMPSTER, Mr. GREGORY, Mr. JENKINS, Mr. RICK,  
Mr. STEBBINS
- 201A-201B. Seminar in Genetics. (1-1) Yr.  
Reports and discussions. The STAFF (Mr. CLAUSEN in charge)

## HOME ECONOMICS

(For courses in Home Economics, see pages 334-340)

## HORTICULTURE

2. Fruit Growing. (3) I. Mr. R. M. BROOKS  
Prerequisite: Botany 1 or 12.  
Fruit growing practices; propagation, planting, and culture of orchard trees, and small fruits.

## LANDSCAPE DESIGN

Art 2A-2B, Botany 12, Architecture 1, Landscape Design 1A-1B, 2, and Engineering 21 are prerequisite to all upper division courses in Landscape Design.

- 1A-1B. The Theory and Aesthetics of Landscape Design. (3-3) Yr.  
Lectures and laboratory. Mr. \_\_\_\_\_  
The different styles of landscape art and principles governing correct design.
2. History and Literature of Landscape Design. (2) II. Mr. VAUGHAN  
Limited to major students only.  
Early influences and their effect on modern practice.
49. Summer Practice and Observation Course. (No credit)  
The STAFF (Mr. \_\_\_\_\_ in charge)  
Students should register for this course at the end of the junior year.
- 101A-101B. Elementary Problems in Landscape Design. (3-3) Yr.  
Lectures and laboratory. Mr. VAUGHAN  
Basic problems in the design of residential homesites, parks and general public areas.
- 111A-111B. Landscape Design and Construction. (4-4) Yr. Mr. VAUGHAN  
Lecture and laboratory.  
Problems of design and construction with special reference to grading, retaining walls, steps, pools, pergolas, irrigation and drainage systems; reports and estimates.
- 112A-112B. Plant Materials. (3-3) Yr. Mr. SHEPHERD  
Lecture and laboratory.  
The form, habit, texture, and adaptation of trees, shrubs, vines, and herbaceous plants.
- 113A-113B. Plant Materials. (3-3) Yr. Mr. SHEPHERD  
Lecture and laboratory.  
Advanced study of plant adaptations and their landscape values, and planting design.

- 114A-114B. Advanced Landscape Design. (4-4) Yr. Mr. ———  
Lecture and laboratory.  
Problems of design and construction from topographic surveys of the larger areas (parks, playgrounds, and country estates), with detailed plans, reports, and estimates.
- 115A-115B. City and Town Planning. (4-4) Yr.  
Lectures and laboratory. The STAFF (Mr. ——— in charge)  
Fundamental principles on which the functional planning of a city or town are based.
116. Site Planning. (3) I. Mr. VAUGHAN  
Lectures and laboratory.  
Prerequisite: junior standing.  
A study of the development of irregular topography for building groups and their attendant outdoor elements. Restricted to students in architecture and landscape design.
199. Special Study for Advanced Undergraduates. (1-5) I and II.  
The STAFF (Mr. ——— in charge)

## GRADUATE COURSE

- 201A-201B. Modern Civic Art. (1-6; 1-6) Yr.  
The STAFF (Mr. ——— in charge)  
Advanced problems in design with special reference to city parks, municipal park systems, recreation areas, civic centers, and other civic features in their relation to the city plan as a whole.

## PLANT NUTRITION

(For lower division courses in Plant Nutrition, see Soil Science)

- 201A-201B. Plant Nutrition. (1-6; 1-6) Yr.  
Mr. BARKER, Mr. BENNETT, Mr. DORE, Mr. HASSID,  
Mr. HOAGLAND, Mr. STOUT  
Open to qualified graduate students, by permission of the instructor.  
Research on problems of plant nutrition, including biochemistry.
202. Agricultural Chemistry. (1) II. Mr. DORE, Mr. HASSID  
Prerequisite: permission of instructor.  
Seminar in advanced carbohydrate chemistry, with special reference to plant science.
- 203A-203B. Plant Nutrition. (1-1) Yr. MR. BARKER, MR. HASSID  
Open to properly qualified graduate students, by permission of the instructor.  
Seminar on problems of plant nutrition and plant biochemistry.

## PLANT PATHOLOGY

- Botany 1, or 12 and 16, and Bacteriology 1 are prerequisite to course 120. Course 120 is prerequisite to all subsequent courses in plant pathology.
100. Forest Pathology. (3) II. Mr. HANSEN  
Lectures and laboratory.  
Prerequisite: Botany 1 or 12 and 16. Restricted to forestry students.  
Diseases of forest plants.



120. Plant Diseases. (4) I. Mr. YARWOOD  
Lectures and laboratory.  
A general course on the nature, cause, and control of plant diseases.
121. Technique of Plant Pathology. (2) II. Mr. RAWLINS, Mr. ARK  
Laboratory.  
(A) Histology and phytopathological technique. (B) Application of histochemical methods to the study of diseased plant tissues.  
NOTE.—May be repeated once without duplication of credit (maximum, 4 units). Part (A) to be given in 1947–1948.
123. Principles of Plant Pathology. (2) II. Mr. THOMAS  
A consideration of some of the principles broadly applicable to fungus, bacterial, virus, and nutritional diseases of plants.
125. Diseases of Truck and Field Crops. (2) I. Mr. GARDNER, Mr. SNYDER  
Laboratory.  
The pathology of important crop plants. Dissemination, factors influencing inception and severity of disease, diagnosis, host reaction, etiology, control.  
NOTE.—This course is given in alternate years. To be given in 1948–1949.
199. Special Study for Advanced Undergraduates. (1–5) I and II.  
Mr. GARDNER, Mr. SNYDER, Mr. HANSEN, Mr. RAWLINS,  
Mr. THOMAS, Mr. ARK, Mr. YARWOOD

## GRADUATE COURSES

- 201A–201B. Seminar in Plant Pathology. (1–1) Yr.  
The STAFF (Mr. THOMAS in charge)
- 230A–230B. Research in Plant Pathology. (1–6; 1–6) Yr.  
Mr. GARDNER, Mr. HANSEN, Mr. RAWLINS, Mr. SNYDER, Mr. TAKAHASHI,  
Mr. THOMAS, Mr. TOMPKINS, Mr. ARK, Mr. YARWOOD

## POMOLOGY

(For courses in Pomology, see Horticulture)

## POULTRY HUSBANDRY

1. Poultry Production. (3) I. Mr. LERNER, Mr. GRAU  
Lectures and laboratory.  
An introductory study of the relation of the several sciences underlying poultry production to poultry husbandry practice.
102. Experimental Incubation. (3) II. Mr. L. W. TAYLOR  
Lectures and laboratory.  
Prerequisite: Zoölogy 100, Chemistry 8.  
Problems of embryonic development, causes of embryonic mortality in poultry, and principles of artificial incubation.
103. Poultry Breeding. (3) I. Mr. LERNER, Mr. L. W. TAYLOR  
Prerequisite: Genetics 100.  
Inheritance of characteristics in poultry and study of the application of genetic principles to problems in poultry breeding.

104. Poultry Feeds and Feeding. (2) I. Mr. LEPKOVSKY  
Prerequisite: Poultry Husbandry 106, completed, or in progress.  
A study of the manufacture, composition, and use of poultry feedstuffs.

106. Principles of Animal Nutrition. (3) I. Mr. LEPKOVSKY  
Prerequisite: Chemistry 8, Zoölogy 1B, Physiology 1A, 1C, or Animal Husbandry 110.

The fundamentals of metabolism, maintenance, growth, and reproduction; chemistry and digestion of the proteins, carbohydrates, and fats; functions of minerals, vitamins, and water.

NOTE.—This course may be elected in the Animal Science Curriculum on the Berkeley campus.

Poultry Hygiene. (See Veterinary Science 101.)

Poultry Farm Organization and Administration. (See Agricultural Economics 118 and 119.)

Marketing Poultry Products. (See Agricultural Economics 101A, 101B, 104, and 199.)

199. Special Study for Advanced Undergraduates. (1-5) I and II.

The STAFF (Mr. L. W. TAYLOR in charge)

Prerequisite: Poultry Husbandry 1, courses basic to the problems elected, and consent of instructor.

Problems relating to the nutrition, breeding, incubation, physiology, or egg quality of chickens may be elected.

#### GRADUATE COURSE

- 200A-200B. Research in Poultry Husbandry. (1-6; 1-6) Yr.

Mr. LEPKOVSKY, Mr. LEARNER, Mr. L. W. TAYLOR, Mr. GRAU

#### SOIL SCIENCE

No student will be accepted as a major student in soil science who has not attained at least a grade C average in each of the fields of required courses in chemistry, physics, botany, bacteriology, and the geological sciences.

#### Soil Morphology and Soil Physics

100. Soil Characteristics. (4) I. Mr. BODMAN  
Lectures and laboratory.  
Prerequisite: Geology 1A, Chemistry 1A-1B, Physics 2A-2B.  
An introduction to the physical and chemical properties of the soil.

101. Development and Morphology of Soils. (4) II. Mr. JENNY  
Lectures and one unit of field work.  
Prerequisite: Geology 1A, Chemistry 1A-1B. Soil Science 100 is recommended.

Influence of climate, vegetation, parent material, topography, and time on soil development; chemistry of soil formation; classification of soils; relationships between soil groups and agricultural use developed and illustrated by a critical study of representative soils of the world.

102. Soil Physics. (2) II. Mr. BODMAN  
 Prerequisite: Soil Science 100, including laboratory sections; calculus.  
 Recommended: physical chemistry. If possible, course 102L should be taken concurrently.  
 The physical properties of soils and their measurement.
- 102L. Soil Physics. (2) II. Mr. BODMAN, Mr. DAY  
 Laboratory.  
 Prerequisite: Soil Science 102; may be taken concurrently.  
 Laboratory experiments designed to accompany course 102.
103. Soils of California. (3) I. Mr. STORIE  
 Lectures and discussion sections. Two field trips during the semester to be arranged.  
 Prerequisite: Geology 1A, Chemistry 1A-1B.  
 The general character, mode of formation, classification, geography, use and conservation of the soil resources of the State. Practice in identifying, rating, and judging the probable agricultural value of the important soils in California.
105. Summer Field Course. (6) Mr. STORIE  
 Six weeks, daily.  
 Prerequisite: Soil Science 100 and 101 or 103, and approval of instructor in charge.  
 Methods of mapping and classifying soils; the preparation of soil reports; field work in soil surveying and field studies of the profiles of representative California soils.

#### Soil Chemistry, Soil Microbiology, and Plant Nutrition

110. The Soil as a Medium for Plant Growth. (4) I. Mr. STOUT  
 Lectures and one other hour to be arranged.  
 Prerequisite: Chemistry 1A-1B, 8.  
 Composition and properties of soils; factors determining productivity; the causes and effects of the soil's reaction, with particular reference to "acid" and "alkali" soils; the nature of fertilizers and some of their effects upon soil and plant; current theory of the soil solution.
111. Soil Microbiology. (3) II. Mr. BARKER  
 Lectures and laboratory.  
 Prerequisite: Chemistry 5, 8, Bacteriology 1, 4.  
 The role of microorganisms in nature, particularly in relation to agriculture.
112. The Soil as a Medium for Plant Growth. (2) II. Mr. STOUT  
 Lectures and conferences.  
 Prerequisite: Soil Science 110.  
 Soil conditions as phenomena and in relation to factors influencing fertility; liquid and solid phases of the soil, including absorption phenomena, base exchange and buffer effects.
113. Soil Chemistry in Relation to Plant Growth. (2) II. Mr. STOUT  
 Laboratory.  
 Prerequisite: Chemistry 5, Soil Science 112, to be taken concurrently.

## 114. Properties of Colloids. (3) II.

Mr. JENNY

Prerequisite: Chemistry 109.

Properties of colloidal systems of importance in agriculture and biology. Chemistry and physics of surfaces (adsorption, ion interchange), electric double layer, flocculation, Brownian movement, colloid optics, viscosity, swelling.

## 115. Mineral Nutrition of Plants. (2) II.

Mr. HOAGLAND, Mr. AENON

Prerequisite: Botany 120A-120B (120B may be taken concurrently).

Designed for students in Soil Science and certain other curricula in agriculture and for students in Botany.

Nutrient medium in relation to inorganic and organic composition of plants; nitrogen metabolism; deficiency diseases; effects of inorganic elements on physiological processes; toxicities of mineral elements; certain relations between plant and animal nutrition; special phases of absorption and accumulation of mineral elements, including methods of experimentation.

## 116. Soil Management. (2) I.

Mr. JENNY in charge

Prerequisite: senior standing in soil science.

Evaluation of soil fertility by field experiments; use of fertilizers; cultivation practices; aspects of soil erosion control. Lectures, discussions, and demonstrations by various specialists.

## General Soil Science

## 199. Special Study for Advanced Undergraduates. (1-5) I and II.

Mr. BARKER, Mr. BODMAN, Mr. DAY, Mr. L. E. DAVIS, Mr. HOAGLAND, Mr. JENNY, Mr. KELLEY, Mr. STOUT

Open only to students with at least a grade B average who have also the approval of the undergraduate adviser in soil science.

## GRADUATE COURSES

## 201A-201B. Research in Soil Science. (1-6; 1-6) Yr.

Mr. BARKER, Mr. BODMAN, Mr. L. E. DAVIS, Mr. HOAGLAND, Mr. JENNY, Mr. KELLEY, Mr. STOUT, Mr. DAY

## 235. Seminar. (1) I.

Mr. JENNY

Prerequisite: graduate standing in soil science, plant physiology, or related subjects.

## 236A-236B. Staff Seminar in Soil Science. (No credit)

The STAFF

The group consists of staff members in the Division of Soils and Division of Plant Nutrition.

## SOIL TECHNOLOGY

(For courses in Soil Technology, see Soil Science)

## SUBTROPICAL HORTICULTURE

For announcement of courses in this field, see the PROSPECTUS OF THE COLLEGE OF AGRICULTURE or the GENERAL CATALOGUE, DEPARTMENTS AT LOS ANGELES.

## TRUCK CROPS

## \*1. Vegetable Production. (3) II.

Mr. MACGILLIVRAY

Principles involved in vegetable production; survey of the vegetable industry.

\* Not to be given, 1947-1948.

Underline Course in Red for Fall

✓ instructors

Underline Course in blue for Spring

✓ instructors

Checked work in Office ~~AM~~  
Checked work C/R ~~AM~~

118.

↓  
Mr Robinson

## VETERINARY SCIENCE

(See page 468)

(GIVEN AT DAVIS)

## AGRICULTURAL CHEMISTRY ✓

## GRADUATE COURSES

- \*200A-200B. Seminar in Agricultural Chemistry. (1-1) Yr.  
The STAFF (Mr. YOUNG in charge)
- 201A-201B. Research in Agricultural Chemistry. (1-6; 1-6) Yr.  
~~The STAFF (Mr. REIBER in charge)~~

## AGRICULTURAL ECONOMICS ✓

- 101A. Principles of Marketing Agricultural Products. (3) I. Mr. MEHREN
103. Agriculture in the American Economy. (3) II. ~~NOT OFFERED~~ \_\_\_\_\_
- ~~118. Farm Organization. (3) I. II. NOT OFFERED~~ \_\_\_\_\_ ✓
199. Special Study for Advanced Undergraduates. (1-5) I and II.  
~~The STAFF (Mr. MEHREN in charge)~~

## AGRICULTURAL ENGINEERING ✓

6. Introduction to Surface Climatology. (2) II. Mr. F. A. BROOKS
12. Survey and Problems in Agricultural Engineering. (2) II.  
Mr. WALKER, Mr. BAINER
- 14A-14B. Farm Mechanics for Teachers. (2-2) Yr.  
Mr. FARRIS, Mr. LEWIS, Mr. BELTON
49. Summer Field Practice. (6) The STAFF (Mr. \_\_\_\_\_ in charge)
102. Unit Operation in Processing Agricultural Products. (3) II. Mr. PERRY
103. Agricultural Power. (3) II. Mr. MOSES
104. Agricultural Machinery. (3) I. Mr. BAINER
105. Farm Structures. (3) I. Mr. NEUBAUER
113. Agricultural Power. (4) II. Mr. MOSES
114. Agricultural Machinery. (3) I. Mr. BAINER
115. Farm Structures Design. (3) I. Mr. WALKER, Mr. NEUBAUER
130. Proseminar. (1) II. Mr. F. A. BROOKS, Mr. WALKER
199. Special Study for Advanced Undergraduates. (1-5) I and II.  
~~The STAFF (Mr. F. A. BROOKS in charge)~~

\* Not to be given, 1947-1948.

## GRADUATE COURSE

200A-200B. Research in Agricultural Engineering. (1-6; 1-6) Yr.

Mr. WALKER, Mr. BAINER, Mr. BOELTJE, Mr. F. A. BROOKS, Mr. MOSES,  
Mr. NEUBAUER, Mr. PERRY, Mr. YOUNG, Mr. HOWE

## AGRONOMY ✓

1. Introduction to Agronomy. (3) I. Mr. ALLARD
110. Principles of Crop Production. (3) I. Mr. LAUDE
111. Field Crops. (3) I. Mr. STANFORD
112. Field Crop Technology. (3) II. ~~Mr. BRIGGS~~
114. Plant Breeding. (3) II. Mr. BRIGGS
115. Range and Forage Crops. (3) II. Mr. LOVE
199. Special Study for Advanced Undergraduates. (1-5) I and II.  
The STAFF (Mr. MADSON in charge)

## GRADUATE COURSE

200A-200B. Research in Agronomy. (1-6; 1-6) Yr.

Mr. BRIGGS, Mr. MADSON, Mr. CONRAD, Mr. LOVE, Mr. F. L. SMITH,  
Mr. STANFORD, Mr. ALLARD, Mr. LAUDE

## ANIMAL HUSBANDRY ✓

7. Introduction to Animal Husbandry. (3) I. Mr. HUGHES
8. Livestock Judging and Selection. (2) I. Mr. HEITMAN
101. Animal Biochemistry. (3) II. Mr. GOSS
102. Animal Biochemistry Laboratory. (2) II. Mr. GOSS
103. Livestock Feeds and Feeding. (3) I. Mr. MILLER
107. Breeding Farm Animals. (2) II. Mr. HART
108. Milk Production. (4) II. Mr. REGAN, Mr. RALSTON
110. Physiology of Domestic Animals. (5) I. Mr. COLE
111. Advanced Livestock Judging. (2) I. Mr. HUGHES
112. Advanced Dairy Cattle Production. (2) I. ~~Mr. MEAD~~  
Mr. MEAD, Mr. REGAN, Mr. RALSTON
113. Wool Technology. (3) I. Mr. J. F. WILSON
115. Horse Production. (3) II. Mr. HOWELL
118. Meat Production. (4) II. Mr. GUILBERT, Mr. HEITMAN, Mr. MILLER
120. Advanced Animal Nutrition. (3) I. Mr. KUMBER
199. Special Study for Advanced Undergraduates. (1-5) I and II.  
The STAFF (Mr. HART in charge)

✓  
112

✓  
199

✓  
Mr. Suneson

✓  
Mr. Briggs



Doct. 1. Unit value changed to (5) r. Course approval blank 12/17

Note: Those STUDENTS who completed Bot 16 before Bot 1, will be required to complete Bot 1.

✓  
5.

110b

✓  
Mrs Esau

✓  
Mr. Tucker

## GRADUATE COURSES

200A-200B. Research in Animal Husbandry, Animal Nutrition, Animal Physiology, or Animal Genetics. (1-6; 1-6) Yr.

Mr. HART, Mr. YOUNG, Mr. COLE, Mr. GREGORY, Mr. HOWELL, Mr. HUGHES, Mr. KEIBER, Mr. MILLER, Mr. REGAN, Mr. SFORER, Mr. J. F. WILSON, Mr. GROSS, Mr. GUILBERT, Mr. MAD, Mr. CUPPS, Mr. HEITMAN

201A-201B. Seminar in Animal Nutrition, Animal Physiology, or Animal Genetics. (1-1) Yr. The STAFF (Mr. HART in charge)

## BACTERIOLOGY

1. General Bacteriology. (2) I and II. Mr. MUDGE

199. Special Study for Advanced Undergraduates. (1-5) I and II. The STAFF (Mr. MUDGE in charge)

## GRADUATE COURSE

200. Research in Bacteriology. (1-6) I and II. The STAFF (Mr. MUDGE in charge)

## BOTANY

1. General Botany. (5) I and II. Mr. ROBBINS, Mr. WEIER, Mr. CURRIER, Mr. STOCKING,

5. General Morphology. (4) II. Mr. ROBBINS,

7. Plant Physiology. (4) II. Mr. CRAFTS, Mr. STOCKING

100b. Microscopic Technique. (2) I. Miss ESAU

105. Plant Anatomy. (4) I. Miss ESAU

106. Morphology of Flowering Plants. (3) II. Miss ESAU

107. Weed Control. (4) II. Mr. ROBBINS, Mr. CRAFTS, Mr. HARVEY

110b. Systematic Botany of Seed Plants. (3) II.

\*120A-120B. Plant Physiology. (2-2) Yr. Mr. CRAFTS

\*121A-121B. Plant Physiology Laboratory (2-2) Yr. MR. CRAFTS

130. Plant Cytology. (4) I. Mr. WEIER

199. Special Study for Advanced Undergraduates. (1-5) I and II. The STAFF (Mr. ROBBINS in charge)

## GRADUATE COURSE

200A-200B. Research in Botany. (1-6; 1-6) Yr. The STAFF (Mr. ROBBINS in charge)

## CHEMISTRY

1A-1B. General Chemistry. (5-5) Yr. Beginning either semester. Mr. YOUNG, Mr. ANDREWS, Mr. KEIBER, Mr. KEPNER, Mr. PAINTER, Mr. WEIER, Mr. VOLMAN

\* Not to be given, 1947-1948.

5. Quantitative Analysis. (3) II.

Mr. KEEFER

8. Organic Chemistry. (3) I.

Mr. REEBER

9. Organic Chemistry. (3) I.

Mr. ANDREWS

101. Elementary Biochemistry. (3) II.

Mr. PAINTER

102. Biochemistry Laboratory. (2) II.

Mr. PAINTER

109. Physical Chemistry, Brief Course. (3) II.

Mr. YOUNG

\*112. Physical Chemistry. (3) I.

Mr. KEEFER

113. Chemistry of Colloids. (3) I.

Mr. VOLMAN

199. Special Study for Advanced Undergraduates. (1-5) I and II.

The STAFF (Mr. Young in charge)

## GRADUATE COURSE

280. Research. (2-9) I and II.

The STAFF (Mr. Young in charge)

## DAIRY INDUSTRY

1. Principles of Dairying. (3) I.

Mr. JACK, Mr. RALSTON

2. Laboratory in Principles of Dairying. (1) I.

Mr. TARASSUK

4. Dairy Products Judging. (1) I.

Mr. PHILLIPS

49. Summer Practice and Observation Course. (6)

The STAFF (Mr. GORHAM in charge)

101A-101B. Dairy Products. (5-5) Yr.

Mr. ROADHOUSE, Mr. JACK, Mr. PHILLIPS, ———

I: Mr. Roadhouse, ———

II: Mr. Jack, Mr. Phillips.

106. Chemistry of Milk and Dairy Products. (4) II.

Mr. RICHARDSON, Mr. TARASSUK

107. Laboratory Control in Dairy Technology. (3) I.

Mr. RICHARDSON

142. Dairy Bacteriology. (3) I.

160. Proseminar. (1) II.

The STAFF (Mr. JACK in charge)

199. Special Study for Advanced Undergraduates. (1-5) I and II.

The STAFF (Mr. JACK in charge)

## GRADUATE COURSES

200A-200B. Research in Dairy Technology, Dairy Chemistry, and Dairy Bacteriology. (1-6, 1-6) Yr.

The STAFF (Mr. JACK in charge)

201A-201B. Seminar in Dairy Technology, Dairy Chemistry, and Dairy Bacteriology. (1-1) Yr.

The STAFF (Mr. JACK in charge)

## DECORATIVE ART

(For courses in Decorative Art, see Home Economics, page 340)

\* Not to be given, 1947-1948.

126.

Mr. Andrews

199

Mr. Reiber in charge

280

Mr. Reiber in charge

107

Mr. Tarassuk

142

Mr. Mudge

1a ✓  
1b ✓  
110 ✓  
170 ✓

199

323 ✓  
801 ✓

1a.

Mr. Fisher ✓  
Mr. Hedges ✓  
Mr. Le Court ✓  
Mr. Le Court ✓

Mr. Le Court

Mr. Le Court ✓  
Mr. Le Court ✓

Mr. Veitmeyer

## ECONOMICS ✓

1A. Principles of Economics. (3) I and II.

Mr. MEYER, ✓

1B. Principles of Economics. (3) II.

Mr. MEYER ✓

## EDUCATION ✓

110. Introduction to Educational Psychology. (3) II.

✓

†160. Vocational Education. (2) I and II.

Mr. SUTHERLAND ✓

†161. Problems in Vocational Education. (2) I and II.

Mr. SUTHERLAND ✓

†162. Continuation Education. (2) I and II.

Mr. SUTHERLAND ✓

170. Secondary Education. (2) II.

✓

198. Directed Group Study of Agricultural Education. (2) II.

Mr. SUTHERLAND in charge

199. Special Study for Advanced Undergraduates in Agricultural Education.

(1-5) I and II.

Mr. SUTHERLAND ✓

## GRADUATE COURSE

260A-260B. Vocational Education Seminar. (2-2) Yr.

Mr. GRIFFIN, Mr. SUTHERLAND ✓

## PROFESSIONAL TEACHER-TRAINING COURSES

†320. Supervised Teaching, Including Professional Methods. (6) I and II.

Mr. SUTHERLAND ✓

†323. Practicum in Supervised Teaching. (2) I and II.

Mr. SUTHERLAND ✓

## ENGINEERING ✓

1A. Plane Surveying. (3) I.

Mr. BOHART ✓

## ENTOMOLOGY AND PARASITOLOGY ✓

1. General Entomology. (4) II.

Mr. BOHART ✓

105. Apiculture. (4) II.

Mr. ECKERT ✓

116. Veterinary Parasitology. (3) I.

Mr. DOUGLAS ✓

124. Economic Entomology. (4) I.

Mr. BAILEY, Mr. L. M. SMITH ✓

199. Special Study for Advanced Undergraduates. (1-5) I and II.

Mr. BAILEY, Mr. BOHART, Mr. DOUGLAS, Mr. ECKERT, Mr. LANGE, Mr. L. M. SMITH ✓

## GRADUATE COURSE

201A-201B. Research in Entomology and Parasitology. (1-6; 1-5) Yr.

The Staff (Mr. BAILEY in charge) ✓

## GENETICS ✓

100. Principles of Genetics. (4) I.

Mr. GREGORY ✓

† Open only to apprentice teachers and graduate students.

## Agriculture

## GRADUATE COURSE

200A-200B. Research in Genetics. (1-6; 1-6) Yr.Mr. CLAUSEN, Mr. GREGORY, Mr. BRIGGS, Mr. OLMO,  
Mr. ASMUNDSON, Mr. LOVE, Mr. RICK

## GEOLOGY ✓

1A. General Geology. (3) II.

Mr. GILBERT

## HISTORY ✓

4A-4B. History of Western Europe. (3-3) Yr.8A-8B. History of the Americas. (3-3) Yr.

Mr. SHIDELER

17A-17B. History and Institutions of the United States. (3-3) Yr.

Mr. PURYEAR

171A-171B. History and Institutions of the United States. (3-3) Yr.

Mr. PURYEAR

\*185. Government and Agriculture of the United States. (3) II.

Mr. SHIDELER

188A-188B. History of Agriculture in the Americas. (2-2) Yr.

Mr. SHIDELER

189A-189B. History of the Southwest and the Pacific Coast. (2-2) Yr.

Mr. PURYEAR

199. Special Study for Advanced Undergraduates. (1-5) I and II.

Mr. PURYEAR

## HOME ECONOMICS ✓

(For courses offered at Davis, see under Home Economics, pages 339-340)

## HORTICULTURE ✓

2. Fruit Growing. (3) I.

Mr. L. D. DAVIS

\*10. Plant Propagation. (2) II.

Mr. R. E. BAKER

105P. Pomology: Fruit Handling and Varieties. (3) Summer Course (six weeks).

Mr. L. M. BROOKS

106A-106B. Fruit Plants. (2-2) Yr.

Mr. PROBSTING, —

## Viticulture and Enology

105v. Viticulture: Fruit Handling and Varieties. (3) Summer Course (six weeks).

Mr. WINKLER

116. General Viticulture. (4) II.

Mr. WINKLER

\*120A-120B. Enology. (3-3) Yr.

Mr. AMERINE

130A-130B. Microbiology of Wine Production. (2-2) Yr.

Mr. CASTOR

140. Unit Operations in Winery Practice. (2) I.

Mr. GUYMON

141. Brandy. (2) II.

Mr. GUYMON

\* Not to be given, 1947-1948.

201a-201b. Staff Seminar in Genetics. No credit yr.  
The Staff (Mr. Briggs in charge)

46.

86.

Mr. O'Brien ✓

Mr. Puryear ✓



1a.  
1b.

Mr. B.C. Guyer, Mrs. Homano  
Mr. Guyer

## General Horticulture

110. Fruit Morphology. (3) I. Mr. R. M. BROOKS

112. Handling and Storage of Deciduous Fruits and Grapes. (2) I.  
Mr. ALLEN

114. Fruit Breeding. (3) II.  
Mr. OLMO

121. Advanced Horticulture. (3) I. Mr. PROEBSTING

199. Special Study for Advanced Undergraduates. (1-5) I and II.

Mr. TUMBS, Mr. ALLEN, Mr. AMERINE, Mr. R. E. BAKER, Mr. R. M. BROOKS, Mr. CLAYPOOL, Mr. CRANE, Mr. L. D. DAVIS, Mr. GUYMON, Mr. JACOB, Mr. CASTOR, Mr. HARTMANN, Mr. OLMO, Mr. PROEBSTING, Mr. WINKLER

## GRADUATE COURSES

201A-201B. Research in Pomology. (1-6; 1-6) Yr.  
Mr. TUMBS, Mr. ALLEN, Mr. R. E. BAKER, Mr. R. M. BROOKS, Mr. CASTOR, Mr. CLAYPOOL, Mr. L. D. DAVIS, Mr. PROEBSTING

205A-205B. Seminar. (1-1) Yr. Mr. L. D. DAVIS

233A-233B. Research in Viticulture and Enology. (1-6; 1-6) Yr.  
Mr. WINKLER, Mr. AMERINE, Mr. CASTOR, Mr. GUYMON, Mr. JACOB, Mr. OLMO

## IRRIGATION

100. Principles Underlying Irrigation in Its Soil and Plant Relationships (3) II. Mr. VEIHMEYER

110. Development and Use of Farm Irrigation Water Supplies and Systems. (4) I. Mr. JOHNSTON

120. Irrigation Hydraulics. (3) I. Mr. JOHNSTON

130. Underground Water and Farm Irrigation Pumping Plants. (3) II. Mr. JOHNSTON

199. Special Study for Advanced Undergraduates. (1-5) I and II.  
The STAFF (Mr. VEIHMEYER in charge)

## GRADUATE COURSE

201A-201B. Research in Irrigation. (1-6; 1-6) Yr.  
The STAFF (Mr. VEIHMEYER in charge)

## LANDSCAPE DESIGN

3. Planning the Home Grounds. (2) I and II. Mr. STAHL

## LANGUAGES AND LITERATURE

## English

1A. Composition. (3) I and II.  
Mr. FISHERMAN, Mr. JORGENSEN, Miss VAN NORDEN, Mrs. WRIGHT

1B. Introduction to Literature. (3) I and II.  
Mr. FISHERMAN, Mr. JORGENSEN, Miss VAN NORDEN, Mrs. WRIGHT

9. Directed Reading. (1-3) I and II.

Mr. FISHMAN, Miss VAN NORDEN, Mrs. WRIGHT

46A-46B. Survey of English Literature. (3-3) Yr.

Mr. FISHMAN, Miss VAN NORDEN

## French ✓

1. Elementary French. (4) I and II.

Mr. NELSON

2. Elementary French. (4) I.

Mr. NELSON

## German ✓

1. Elementary German. (4) I.2. Elementary German. (4) II.

## Spanish ✓

1. Elementary Spanish. (4) I and II.

Mr. NELSON

2. Elementary Spanish. (4) II.

Mr. NELSON

## MATHEMATICS ✓

C. Trigonometry. (3) I and II.

The STAFF (Mr. ROESSLER in charge)

D. Intermediate Algebra. (3) I and II. The STAFF (Mr. ROESSLER in charge)1. College Algebra. (3) I and II.†3A. Analytic Geometry and Calculus, First Course. (3) I and II.†3B. Analytic Geometry and Calculus, Second Course. (3) I and II.

Mr. G. A. BAKER,

4A. Analytic Geometry and Calculus, Third Course. (3) I and II.

Mr. BURDETTE, Mr. G. A. BAKER

4B. Analytic Geometry and Calculus, Fourth Course. (3) I and II.

Mr. BURDETTE

\*10. Spherical Trigonometry and Applications. (2) I.11A-11B. Analytic Geometry and Calculus. (3-3) Yr.†9. Elementary Statistics. (3) Yr.

Mr. BOWEN

105A-105B. Statistical Methods for Biologists. (2-2) Yr.

Mr. ROESSLER, Mr. G. A. BAKER

110A-110B. Advanced Calculus. (2-2) Yr.

Mr. BURDETTE

120A-120B. Elementary Theory of Probability. (3-3) Yr. Mr. G. A. BAKER199. Special Study for Advanced Undergraduates. (1-5) I and II.

The STAFF (Mr. ROESSLER in charge)

## MECHANICAL ENGINEERING ✓

151. Industrial Heat Transfer. (3) I.

Mr. PERRY, Mr. F. A. BROOKS

152. Mass Transfer in Industrial Equipment. (3) II.

Mr. PERRY, Mr. F. A. BROOKS

† Students who do not meet the prerequisites of the course may demonstrate their fitness by passing an examination in these subjects.

\* Not to be given, 1947-1948.

9.

44a-44b. Masterpieces of Literature. (3-3) yr.  
v. course approval blank 12/47

Mr. Guyer

Mr. Fishman,  
Miss Van Norden, Mrs. Wright

46b. ✓

Mrs. Hornann

1. ✓

Miss Lubenow ✓

2.

Miss Lubenow ✓

1.

Miss Lubenow ✓

2.

Miss Lubenow ✓

1.

Mrs. Davis ✓

3a.

Mr. Hayes, Mr. Fulton ✓

3b.

Mr. Hayes ✓

4b.

Mr. Maillard ✓

~~11a-11b~~

Mrs. Rolfe ✓

12. Elements of Probability and Statistics (3) I  
v. course approval blank 2/48

Mr. Roessler,  
Mr. Hayes ✓

10b ✓

Mr. Barnes ✓

107a. Second Year Postwar Advanced Infantry, Branch ✓

Material (3) II

~~Mr. Batts~~ Mr. Barnes

Prerequisite: Course 106a - 106b.

Leadership, drill, and exercise of command; military teaching methods; psychological warfare; military mobilization and demobilization; new developments; communications; gunnery; technique of fire control, supply and maintenance.

26

Miss Welch ✓

2a.

Mr. Steck ✓

3a

Mr. Steck ✓

4c.

Mr. Patters ✓

## MILITARY SCIENCE AND TACTICS

<u>10A. First Course. (2) I.</u>	Mr. BUTTS
<u>10B. Second Course. (2) II.</u>	Mr. BUTTS
<u>11A. Third Course. (2) I.</u>	Mr. BUTTS
<u>11B. Fourth Course. (2) II.</u>	Mr. BUTTS
<u>106A. Fifth Course. Advanced Infantry Training. (3) I.</u>	Mr. BUTTS
<u>106B. Sixth Course. Advanced Infantry Training. (3) II.</u>	Mr. BUTTS

## PHYSICAL EDUCATION

(Men)

<u>1. Physical Training, Recreation, and Competitive Sports. (1) I and II.</u>	Mr. TOOMEY, Mr. E. S. WILSON, Mr. SCHALL, Mr. HICKY, Mr. STROMGREEN
--	--

(Women)

<u>26. Physical Education. (1) I and II.</u>	The STAFF
--	-----------

## PHYSICS

<u>2A-2B. General Physics. Lectures. (3-3) Yr.</u>	Mr. GARDNER, Mr. PATTEN
<u>3A-3B. General Physics Laboratory. (1-1) Yr.</u>	Mr. GARDNER, Mr. PATTEN
<u>*4A. General Physics. (4) II.</u>	Mr. PATTEN
<u>4B. General Physics. (4) I.</u>	Mr. PATTEN
<u>4C. General Physics. (4) II.</u>	Mr. GARDNER
<u>106. Atomic Structure and Structure of Matter. (3) II.</u>	Mr. GARDNER
<u>*116. Heat. (2) I.</u>	Mr. PATTEN
<u>129. Introduction to Electronics. (3) I.</u>	Mr. GARDNER
<u>199. Special Study for Advanced Undergraduates. (1-5) I and II.</u>	The STAFF

## PHYSIOLOGY

<u>1A. Introductory Physiology. (3) I.</u>	Not offered	_____
<u>1C. Introductory Physiology Laboratory. (2) I.</u>	✓	_____

## PLANT NUTRITION

(For courses in Plant Nutrition, see Soil Science)

## PLANT PATHOLOGY

<u>120. Plant Diseases. (4) II.</u>	Mr. LEACH, Mr. HOUSTON, Mr. OSWALD
<u>125. Diseases of Truck and Field Crops. (2) I.</u>	No stu. Mr. KENDRICK, Mr. E. E. WILSON
<u>199. Special Study for Advanced Undergraduates. (1-5) I and II.</u>	Mr. KENDRICK, Mr. LEACH, Mr. E. E. WILSON, Mr. HEWITT, Mr. HOUSTON, Mr. OSWALD

\* Not to be given, 1947-1948.

## Agriculture

## GRADUATE COURSE

230A-230B. Research in Plant Pathology. (1-6; 1-6) Yr.

Mr. KENDRICK, Mr. LEACH, Mr. E. E. WILSON,  
Mr. HEWITT, Mr. HOUSTON, Mr. OSWALD

## POLITICAL SCIENCE ✓

113. American Political Theory. (2) II.

Mr. SHIDELER

## POMOLOGY ✓

(For courses in Pomology, see Horticulture)

## POULTRY HUSBANDRY

1. Poultry Production. (3) II.

Mr. ASMUNDSON, Mr. LORENZ

199. Special Study for Advanced Undergraduates. (1-5) I and II.

The STAFF (Mr. ASMUNDSON in charge)

## GRADUATE COURSE

200A-200B. Research in Poultry Husbandry. (1-6; 1-6) Yr.

Mr. ASMUNDSON, Mr. KRATZER, Mr. F. W. LORENZ, Mr. W. O. WILSON

## PSYCHOLOGY ✓

1A. General Psychology. (3) II.

## PUBLIC HEALTH ✓

5A. Elementary Public Health. (3) II.

## PUBLIC SPEAKING

1A. Elements of Public Speaking. (3) I and II.

Mr. FISHMAN, Mr. JOERGENSEN

\*1B. Principles and Types of Speech. (3) I and II.

## SOIL SCIENCE ✓

106. Elements of Soil Science. (4) II.

Mr. L. E. DAVIS

110. The Soil as a Medium for Plant Growth. (4) I.

Mr. CONRAD

199. Special Study for Advanced Undergraduates. (1-5) I and II.

Mr. CONRAD, Mr. L. E. DAVIS, Mr. VEIHMAYER

## GRADUATE COURSE

200A-200B. Research in Soil Science. (1-6; 1-6) Yr.

Mr. CONRAD, Mr. L. E. DAVIS, Mr. VEIHMAYER

## SOIL TECHNOLOGY ✓

(For courses in Soil Technology, see Soil Science)

## SUBJECT A: ENGLISH COMPOSITION ✓

Subject A. English Composition. (No credit) I and II.

Mr. SIKES

\* Not to be given, 1947-1948.

la.

Mr. Le Court

la.

Mr. Guyer, Mrs. Homann, Miss Van Dorden,  
Van Norder, Mrs. Sikes



III.

Mr. Jasper

## TRUCK CROPS ✓

1. Vegetable Production. (3) I and II. ✓ I ✓ Mr. MACGILLIVRAY, Mr. HANNA ✓ II ✓  
105. Systematic Olericulture. (3) I. ✓ Mr. RICK ✓  
121. Vegetable Physiology. (3) II. ✓ Mr. MANN, Mr. PRATT ✓  
122. Advanced Truck Crops. (3) I. ✓ Mr. KNOTT ✓  
199. Special Study for Advanced Undergraduates. (1-5) I and II. ✓  
 Mr. KNOTT, Mr. MACGILLIVRAY, Mr. G. N. DAVIS, Mr. DONEEN, ✓  
 Miss ESAU, Mr. HANNA, Mr. HARRINGTON, Mr. O. A. LORENZ, ✓  
 Mr. MANN, Mr. MORRIS, Mr. PRATT, Mr. RICK, Mr. P. G. SMITH ✓

## GRADUATE COURSE

- 200A-200B. Research in Truck Crops. (1-6; 1-6) Yr. ✓  
 Mr. KNOTT, Mr. G. N. DAVIS, Mr. DONEEN, Miss ESAU, Mr. HARRINGTON, Mr. O. A. LORENZ, Mr. MACGILLIVRAY, Mr. MANN, Mr. MORRIS, Mr. PRATT, Mr. RICK, Mr. P. G. SMITH. ✓

## VETERINARY SCIENCE ✓

111. Principles of Pathology and Control of Diseases of Domestic Animals. ✓  
 (3) II. ✓ Mr. H. S. CAMERON ✓

## GRADUATE COURSE

- 200A-200B. Research in Animal Pathology. (1-6; 1-6) Yr. ✓  
 Mr. H. S. CAMERON, Mr. HINSHAW ✓

## VITICULTURE ✓

(For courses in Viticulture and Enology, see Horticulture)

## ZOÖLOGY ✓

- 1A. General Zoölogy. (5) I. ✓ Mr. STORER, Mr. MILLER, Mr. ROSENBERG ✓  
1B. Vertebrate Anatomy. (3) II. ✓ Mr. STORER, Mr. MILLER ✓  
1C. Vertebrate Embryology. (2) II. ✓ Mr. STORER, Mr. ROSENBERG ✓  
10. General Biology. (3) I. ✓ Mr. ROSENBERG ✓  
100D. Microscopic Technique. (2) II. ✓ Mr. ROSENBERG ✓  
116. Economic Vertebrate Zoölogy. (3) II. ✓ Mr. STORER ✓  
199. Special Study for Advanced Undergraduates. (1-5) I and II. ✓  
 Mr. STORER, Mr. MILLER, Mr. ROSENBERG ✓

## GRADUATE COURSE

- 200A-200B. Research in Zoölogy. (1-6; 1-6) Yr. ✓  
 Mr. STORER, Mr. MILLER, Mr. ROSENBERG ✓

(GIVEN AT RIVERSIDE)

## GRADUATE COURSES

## ENTOMOLOGY

- 200A-200B. Seminar in Entomology, including Biological Control. (1-1) Yr.  
The STAFF (Mr. BOYCE in charge)
- 201A-201B. Research in Entomology. (2-6; 2-6) Yr.  
Mr. BOYCE, Mr. H. S. SMITH
- 205A-205B. Research in Biological Control. (2-6; 2-6) Yr. Mr. H. S. SMITH

## HORTICULTURE

- 201A-201B. Research in Subtropical Horticulture. (1-6; 1-6) Yr.  
Mr. CONDIT, \_\_\_\_\_, \_\_\_\_\_

## PLANT PATHOLOGY

- 201A-201B. Seminar in Plant Pathology. (1-1) Yr.  
The STAFF (Mr. KLOTZ in charge)
- 230A-230B. Research in Plant Pathology. (1-6; 1-6) Yr. Mr. KLOTZ

## PLANT PHYSIOLOGY

- 203A-203B. Research in Plant Physiology. (1-6; 1-6) Yr.  
Mr. BARTHOLOMEW
- 205A-205B. Seminar in Plant Physiology. (1-1) Yr.  
The STAFF (Mr. BARTHOLOMEW in charge)

## SOIL SCIENCE

- 202A-202B. Research in Soils. (1-6; 1-6) Yr. Mr. CHAPMAN
- 237A-237B. Seminar in Soils. (1-1) Yr.  
The STAFF (Mr. CHAPMAN in charge)

## ANATOMY

## A Division of the Medical School

HERBERT McLEAN EVANS, B.S., M.D., D.med. h.c. (Freiburg and Santiago), Sc.D. (San Marcos), Docteur h.c. (Paris), Professor of Anatomy, Morris Herzstein Professor of Biology, and Director of the Institute of Experimental Biology.

JOHN B. DE C. M. SAUNDERS, M.B., Ch.B., F.R.C.S. (Edin.), Professor of Anatomy and Lecturer in Medical History and Bibliography (Chairman of the Division).

MIRIAM E. SIMPSON, Ph.D., M.D., Professor of Anatomy.

ROBERT O. MOODY, B.S., M.D., Professor of Anatomy, Emeritus.

WILLIAM R. LYONS, Ph.D., Associate Professor of Anatomy.

ALEXEI A. KONEFF, M.D., Assistant Professor of Anatomy and Lecturer in Histological Technique.

WILLIAM O. REINHARDT, A.B., M.D., Assistant Professor of Anatomy.

BERTRAM FEINSTEIN, M.D., Instructor in Anatomy.

ROBERT M. JAMESON, M.D. (Toronto), D.T.M. (McGill), Instructor in Anatomy.

C. WILLET ASLING, M.D., Lecturer in Anatomy.

DOUGLAS G. CAMPBELL, M.D., Lecturer in Neuroanatomy.

*Letters and Science List.*—All undergraduate courses in anatomy are included in the Letters and Science List of Courses. For further information concerning this list, see page 82.

## UPPER DIVISION COURSES

## 101. Histology and Microscopic Organology. (6) I.

Miss SIMPSON (in charge), Mr. EVANS, Mr. KONEFF, Mr. LYONS

Three laboratory and 3 lecture periods a week. Prescribed for students in the first year of the Medical School. Prerequisite: chemistry, physics, and elementary biology or zoölogy and either embryology or physiology, preferably embryology. Enrollment limited.

## 102. General Human Anatomy. (3) II.

Mr. ASLING

Lectures and laboratory. Prerequisite: Zoölogy 1A or Physiology 1A, 1C. Enrollment limited to 200.

Demonstration and laboratory study of prepared human dissections, models and microscopic slides. Not open to freshmen or to premedical or pre dental students.

## 103. Neuroanatomy. (4) I.

Mr. CAMPBELL (in charge), Mr. FEINSTEIN

Lectures and laboratory. Enrollment limited to 12.

For certain nonmedical students only.

## 105. Systematic Human Anatomy. (5) I.

Mr. SAUNDERS (in charge), Mr. CAMPBELL,  
Mr. JAMESON, Mr. REINHARDT

Lectures. Prescribed for students in the first year of the Medical School. Enrollment limited to 72. Course 105X must be taken concurrently.

- 105x. Systematic Human Anatomy. Laboratory. (6) I.  
 Mr. SAUNDERS (in charge), Mr. CAMPBELL,  
 Mr. JAMESON, Mr. REINHARDT  
 Prescribed for students in the first year of the Medical School; must be  
 taken concurrently with course 105.
199. Special Study for Advanced Undergraduates. (1-5) I and II.  
 The STAFF (Mr. EVANS and Mr. SAUNDERS in charge)

## GRADUATE COURSES

Concerning conditions for admission to graduate courses, see page 156.

209. Human Embryology. Credit to be arranged. I and II. Mr. EVANS  
 Opportunity is offered for the study of specific problems in human em-  
 bryology. Open only to students familiar with vertebrate embryology.
210. Physiological Anatomy of Reproduction. (2) I and II. Mr. EVANS  
 Two hours weekly.  
 Informal conferences and demonstrations. Outside reading required.
211. Haematology. I and II. Miss SIMPSON  
 Credit to be arranged.
212. Dynamic Morphology. I and II. Mr. SAUNDERS  
 Hours and credit to be arranged.  
 Laboratory work, special reading, and informal conferences.
213. Original Investigation. I and II.  
 The STAFF (Mr. EVANS and Mr. SAUNDERS in charge)  
 Hours and credit to be arranged.  
 Students who are prepared to undertake research in the anatomical  
 sciences will be afforded facilities and encouragement by members of the  
 staff.
214. Anatomy for Physicians and Advanced Students. (1-8) I and II.  
 Mr. SAUNDERS and the STAFF  
 This course is offered in Berkeley and San Francisco.

## ANTHROPOLOGY

EDWARD W. GIFFORD, Professor of Anthropology and Director of the Anthropological Museum.

ROBERT H. LOWIE, Ph.D., Sc.D., Professor of Anthropology (Chairman of the Department).

RONALD L. OLSON, Ph.D., Professor of Anthropology.

A. L. KROEBER, Ph.D., Sc.D., Professor of Anthropology, Emeritus, and Director, Emeritus, of the Anthropological Museum.

THEODORE D. MCCOWN, Ph.D., Associate Professor of Anthropology and Associate Curator of Physical Anthropology.

DAVID G. MANDELBAUM, Ph.D., Associate Professor of Anthropology.

ROBERT F. HEIZER, Ph.D., Assistant Professor of Anthropology and Assistant Curator of American Archaeology.

- 
- GEORGE A. PETTIT, Ph.D., Lecturer in Anthropology.
  - H. F. LUTZ, Ph.D., D.D., Associate Curator of Near Eastern Archaeology and Professor of Egyptology and Assyriology.
  - LILA M. O'NEALE, Ph.D., Associate Curator of Textiles and Professor of Decorative Art.
  - H. R. W. SMITH, Ph.D., Associate Curator of Classical Archaeology and Professor of Latin and Classical Archaeology.
  - WINFIELD S. WELLINGTON, M.A., Gr. Arch., Associate Curator of Art, Director of the Art Gallery, and Associate Professor of Decorative Art.

*Letters and Science List.*—All undergraduate courses in anthropology are included in the Letters and Science List of Courses. For further information concerning this list, see page 82.

*Departmental Major Adviser:* Mr. T. D. McCOWN.

*Preparation for the Major.*—Required: Anthropology 1, 2A-2B (10). Recommended: History 4A-4B; Near Eastern Languages 13A-13B, 25A-25B; Oriental Languages 42. On the basis of the student's record in the lower division, the department will decide whether he will be permitted to make anthropology his major.

*The Major.*—Required: Anthropology 105, 153; either 181-182 or 101A-101B; and other courses aggregating 12 upper division units in anthropology; with substitution permitted among these 12, on approval by the department of some definite plan, up to 6 units in allied subjects, as suggested by the following list of courses: Anatomy 102; Classics 193, 194, 197; Geography 121, 122; German 125; Oriental Languages 172A; Paleontology 113; Philosophy 147; Public Health 163A; Near Eastern Languages 102A-102B; Social Institutions 101A-101B; Zoölogy 114. A comprehensive subject examination is required at the close of the senior year.

Students who fail to maintain a satisfactory scholarship average may be dismissed from the major at any time.

## LOWER DIVISION COURSES

1. General Anthropology: Physical and Biological Factors. (4) I and II.

Mr. HEIZER, Mr. McCOWN

Human biology in terms of human evolution, fossil man, races, race differences, and problems.

2A-2B. General Anthropology: Cultural Factors. (3-3) Yr.

Mr. McCOWN, Mr. LOWIE, Mr. MANDELBAUM, Mr. GIFFORD

2A. Prehistory and cultural growth. I. Mr. Lowie, Mr. McCOWN.

2B. Cultural patterns and dynamics. II. Mr. Mandelbaum, Mr. Gifford.

UPPER DIVISION COURSES

General prerequisite: courses 1, 2A-2B, or junior standing.

- \*101A-101B. Ethnography of the World. (3-3) Yr. MR. LOWIE
102. Chapters in Culture History. (3) II. MR. LOWIE  
The topics considered will include economic life, primitive literature and language.
105. The American Indians. (3) I. MR. HEIZER  
Development, spread, and attainments of culture.
106. Archaeology of North America. (3) II. MR. HEIZER  
Prehistory of North American Indians; prehistoric culture areas; relations with historic Indians.
111. Prehistory. (3) II. MR. McCOWN  
Prerequisite: course 2A.  
Origin, development, and distribution in space and time of the prehistoric cultures of the Old World.
- \*112. Protohistoric Ethnography of Europe. (3) I. MR. McCOWN  
Manners and customs; social and economic organization; art and religion of the prehistoric and protohistoric peoples of Europe.
- \*115. Peoples of the Philippines and Indonesia. (3) I. MR. GIFFORD  
Geography, races, populations, cultures, and development of the Philippines, as part of the larger Indonesian sphere of world history.
- 118A-118B. The Nature of Culture. (3-3) Yr. MR. MANDELBAUM  
118A: The general structure and basic processes of cultural behavior; illustrative materials from primitive societies and modern civilizations.  
118B: The dynamics of cultural life; analysis of life history materials and contemporary events.
- \*123. Indians of the Southwest. (3) I. MR. GIFFORD  
Prehistory: the ancient inhabitants, Basket Makers, Pueblos, and related peoples. Archaeological methods employed. The modern tribes and their relations to the early inhabitants. Connections of the Southwest with Mexico and other places.
- \*124. Primitive Religion. (3) II. MR. MANDELBAUM  
Comparative survey of religion and magic.
125. Comparative Society. (3) I. MR. OLSON  
The development of human society, with emphasis on the growth of modern institutions out of primitive kinship, social, and territorial units.
126. Invention and Technology. (3) I. MR. GIFFORD  
Psychology of invention; origin, history, and spread of fundamental inventions; illustrative material from the Museum of Anthropology.

\* Not to be given, 1947-1948.

- \*137. Indians of California. (3) I. Mr. HEIZER  
Origin and relationships of the natives; prehistoric remains; shell mounds. Tribal divisions; arts; customs; industries; beliefs.
- \*139. Africa. (3) I. Mr. HEIZER  
Races; Egyptian, Mediterranean, and Negro cultures, past and present; native achievement; Asiatic relations and influences.
141. Mexico and Central America. (3) I. Mr. OLSON  
Achievements of the Aztecs, Mayas, and their predecessors.
142. Peoples of the Andes. (3) II. Mr. OLSON  
Culture of the Incas of Peru and of other Andean peoples.
- \*143. Peoples of India. (3) I. Mr. MANDELBAUM  
A survey of the principal culture groups of India. Problems of the primitive tribes, village life, religious affiliations, caste structure, and their relation to the contemporary scene in India.
147. Peoples and Cultures of the Pacific Islands. (3) II. Mr. GIFFORD  
Oceanic races and cultures; indigenous origins; Asiatic relations and influences.
- 150A-150B. Physical Anthropology. (3-3) Yr. Mr. McCOWN  
Lecture and laboratory. Prerequisite: course 1.  
Evolutionary development of man; anthropometry; analysis of data; criteria of race. Enrollment limited to 12; primarily for major students in anthropology and the medical sciences.
- \*152. Fossil Man. (3) II. Mr. McCOWN  
Prerequisite: course 1 or Paleontology 1.  
Origin and relationships of the extinct forms of mankind.
153. Living Races of Man. (3) I. Mr. McCOWN  
Physical characters, distribution, and relationships of the living races of mankind.
- \*160. Contemporary Civilization. (3) I. Mr. LOWIE  
An application of anthropological principles of analysis and interpretation to contemporary civilization.
181. Europe and the Caucasus. (3) I. Mr. LOWIE  
The simpler peoples and typical samples of higher cultures will be considered from an anthropological point of view.
182. Asia. (3) II. Mr. LOWIE  
Emphasis will be placed upon the simpler cultures.
195. Field Course in Archaeological Method. (1) II. Mr. HEIZER  
Lectures, museum preparation, and week-end excavations.  
Enrollment limited to 18 students, admitted by consent of instructor.
196. Archaeological Method. (2) I. Mr. HEIZER  
Prerequisite: course 195 and the permission of the instructor. Enrollment limited to 20 students.  
Museum preparation, advanced field investigation, and guidance in preparation of museum material for publication.

\* Not to be given, 1947-1948.



198. Preceptorial and Reading Course. (3) I and II.

Mr. MANDELBAUM, Mr. HEIZER

Systematic readings in the history of anthropology and in significant modern developments within the field.

Open to seniors. With the permission of the instructor, may be repeated without duplication of credit.

199. Special Study for Advanced Undergraduates. (2-3) I and II.

Mr. OLSON

## PROFESSIONAL COURSES

These courses are intended as a nucleus of study relating to museums. Students wishing to prepare for general museum work should supplement these with such courses as Paleontology 113, Zoölogy 113, and Architecture 14.

489. Museums and Their Work. (3) I.

Mr. GIFFORD

Lectures and field trips.

Types of museums, buildings, administration, publicity, exhibition, school service, adult education and organized group service, curatorial work, lectures, and demonstrations.

490. Museum Methods. (2) II.

Mr. GIFFORD

Prerequisite: course 489. Limited to five students.

Practical exercises in classification, cataloguing, care, restoration, installation, labeling, and display of specimens; exhibition devices, models, loan collections, research collections; docentry practice.

## GRADUATE COURSES

206. Proseminar. (2) I and II.

Mr. MCCOWN, Mr. MANDELBAUM

Introduction to research. For new graduate students in anthropology.

- 207A-207B. History and Theory of Anthropology. (2-2) Yr.

Mr. LOWIE

Prerequisite: course 206.

- 209A-209B. Culture Problems of Eurasia and North America. (2-2) Yr.

Prerequisite: course 206.

Mr. OLSON

210. Cultural Relationships between North and South America. (2) II.

Prerequisite: course 206.

Mr. HEIZER

211. Problems in the Culture History of Europe and the Mediterranean. (2) II.

Prerequisite: course 206.

Mr. MCCOWN

- 218H. Culture and Personality: the Psychological Approaches. (2) I.

Mr. MANDELBAUM

244. Research. (2-6) I and II.

The STAFF

279. Technological Analysis of Primitive Arts and Crafts. (2) I.

Miss O'NEALE

Designed primarily for students offering technology as a field of study. An introduction to various methods of working materials. Discussions, readings, analysis of museum and specimens.

## MUSEUM OF ANTHROPOLOGY

The Museum of Anthropology, organized in 1901 with the Phoebe A. Hearst collections as nucleus, is in storage in the temporary Anthropology Museum building, although special exhibits are occasionally arranged in connection with courses of instruction. The contents include 66,000 inventoried artifacts from native California, 42,000 from other parts of the New World, 33,000 from the Eastern Hemisphere, 6,000 skeletal items, 13,000 negatives. The collections are available for study by scholars and advanced graduate students. Those interested in the Museum's facilities may address the Curator, Mr. E. W. Gifford.

## ARCHITECTURE

- <sup>1</sup> MICHAEL B. GOODMAN, M.A., Professor of Architecture.  
 RAYMOND W. JEANS, M.A., Professor of Architecture.  
 STAFFORD L. JORY, Gr.Arch., Professor of Architecture.  
 HOWARD MOÏSE, B.S., M.Arch., Professor of Architecture.  
 WARREN C. PERRY, B.S., F.A.I.A., Professor of Architecture (Chairman of the Department).  
 WILLIAM C. HAYS, B.S., F.A.I.A., Professor of Architecture, Emeritus.  
 JOHN LYON REID, M.A., Associate Professor of Architecture.
- <sup>1</sup> JACQUES SCHNIER, M.A., Assistant Professor of Sculptural Design.  
 HAROLD A. STUMP, A.B., Assistant Professor of Architecture.
- 
- THOMAS F. CHACE, B.S., Lecturer in Architecture.  
 JAMES GAYNER, Lecturer in Architecture.  
 RAYMOND PUCCINELLI, Lecturer in Sculptural Design.  
 WILLIAM M. RICE, A.B., Lecturer in Water Color.  
 L. DEMING TILTON, B.S., Lecturer in Architecture and Political Science.

*Letters and Science List.*—Courses 5A, 5B, 5C, 5D, 6A, 6B, 6C, 6D, 14, 113, 114, 117, and 120A–120B are included in the Letters and Science List of Courses. For regulations governing this list, see page 82.

## LOWER DIVISION COURSES

The full course in History of Architecture (5A, 5B, 5C) is covered in three semesters, the parts being given in rotation in that order; no part is pre-requisite to another. Courses 5A, 5B, 5C are required of all students enrolled in the curriculum in architecture, and must be accompanied by courses 6A, 6B, 6C; enrollment in the last-named courses is limited to students following the curriculum.

Credit in courses 12, 13, 14, 112, 113, 114, 115 will be allowed up to a total of 4 units each, but in no semester will more than 2 units be allowed in any one of these courses. (Permission of instructor must be obtained to take more than 1 unit in any given semester.)

Students with junior standing will be allowed, under exceptional circumstances only, to take the following courses concurrently, if granted permission by the faculty: courses 1 and 2; 1 and 3; 3 and 4.

1. Architectural Drawing. (3) I and II. Mr. STUMP, \_\_\_\_\_  
 Six hours weekly. Lecture and drafting practice.  
 Study of architectural forms and composition.
2. Architectural Drawing: Orthographic Projection. (3) I and II. Mr. STUMP, \_\_\_\_\_  
 Six hours weekly. Lecture and drafting practice. Prerequisite: solid geometry.
3. Architectural Drawing: Shades and Shadows; Perspective. (3) I and II. Mr. STUMP, \_\_\_\_\_  
 Six hours weekly. Lecture and drafting practice. Prerequisite: course 2.

<sup>1</sup> In residence fall semester only, 1947–1948.

4. Elementary Design and Theory. (4) I and II. Mr. JEANS, Mr. MOÏSE  
Eight hours weekly. Prerequisite: courses 1, 2, and 3.
- 5A. Architecture of Ancient and Classic Times. (2) I. Mr. JORY
- 5B. Architecture of the Dark Ages and the Middle Ages. (2) II. Mr. MOÏSE
- \*5C. Architecture of the Renaissance. (2) I. Mr. PERRY
- 5D. Architecture and Allied Arts of Modern Times. (2) II. Mr. REID  
The beginnings and developments of contemporary forms of expression,  
with an examination of the social, economic, technological, and artistic  
influences affecting them.
- 6A. Classwork in Ancient and Classic Architecture. (1) I.  
Mr. JORY, Mr. PERRY, Mr. REID, Mr. MOÏSE
- 6B. Classwork in Medieval Architecture. (1) II.  
Mr. MOÏSE, Mr. PERRY, Mr. REID, Mr. JORY
- \*6C. Classwork in Renaissance Architecture. (1) I.  
Mr. PERRY, Mr. REID, Mr. JORY, Mr. MOÏSE
- 6D. Classwork in Modern Architecture and the Allied Arts. (1) II. Mr. REID
12. Rendering in Water Color. (1) I and II. Mr. GOODMAN, Mr. RICE  
Three hours weekly. Two sections to be given.  
Prerequisite: Art 2A or equivalent.
13. Rendering in Pen and Ink. (1) I and II. Mr. JEANS, ———  
Three hours weekly. Two sections to be given.  
Prerequisite: Art 2A or equivalent.
14. Elements of Sculpture. (2) I and II. Mr. SCHNIER, Mr. PUCCINELLI  
Six hours weekly. Three sections.
18. Introduction to Architecture. (1) I and II. Mr. PERRY, Mr. MOÏSE  
Lectures for beginning students in architecture; drafting practice.  
Prerequisite: Architecture 1 or equivalent.

UPPER DIVISION COURSES

The general prerequisite for upper division courses is junior standing.

- 101A-101B. Design and Theory: Junior Problems. (5-5) Yr. Beginning each  
semester. Mr. GOODMAN, Mr. JORY  
Prerequisite: courses 1, 2, 3, and 4.  
Ten hours weekly.
- 102A-102B. Design and Theory: Senior Problems. (5-5) Yr. Beginning each  
semester. Mr. MOÏSE, Mr. REID  
Prerequisite: course 101A-101B.  
Ten hours weekly.
- †102C-102D. Design and Theory. (5-5) Yr. Beginning each semester.  
Prerequisite: course 101A-101B. Mr. MOÏSE, Mr. REID  
Ten hours weekly.
- 108A-108B. Architectural Mechanics. (3-3) Yr. Mr. GAYNER  
Prerequisite: Physics 4A-4B. Lectures.

\* Not to be given, 1947-1948.

† To be given if a sufficient number of students enroll.

110. The House. (1) I and II. Mr. GOODMAN, Mr. JEANS
112. Advanced Water-Color Rendering. (1) I and II. Mr. JOBY  
Prerequisite: course 12 (3 units).  
Three hours weekly.
113. Sculptural Design. (2) I and II. Mr. SCHNIER  
Prerequisite: course 14 (2 semesters), or course 114 (1 semester).  
Six hours weekly.
114. The Human Figure in Sculpture. (2) I and II. Mr. SCHNIER  
Prerequisite: course 14 (2 semesters) or course 1 and 14 (1 semester).  
Six hours weekly.
115. Rendering in Pencil. (1) I and II. Mr. REID, Mr. JOBY  
Prerequisite: Architecture 13 (2 units).  
Three hours weekly.
117. Introduction to Housing and Planning. (3) I and II. Mr. MOÏSE  
Occasional seminars and field trips as arranged.  
Prerequisite: senior standing.
- 120A-120B. Introduction to City and Regional Planning. (1-1) Yr. Mr. TILTON  
Prerequisite: junior standing.  
NOTE.--120A is not prerequisite to 120B.
- 121A-121B. Principles of Community Design. (2-2) Yr. Mr. TILTON  
Two lectures and one section meeting weekly.  
Prerequisite: course 120A-120B, 117, or equivalent preparation in Landscape Design or Civil Engineering.  
The needs of the modern community and the problems of design involved in typical city planning projects; with required reading, field trips, reports, and simple design problems.  
121A is not prerequisite to 121B.
- †199. Special Study for Advanced Undergraduates. (1-5) I and II.  
By arrangement only. The STAFF (Mr. PERRY in charge)

## GRADUATE COURSES

Concerning conditions for admission to graduate courses, see page 156.

200. Comprehensive Graduate Problem. (5) I. Mr. JEANS  
Twelve hours weekly. A semester problem, including all phases of design, structure, and construction details. Given only in conjunction with course 207.
- 201A. Design and Theory: Graduate Sketch Problems. (1) I and II. Mr. PERRY, Mr. JOBY  
Prerequisite: course 102A-102B.
- 201B. Design and Theory: Graduate Problems. (7) I and II. Mr. PERRY  
Prerequisite: course 101A-101B, and course 102A-102B with at least a grade of B.
- †202. Design and Theory: Advanced Problems and Research. (6) I and II. Mr. PERRY  
Prerequisite: courses 200, 201A-201B, 207.

† To be given if a sufficient number of students enroll.

207. Architectural Engineering. (3) I. Mr. CHACE  
 This course is coördinated with course 200 and must be taken with it.
208. Seminar in Architecture. (3) II. Mr. PERRY  
 For candidates for the degree of Master of Arts only.
209. Seminar in Professional Practice. (2) II. Mr. JEANS  
 Prerequisite: courses 200, 207, and graduate standing.  
 A course in specification writing, professional practice and business relations.
- †298. Special Study for Graduate Students. (2-4) I and II.  
 By arrangement only. The STAFF (Mr. PERRY in charge)

REQUIRED COURSES IN OTHER DEPARTMENTS

- Laboratory Physics. (Physics 2A-2B, 3A-3B.)
- Introduction to Mathematical Analysis. (Mathematics 3A, 3B, 4A.)
- Form. (Art 2A.)
- Strength of Materials. (Engineering 18A, 18B; Civil Engineering 108F.)
- Elements of Framed Structures. (Civil Engineering 112, 107E, 107F.)
- Plane Surveying. (Engineering 21.)

† To be given if a sufficient number of students enroll.

## ART

JOHN HALEY, Professor of Art.

<sup>2</sup>ERLE LOBAN, Professor of Art.

EUGEN NEUHAUS, Ph.D. (hon.c.), Professor of Art.

STEPHEN C. PEPPER, Ph.D., Professor of Philosophy and Aesthetics (Chairman of the Department of Art).

WORTH RYDER, Professor of Art.

OLIVER M. WASHBURN, A.B., Professor of the History of Art, Emeritus.

RAY S. BOYNTON, Associate Professor of Art.

WALTER A. HORN, Ph.D., Associate Professor of Art.

\*MARGARET P. O'HAGAN, M.A., Associate Professor of Art.

GLENN WESSELS, M.A., Associate Professor of Art.

DARRELL A. AMYX, Ph.D., Assistant Professor of Art.

JAMES MCCRAY, M.A., Assistant Professor of Art.

CHIURA OBATA, Assistant Professor of Art.

OTTO J. MAENCHEN, Ph.D., Lecturer in Art.

HENRY SCHAEFER-SIMMERN, Lecturer in Art and Education.

*Letters and Science List.*—All undergraduate courses in art are included in the Letters and Science List of Courses. For further information concerning this list, see page 82.

*Departmental Major Advisers:* Mr. WESSELS, Mr. LORAN.

*Preparation for the Major.*—Six units chosen from courses 1A, 1B, 1C; and courses 2A-2B, 3A-3B.

*The Major.*—A student may elect a major in Appreciation and Practice of Art or History of Art.

The department will recommend for graduation only students with at least a C average. Students who fail to maintain at least a C average may be asked to drop the major at any time.

I. Appreciation and Practice of Art. Required: 12 units of Group A courses under three different artists, 2 units of Group B, 4 units of Group C, and 6 units chosen from Group A, B, or C.

II. History of Art. Required: 12 units of Group C and 12 units of any courses in Group A, B, or C.

*Assignment to Sections.*—Inasmuch as space and facilities for technical courses are limited, students are advised to enroll in all Group A courses during the days of registration to be announced on placards on bulletin boards. Preference is given to first applicants.

*Transfer Students.*—Transfer students who have fulfilled unit requirements elsewhere are: (a) required to take an examination in order to qualify for Group A courses, and (b) are requested to present (if possible) examples of their work so as to assist the Department in reaching a judgment as to their capacity to profit from immediate enrollment in these courses.

<sup>2</sup> In residence spring semester only, 1947-1948.

\* Absent on leave, 1947-1948.

Students who qualify will sometimes be advised to take course 199 in order to acquaint themselves with the methods expected for this department's advanced courses.

LOWER DIVISION COURSES

- 1A. Art of the Ancient Mediterranean World. (3) II. MR. AMYX  
From the Stone Age to the end of the Roman Empire.  
Prerequisite for all upper division courses in ancient art.
- 1B. History of Medieval, Renaissance, and Modern Art—Emphasis on Painting. (3) II. MR. RYDER  
Lectures and section meetings to be arranged monthly.
- 1C. History of Medieval, Renaissance, and Modern Art—Emphasis on Architecture and Sculpture. (3) I. MR. HORN  
Lectures and weekly sections to be arranged.
- 2A-2B. Form. (2-2) Yr. Beginning each semester.  
MR. BOYNTON, MR. HALEY, MR. LORAN, MR. MCCRAY,  
MR. RYDER, MR. WESSELS
- 3A-3B. Form and Color. (2-2) Yr. Beginning each semester.  
MR. BOYNTON, MR. LORAN, MR. HALEY,  
MR. MCCRAY, MR. WESSELS  
Prerequisite: course 2A-2B.
12. Freehand Basic Brushwork in "Sumi" Painting. (2) I and II. MR. OBATA
- \*19. The Appreciation of Art. (1) I. MR. NEUHAUS

UPPER DIVISION COURSES

Group A: Appreciation and Practice

Prerequisite: courses 2A-2B, 3A-3B.

The various courses in Group A differ in content, use of materials, type of subject matter, etc., depending upon the individual aims of the artists in charge. All courses may be repeated indefinitely without duplication of credit.

The subject matter will range from still life and landscape to life classes, figure and mural compositions.

The materials used will range from charcoal and *sumi* to water color, gouache, egg tempera, oil, mixed technique and fresco painting.

101. Advanced Drawing and Painting. (2) I and II. MR. NEUHAUS  
Representational composition based upon out-of-door subjects in any medium.
102. Advanced Drawing and Painting. (2) I. MR. RYDER  
Composition with the human figure as a basic motif. Drawings in charcoal and pencil. Paintings in tempera, gouache, and wax.
103. Advanced Drawing and Painting. (2) I and II. MR. BOYNTON  
Water color, oil, pastel, and black and white media, using figure and costume models.
104. Advanced Drawing and Painting. (2) I and II. MR. HALEY

\* Not to be given, 1947-1948.



105. Advanced Drawing and Painting. (2) II. Mr. LORAN
106. Advanced Drawing and Painting. (2) I and II. Mr. MCCRAY
- \*110. Advanced Drawing and Painting. (2) I. Mrs. O'HAGAN  
Plastic organization of the picture, using still life and the human figure as models.
111. Advanced Drawing and Painting. (2) I and II. Mr. SCHAEFER-SIMMERN
112. Advanced Drawing and Painting. (2) I and II. Mr. OBATA
113. Advanced Drawing and Painting. (2) I and II. Mr. WESSELS

#### Group B: Theory and Criticism

107. The Human Figure in Art, Past and Present. (2) II. Mr. RYDER  
Prerequisite: course 3A-3B.  
The use of the human figure in art, past and present. Problems of light, color and space involving the figure and its environment.
168. Community Art. (2) I. Mr. NEUHAUS  
Prerequisite: upper division standing.
173. The Architecture of Paintings. (2) I and II. Mr. RYDER  
Prerequisite: course 2A-2B.  
Enrollment limited to 50 students.
- Aesthetics. (Philosophy 136A-136B.) (3-3) Yr. Mr. PEPPER  
Prerequisite: 6 units of philosophy (at the discretion of the instructor these may be waived for students majoring in literature and the fine arts).

#### Group C: History of Art and Archaeology

153. Aegean Art. (2) I. Mr. AMYX  
The art of Crete and Greece in the Bronze Age, with attention to connections with neighboring cultures.
- 154A-154B. Greek Art. (3-3) Yr. Mr. AMYX  
From the Geometric Period to the beginning of the Roman Empire.  
154A. From 1100 to 400 B.C.  
154B. From 400 to 30 B.C.  
Either half of the course may be taken separately.
159. Roman Art. (3) II. Mr. AMYX  
The art of Italy and the Roman Empire, from the Early Iron Age to the period of Constantine.
169. History of American Art. (3) I. Mr. NEUHAUS  
Prerequisite: upper division standing.
- 175A-175B. Medieval Art. (3-3) Yr. Mr. HORN  
175A. Early Christian and Byzantine art.  
175B. Medieval art.
176. Renaissance Art. (3) II. Mr. HORN
179. Proseminar in Art History. (2) II. Mr. HORN

\* Not to be given, 1947-1948.

## SPECIAL STUDY COURSE

## 199. Special Study for Advanced Undergraduates. (1-4) I and II.

The STAFF (Mr. RYDER in charge)

Prerequisite: senior standing in art, with at least a B average in the major, and approval of the Department. Credit gained in course 199 will be accepted in fulfillment of requirements in Groups A, B, or C.

## GRADUATE COURSES

Concerning conditions for admission to graduate courses, see page 156.

## 254. Seminar in Ancient Art. (2) I.

Mr. AMYX

Concentration on special topics for advanced study, with reports by students.

## 269A-269B. Seminar in Art. (3-3) Yr. The STAFF (Mr. NEUHAUS in charge)

Two hours weekly, to be arranged.

Prerequisite: at least a B average in the undergraduate major in art. Applicants must also demonstrate ability in composition in an examination which will be set at the opening of the semester. If necessary, 269B may precede 269A.

## 285. Seminar in the History of Art. (2) I.

Mr. HORN

## 298. Special Study for Graduate Students. (2-6) I and II.

The STAFF (Mr. RYDER in charge)

Prerequisite: at least a B average in the upper division and graduate courses taken in the Department of Art. A student may not register with more than two instructors in any one semester for credit.

## UNIVERSITY ART GALLERY

The University Art Gallery was established in 1933 with funds contributed for the purpose by the Class of 1933, the Regents of the University, Albert M. Bender, and other generous friends and alumni of the University. Owing to limitations of space and facilities, the Gallery does not maintain a permanently installed exhibition, but presents from time to time temporarily installed exhibits covering various phases of art. The material comprising these exhibits is drawn either from University collections in storage, or borrowed from other institutions and organizations, or from private individuals. Those interested in the Gallery's activities may address the Director, Mr. Winfield S. Wellington.

## ASTRONOMY

STURLA EINARSSON, Ph.D., Professor of Astronomy and Director of the Students' Observatory (Chairman of the Department).

WILLIAM F. MEYER, Ph.D., Professor of Astronomy.

\*ROBERT J. TRUMPLER, Ph.D., Professor of Astronomy.

R. TRACY CRAWFORD, Ph.D., Professor of Astronomy and Director of the Students' Observatory, Emeritus.

ARMIN O. LEUSCHNER, Ph.D., Sc.D., LL.D., Professor of Astronomy and Director of the Students' Observatory, Emeritus.

LELAND E. CUNNINGHAM, Ph.D., Associate Professor of Astronomy:

LOUIS G. HENYEV, Ph.D., Assistant Professor of Astronomy.

HELEN PILLANS, M.S., Associate in Astronomy.

JOSEPH H. MOORE, Ph.D., Astronomer, Lick Observatory.

HAROLD F. WEAVER, Ph.D., Assistant Astronomer, Lick Observatory.

*Letters and Science List.*—All undergraduate courses in astronomy except courses 3, 11, and 114 are included in the Letters and Science List of Courses. For regulations governing this list, see page 82.

*Departmental Major Advisers:* Mr. WEAVER, Mr. EINARSSON.

*Preparation for the Major.*—Physics 4A-4B-4C or their equivalent; Mathematics 3A-3B, 4A-4B, or their equivalents; Astronomy 7A-7B; and a reading knowledge of French or German.

*The Major.*—Required: courses 104A-104B, 117A-117B, and 12 more units from the following courses: 107, 108, 115, 199; Mathematics 110A-110B or 119A-119B, 120A; Physics 104A, 105A-105B, 108B, 115, 121. Students intending to take graduate work in astronomy should complete as many as possible of these courses in the upper division.

*Honors in Astronomy.*—Honors are recommended on the basis of excellent work in the major.

For a teaching major in mathematics and astronomy, or physics and astronomy, see ANNOUNCEMENT OF THE SCHOOL OF EDUCATION.

## LOWER DIVISION COURSES

1A. Introduction to Astronomy. (3) I and II. Mr. MEYER, Mr. EINARSSON  
Three lectures and one section meeting weekly.  
General facts and principles of the science of astronomy.

1B. Continuation of course 1A. (3) II. Mr. EINARSSON  
Prerequisite: course 1A.

†2. Practice in Observing. (2) I and II.  
One lecture and three observing hours to be arranged.  
Prerequisite: course 1A and plane trigonometry.  
Elementary work with the equatorial telescope, transit, and sextant; elementary determinations of time, latitude, and longitude; constellation study.

\* Absent on leave, 1947-1948.

† To be given if a sufficient number of students enroll.

3. Surveyor's Course in Elementary Practical Astronomy. (1) I and II.  
Lectures and laboratory. Mr. EINARSSON  
Prerequisite: Engineering 1A.  
Practical astronomy as applied to observations, with the surveyor's transit for determination of azimuth, latitude, and time.
- 7A-7B. General Astronomy. (3-3) Yr. Mr. CUNNINGHAM, Mr. MEYER  
Three lectures weekly, and occasional laboratory and observing hours.  
Prerequisite: Mathematics 3A (may be taken concurrently).  
The facts and principles underlying all branches of astronomy. Intended for majors in the natural sciences and engineering. Required in preparation for a major in astronomy.
10. Nautical Astronomy. (3) I and II. Mr. MEYER  
Prerequisite: plane trigonometry.  
Piloting; the sailings; the line of position.
11. Nautical Astronomy. (2) II. Mr. EINARSSON  
Prerequisite: course 10. Enrollment limited to sixteen students.  
Sextant observation of celestial objects for determination of position; compensation of magnetic compass; elements of gyrocompass.

## UPPER DIVISION COURSES

A working knowledge of differential and integral calculus is prerequisite to courses 107 and 108.

- 104A-104B. Practical Astronomy. (3-3) Yr. ———  
Prerequisite: Mathematics 3A-3B, Physics 1A-1B or 4A-4B, and either course 1A-1B or 7A-7B. Courses 107 and 108 are recommended and may be taken concurrently with 104A.
107. Method of Least Squares. (2) I. Mr. EINARSSON  
Adjustment of observations with applications to astronomy, plane and geodetic surveying.
108. Computing. (3) I and II. Mr. CUNNINGHAM, Mr. MEYER  
Theory and practice of computing and reduction of observations. Interpolation, numerical differentiation and integration. Limited to twelve students.
114. Practical Astronomy for Engineers. (3) I. Mr. EINARSSON  
Lectures, computing, and two hours of astronomical observation.  
Prerequisite: Astronomy 3 and plane surveying (Engineering 1A-1B).  
Precise determination of latitude, time and longitude.
115. Introduction to Theoretical Astronomy. (3) II. Mr. CUNNINGHAM  
Prerequisite: Astronomy 108.  
Elementary theory of orbits, with emphasis on practical computation.
- 117A-117B. Introduction to Astrophysics. (3-3) Yr. Mr. HENYEV  
A laboratory period will occasionally be substituted by appointment for one of the regular periods.  
Prerequisite: Astronomy 7A-7B or consent of instructor.
199. Special Study for Advanced Undergraduates. (1-3) I and II.  
The STAFF (Mr. MEYER in charge)

## GRADUATE COURSES

Concerning conditions for admission to graduate courses, see page 156.

- 215A\*-215B. Theoretical Astronomy. (3-3) Yr. Mr. CUNNINGHAM  
Prerequisite: Astronomy 115.  
Various orbit methods. Special perturbations. Introduction to general perturbations and celestial mechanics.
- 217A-217B. Astrophysics. (3-3) Yr. Mr. HENYEV  
Prerequisite: Astronomy 117A-117B.
- \*218A-218B. Statistical Astronomy. (3-3) Yr. Mr. TRUMPLER
- \*225A-225B. Advanced Theoretical Astronomy. (3-3) Yr. Mr. CUNNINGHAM
- \*227A-227B. Advanced Astrophysics. (3-3) Yr. Mr. HENYEV  
Detailed development of certain more advanced problems of astrophysics. Designed for graduate students whose special field is astrophysics.
299. Advanced Study and Research. (1-4) I and II.  
The STAFF (Mr. EINARSSON in charge)

## LICK OBSERVATORY

The Lick Observatory at Mount Hamilton forms a separate department of the University offering facilities for advanced astronomical work. The department is open to graduate students under regulations prescribed by the Regents. The degrees of Master of Arts and Doctor of Philosophy are offered to students who have fulfilled the required conditions. (See ANNOUNCEMENT OF THE GRADUATE DIVISION, NORTHERN SECTION.) For information relating to graduate work at the Observatory, intending students should address the Dean of the Graduate Division at Berkeley, or the Director of the Lick Observatory, Mount Hamilton, Santa Clara County, California.

\* Not to be given, 1947-1948.

## BACTERIOLOGY

A. P. KRUEGER, A.B., M.D., Professor of Bacteriology (Chairman of the Department).

MICHAEL DOUDOROFF, Ph.D., Associate Professor of Bacteriology.

SANFORD S. ELBERG, Ph.D., Associate Professor of Bacteriology.

ROGER Y. STANIER, Ph.D., Assistant Professor of Bacteriology.

JACOB FONG, Ph.D., Instructor in Bacteriology.

HELEN C. JACKINS, B.S., Associate in Bacteriology.

ERNST LOEWENSTEIN, M.D., Lecturer in Bacteriology.

HORACE A. BARKER, Ph.D., Professor of Soil Microbiology.

REESE H. VAUGHN, Ph.D., Associate Professor of Food Technology.

*Letters and Science List.*—All undergraduate courses in bacteriology (except 199 at Davis) are included in the Letters and Science List of Courses. For regulations governing this list, see page 82.

*Departmental Major Adviser:* Mr. J. FONG.

*Preparation for the Major.*—Required: course 1; Chemistry 1A, 1B, 5, and 8; Zoölogy 1A; Botany 1 or 12; Physics 2A, 2B, 3A, 3B. Recommended: Chemistry 9; Physiology 1A, 1C; Public Health 5A, 5B; elementary courses in French or German; Mathematics 3A, 3B, 4A, 4B.

*The Major.*—All courses required for the major must be completed with a minimum average grade of C. Required: courses 101, 199; Biochemistry 103, 104; and at least 12 units chosen from the following list with the approval of the department: (In special cases, substitutions may be permitted.) Course 103; Botany 101, 102, 107; Food Technology 116; Chemistry 100, 102, 109; Biochemistry 105A, 105B, 107; Zoölogy 110, 111, 140; Anatomy 101; Entomology 117, 126; Physiology 100A, 100B; Public Health 151.

*Honor Students.*—Honors are recommended for candidates who maintain a grade-point average of 2.5 or higher in at least the minimum for the major in bacteriology and in other biological subjects.

## LOWER DIVISION COURSES

## 1. General Introductory Bacteriology and Microbiology. (5) II.

Lectures and laboratory.

Mr. DOUDOROFF, Miss JACKINS

Prerequisites: Chemistry 1A and 8; a semester course in botany, zoölogy, or physiology (Botany 1 or 12; Zoölogy 1A or 10; Physiology 1A) with at least a grade of C in each course.

A general introduction to microbiology required of students majoring in bacteriology and other students intending to do further work in microbiology.

## 2. General Bacteriology. (4) II.

Mr. KRUEGER, Mr. DOUDOROFF, Mr. ELBERG,

Mr. STANIER, Mr. FONG, Miss JACKINS

Lectures and laboratory.

Prerequisite: Chemistry 1A.

Designed especially for students who are not majoring in bacteriology.

## 4. General Bacteriology (Laboratory). (2) II.

Mr. KRUEGER, Mr. DOUDOROFF, Mr. ELBERG,  
Mr. FONG, Mr. STANIER, Miss JACKINS

Prerequisite: Chemistry 1A and permission of instructor.

Laboratory instruction in the general principles of bacteriology. (For students who have had an acceptable course in bacteriology without laboratory.)

## UPPER DIVISION COURSES

A grade of C or higher in the preceding courses in this department is required for admission to the upper division courses.

## 101. Advanced Bacteriology. (7) I.

Mr. KRUEGER, Mr. ELBERG, Miss JACKINS, Mr. FONG

Enrollment limited to seventy-two students who will be selected on the basis of scholastic standing, major field, and year of residence.

Prerequisite: Bacteriology 1 or 2.

Lectures, demonstrations, and laboratory.

## 103. Microbial Metabolism. (2) II.

Mr. BARKER, Mr. DOUDOROFF, Mr. STANIER

Prerequisite: courses 1 and 2, Biochemistry 103 or Botany 122.

## 105. Technical Microbiology. (3) I.

Mr. STANIER, Mr. VAUGHN

Prerequisite: Chemistry 1A-1B, 8; courses 1 or 2.

Utilization and control of bacteria, yeasts and molds in industrial processes such as brewing, vinegar production, and processing of antibiotics.

## 199. Special Study for Advanced Undergraduates. (2-4) I and II.

Mr. KRUEGER, Mr. DOUDOROFF, Mr. ELBERG,  
Mr. FONG, Mr. STANIER, Mr. VAUGHN

## GRADUATE COURSES

Concerning conditions for admission to graduate courses, see page 156.

201. Special Study and Research in Problems of Medical, General, or Technical Bacteriology, and Experimental and Comparative Pathology. I and II.  
Credit according to the work completed.

Mr. KRUEGER, Mr. BARKER, Mr. DOUDOROFF, Mr. ELBERG,  
Mr. FONG, Mr. STANIER

## 205. Seminar. (1) I and II.

Mr. KRUEGER, Mr. DOUDOROFF, Mr. ELBERG, Mr. STANIER

## BIOCHEMISTRY

## A Division of the Medical School

DAVID M. GREENBERG, Ph.D., Professor of Biochemistry (Chairman of the Division).

PAUL L. KIRK, Ph.D., Professor of Biochemistry.

\* EDWARD S. SUNDBSTROEM, M.D., Professor of Biochemistry.

FRANK W. ALLEN, Ph.D., Associate Professor of Biochemistry.

HAROLD TARVER, Ph.D., Assistant Professor of Biochemistry.

<sup>2</sup> HAMILTON H. ANDERSON, M.D., Professor of Pharmacology.

CHOH H. LI, Ph.D., Assistant Professor of Experimental Biology.

*Letters and Science List.*—All undergraduate courses in biochemistry are included in the Letters and Science List of Courses. For regulations governing this list, see page 82.

Alternate programs may be selected for the undergraduate major: Plan I, a program for general undergraduate students and Plan II, a program for students who intend later to become candidates for the degree of M.A. or Ph.D. in Biochemistry.

*Department Major Adviser:* Mr. FRANK W. ALLEN.

Plan I. The program for the general undergraduate is as follows:

*Preparation for the Major.*—Required: Chemistry 1A-1B, 5, and 8; Physics 2A-2B, 3A-3B; Physiology 1A, 1C or Zoölogy 1A-1B. Recommended: Chemistry 9, 107, 109; Bacteriology 1, 4; Botany 12.

*The Major.*—The major must include courses 103 (4), 104 (4), 110 (5), 112 (1), and the balance of the 24 units required for the major chosen in accordance with a plan approved by the departmental adviser.

Ordinarily, no student will be accepted as a major student in biochemistry who has not attained at least a C average in the required courses in chemistry, nor will he be permitted to continue as a major student in biochemistry unless he receives at least a C grade in courses 103 and 104 or 101M.

Plan II. The program for the undergraduate expecting to pursue graduate study in biochemistry is as follows:

*Preparation for the Major.*—Required: Chemistry 1A-1B, 5, 8, 9, and 109 or 110A-110B; Physics 2A-2B, 3A-3B; Mathematics 11A-11B or 3A-3B, 4A; Physiology 1A, 1C or Zoölogy 1A-1B. Recommended: Bacteriology 1 and 4; Botany 12; a reading knowledge of German; a course in statistics.

*The Major.*—The major consists of 24 units of upper division courses in biochemistry and allied subjects taken in accordance with a plan approved by the departmental adviser. Normally at least 20 units of the major must be in courses in biochemistry and must include courses 103 (4), 104 (4), 110 (5) and 112 (1). It is expected that a student pursuing Plan II will maintain a grade-point average of at least 2 in biochemistry courses.

\* Absent on leave, 1947-1948.

<sup>2</sup> In residence spring semester only, 1947-1948.



## UPPER DIVISION COURSES

## 101M. Medical Biochemistry. (8) II.

Mr. GREENBERG, Mr. ALLEN, Mr. TARVER, and Assistants

Prescribed for students in the first year of the Medical School to fulfill the requirements in Biochemistry.

Lectures on the physicochemical basis of life processes, a survey of the chemical nature of lipids, carbohydrates, proteins, vitamins, and hormones, a discussion of the changes that these substances undergo in the animal body, and a general survey of the field of nutrition and energy exchange.

Laboratory practice in routine biochemical procedures including urine and blood analyses.

## 103. Animal Biochemistry. Lectures only. (4) II.

Mr. KIRK, ———

Prerequisite: Chemistry 8 with a grade of C or higher. Recommended: Chemistry 5, Zoölogy 1A-1B or Physiology 1A, 1C, Anatomy 102.

Lectures on the chemical factors concerned in life processes including the chemistry and metabolism of salts, vitamins, hormones, lipids, carbohydrates, and proteins together with a survey of nutrition and energy exchange.

NOTE.—The student is advised to take courses 103 and 104 simultaneously if possible.

## 104. Animal Biochemistry. Laboratory only. (4) II.

———, ———

Prerequisite: course 103, completed or in progress and Chemistry 5 or Home Economics 101A, with a grade of C or higher.

Laboratory practice with the more important constituents of living matter to illustrate their chemical behavior.

## 105A. The Chemistry of the Proteins. (3) I.

Mr. GREENBERG and ———

Prerequisite: Chemistry 8 with a grade of C or higher. Recommended: Chemistry 109 or 110A-110B.

Chemical constitution, methods of analysis, synthesis, isolation, and behavior of amino acids and proteins. The role which these substances play in life processes.

## 105B. The Biochemistry of Enzyme Action and Biological Oxidation. (3) II.

Mr. GREENBERG and ———

Prerequisite: course 105A with a grade of C or higher or consent of instructor. Recommended: Chemistry 109 or 110A-110B.

Classification, sources, methods of purification, physical chemical properties and mechanism of action of enzymes and their role in metabolic processes.

## 106A. Protein Chemistry Laboratory. (2) I.

Mr. GREENBERG and ———

Prerequisite: course 105A in progress or completed, and Chemistry 5.

The preparation and isolation of amino acids and proteins. Methods of analysis, physicochemical properties, and behavior.

## 106B. Enzyme Chemistry Laboratory. (2) II.

Mr. GREENBERG and ———

Prerequisite: course 106A or consent of instructor.

Experimental methods of enzyme chemistry and biological oxidations.

107. Quantitative Microchemical Analysis. (4) I. Mr. KIRK  
Lecture and laboratory.  
Prerequisite: Chemistry 5, 8 and 9 with a grade of C or higher and the permission of the instructor. Enrollment limited to twenty-five.  
Quantitative estimation of elements and compounds on a micro basis with particular reference to biological materials.
108. Qualitative Microchemical Analysis. (3-5) II. Mr. KIRK  
Lecture and laboratory.  
Prerequisite: Chemistry 5, 8, and 9, with a grade of C or higher and the permission of the instructor. Enrollment limited to twenty-five.  
Application of chemical microscopy and microqualitative methods to inorganic and organic substances. Criminological testing methods.
110. Quantitative Medical Biochemistry. (5) I. Mr. ALLEN  
Lectures and laboratory.  
Prerequisite: courses 101M, or 103 and 104, with a grade of C or higher.  
Lectures and laboratory work appertaining to blood analysis, respiratory gas analysis, and other methods that are used in clinical laboratories and that illustrate normal and abnormal life processes.
112. Proseminar. (1) I and II. The STAFF (Mr. GREENBERG in charge)  
Prerequisite: courses 103, 104 and 110, with a grade of C or higher.  
Biochemical literature and newer developments of the subject.
- \*115. The Mechanism of Drug Action. (3) I. Mr. ANDERSON  
(Formerly numbered 109.)  
Prerequisite: course 103 with a grade of C or higher. Recommended: Physiology 100A-100B.  
The composition, synthesis, biochemical, and pharmacological properties and action of chemical agents that are used in medicine; relation between chemical composition and pharmacological action; principles of chemotherapy.
- \*116. The Mechanism of Drug Action. Laboratory. (1) I. Mr. ANDERSON  
(Given at the Medical Center in San Francisco.)  
Prerequisite: course 115 or an equivalent course in pharmacology. This may be taken simultaneously. To be given if ten students enroll.
180. Research. (3-5) I and II. The STAFF (Mr. GREENBERG in charge)  
Prerequisite: completion of the following courses in biochemistry with an average grade of B or higher: 101M (or 103, 104) and 110; or 105A, 105B, and 106A-106B; or 107 or 108.  
A limited number of selected students will be given topics for investigation under the direction of a member of the staff.
199. Special Study for Advanced Undergraduates. (1-2) I and II.  
The STAFF (Mr. GREENBERG in charge)  
Reading and conference for properly qualified students under the direction of a member of the staff.

---

\* Not to be given, 1947-1948.

## GRADUATE COURSES

Concerning conditions for admission to graduate courses, see page 156.

201. Selected Topics in Biochemistry. (2) I and II. Mr. TARVER, Mr. LI  
 I: Protein metabolism. Mr. Tarver.  
 II: Biochemistry of the hormones. Mr. Li.  
 Open to senior students with honor standing by consent of instructor.  
 Intended to acquaint advanced students with recent advances made in  
 the different fields of biochemistry. Selected topics will be alternated from  
 year to year.
212. Graduate Seminar. (1) I and II. The STAFF (Mr. GREENBERG in charge)  
 Prerequisite: completion of the major in biochemistry.
280. Research in Biochemistry. I and II.  
 (Formerly numbered 210.) The STAFF (Mr. GREENBERG in charge)  
 Not less than 4 units except by special permission of the chairman of  
 the division.
299. Special Study for Graduate Students. (1-3) I and II.  
 The STAFF (Mr. GREENBERG in charge)  
 Reading and conference for properly qualified graduate students under  
 the direction of a member of the staff.

## COURSES IN OTHER DEPARTMENTS

- Anatomy 101 (6), 102 (3).  
 Bacteriology 101 (6), 103 (2).  
 Botany 122 (2), 123 (2).  
 Chemistry 100 (3), 101 (3), 102 (3), 103 (3), 104 (3), 107 (3), 109 (3), 110A-  
 110B (6), 111 (3), 114H (3).  
 Home Economics 120A (4), 120B (5).  
 Physiology 100A-100B (6), 104A (2), 106 (2), 110A-110B (6), 112 (3).  
 Soil Science 114 (3).  
 Zoölogy 100 (4), 101 (2), 102 (2), 106 (4), 107 (2), 114 (3), 121 (2).

## BOTANY

JAMES T. BARRETT, Ph.D., Professor of Plant Pathology.

LEE BONAR, Ph.D., Professor of Botany and Curator of Mycological Collections (Chairman of the Department).

\*LINCOLN CONSTANCE, Ph.D., Professor of Botany and Curator of Seed Plant Collections.

ALVA R. DAVIS, Ph.D., Professor of Plant Physiology.

ADRIANCE S. FOSTER, Sc.D., Professor of Botany.

THOMAS H. GOODSPEED, Ph.D., Doctor (hon.c.) La Plata, Sc.D. (hon.c.), Professor of Botany and Director of the Botanical Garden.

DENNIS R. HOAGLAND, M.A., Professor of Plant Nutrition.

HERBERT L. MASON, Ph.D., Professor of Botany and Director of the Herbarium.

HOWARD S. REED, Ph.D., Professor of Plant Physiology, Emeritus.

RALPH EMERSON, Ph.D., Assistant Professor of Botany.

LEONARD MACHLIS, Ph.D., Assistant Professor of Plant Physiology.

GEORGE F. PAFENFUSS, Ph.D., Assistant Professor of Botany and Curator of Algal Collections.

JOHN F. DAVIDSON, Ph.D., Instructor in Botany.

JAMES P. BENNETT, Ph.D., Professor of Plant Physiology.

WILLIAM Z. HASSID, Ph.D., Professor of Plant Nutrition.

\*DANIEL I. ARNON, Ph.D., Associate Professor of Plant Nutrition.

\*GORDON MACKINNEY, Ph.D., Associate Professor of Food Technology.

WILLIAM C. SNYDER, Ph.D., Associate Professor of Plant Pathology.

EMIL M. MRAK, Ph.D., Associate Professor of Food Technology.

SPENCER W. BROWN, Ph.D., Instructor in Genetics.

*Letters and Science List.*—All undergraduate courses in botany are included in the Letters and Science List of Courses. For regulations governing this list, see page 82.

*Departmental Major Adviser:* Mr. PAFENFUSS.

*Preparation for the Major.*—Required: course 1, and Chemistry 1A, 8. If the lower division program is crowded, the student may postpone Chemistry 8 until he reaches the upper division, provided it is taken before courses 111, 122, 123. Recommended: German and one other foreign language; elementary courses in other biological sciences.

*The Major.*—The courses in botany are organized on levels of increasing specialization corresponding to the elementary, intermediate, and the advanced stages of instruction. Requirements for the major are: the elementary course, Botany 1; the intermediate courses, Botany 14, 15, 16, 108, and 111; and advanced botany courses amounting to an additional 10 units.

\* Absent on leave, 1947-1948.

<sup>2</sup> In residence spring semester only, 1947-1948.

## LOWER DIVISION COURSES

1. General Botany. (5) I. MR. PAPPENFUSS, MR. MACHLIS, MR. DAVIDSON  
An introduction to the fundamental principles of biology as illustrated by plants, with emphasis on the morphology, physiology, and phylogenetic relations of the major plant groups.  
Designed as the basic course in botany for all students of plant or animal science.  
Lectures and laboratory.
12. Introduction to the Structure and Function of Plants. (4) II. MR. EMERSON  
Lectures and demonstration periods. Not open for credit to students who have had course 1. Designed primarily for students who desire a general acquaintance with the fundamentals of botany.
14. Structure and Reproduction of the Thallophytes. (4) II. MR. BONAR  
Prerequisite: course 1. Lectures and laboratory.
- \*15. Comparative Morphology of the Bryophytes and Lower Vascular Plants. (4) II.  
Prerequisite: course 1.  
Lectures and laboratory.
16. Comparative Morphology of Vascular Plants. (4) I. MR. FOSTER  
Prerequisite: course 1.  
Lectures and laboratory.

## RELATED COURSES IN OTHER DEPARTMENTS

Introductory Paleobotany. (Paleontology 3.)

General Bacteriology and Microbiology. (Bacteriology 2.)

## UPPER DIVISION COURSES

In addition to requirements specifically noted, the prerequisite for all upper division courses is course 1.

## Morphology and Taxonomy

101. Mycology. (4) II. MR. EMERSON  
Prerequisite: course 14.  
The structure and development of the fungi. Myxomycetes, Phycomyces, and Ascomycetes. Lectures and laboratory.
102. Mycology. (4) I. MR. BONAR  
Prerequisite: course 14. Course 101 recommended but not required.  
Fungi Imperfecti and Basidiomycetes.  
Lectures and laboratory.
105. Plant Anatomy. (4) II. MR. FOSTER  
Prerequisite: course 16 and the permission of the instructor.  
Lectures and laboratory.  
Comparative structure and growth of the meristems; development and structure of important cell types, tissues, and tissue systems; comparative anatomy of stem, root, and leaf. Emphasis is placed upon the anatomy of gymnosperms and angiosperms.

\* Not to be given, 1947-1948.

107. Algology. (4) II. Mr. PAPPENFUSS  
Prerequisite: course 14.  
Lectures and laboratory.  
Advanced morphology and taxonomy of algae.
108. Taxonomy of Flowering Plants. (4) II. Mr. MASON, Mr. DAVIDSON  
Lectures, laboratory, and field work.  
A survey of the Spermatophytes, with lectures on phylogeny and classification; laboratory and field work with collection and identification practice.
- 110A. Phylogenetic Taxonomy. (3) I. Mr. MASON  
Prerequisite: courses 16, 108.  
Lectures and laboratory.  
Analysis of morphological problems fundamental to the systems of classification, with laboratory work on selected problems in morphology.
- 110B. Phylogenetic Taxonomy. (3) II. Mr. MASON  
Prerequisite: courses 110A, 131, and Genetics 100.  
Lectures and laboratory.  
An introduction to population studies and experimental and other research methods applicable to taxonomy.

## RELATED COURSES IN OTHER DEPARTMENTS

- Plant Diseases. (Agriculture: Plant Pathology 120.)  
Technique of Plant Pathology. (Agriculture: Plant Pathology 121.)  
Advanced Paleobotany. (Paleontology 120.)  
Biology of Yeast. (Agriculture: Food Technology 116.)  
Microbial Metabolism. (Bacteriology 103.)  
Soil Microbiology. (Agriculture: Soil Science 111.)  
Wood Technology. (Forestry 114.)

## Plant Physiology and Plant Biochemistry

111. Elementary Plant Physiology. (4) I. Mr. DAVIS, Mr. MACHLIS  
Prerequisite: Chemistry 1A and 8.  
Lectures and laboratory.
- 120A. Advanced Plant Physiology. (2) I. Mr. DAVIS  
Prerequisite: course 111, Chemistry 1A and 8, or its equivalent. Recommended: course 122, Chemistry 5, and Soil Science 110. If possible, course 121A should be taken concurrently.
- 120B. Advanced Plant Physiology. (2) II. Mr. DAVIS  
Prerequisite: course 120A. If possible course 121B should be taken concurrently. A continuation of course 120A.
- \*121A. Plant Physiology. Laboratory. (2) I. Mr. MACHLIS  
Prerequisite: course 111, Chemistry 1A and 8 or its equivalent; course 120A should be taken concurrently. Recommended: courses 105, 122, 123, Chemistry 5.

\* Not to be given, 1947-1948.

- 121B. Plant Physiology. Laboratory (2) II. Mr. MACHLIS  
Prerequisite: course 111, Chemistry 1A and 8 or its equivalent; course 120B should be taken concurrently. Recommended: courses 105, 121A, 122, 123, Chemistry 5.
122. Plant Biochemistry. (2) I. Mr. HOAGLAND  
Prerequisite: Chemistry 8. Whenever possible, course 123 should be taken concurrently.
123. Plant Biochemistry. Laboratory. (2) I. Mr. HASSID  
Prerequisite: course 122 (concurrently), Chemistry 5, 8.

## RELATED COURSES IN OTHER DEPARTMENTS

- Physicochemical Biology. (Zoölogy 101, 101c, 102, 102c, 121, 122.)  
Soils as a Medium for Plant Growth. (Agriculture: Soil Science 110, 112.)  
Principles of Forest Ecology. (Forestry 103.)  
Properties of Colloids. (Agriculture: Soil Science 114.)  
Mineral Nutrition of Plants. (Agriculture: Soil Science 115.)  
General Ecology. (Zoölogy 125.)

## Cytology and Genetics

130. Plant Cytology. (4) I. Mr. GOODSPEED  
Lectures and laboratory.  
Anatomy and physiology of the cell.
131. Plant Cytogenetics. (2) II. Mr. BROWN  
Prerequisite: course 130, Genetics 100 and 101. (Genetics 101 may be taken concurrently.)  
Laboratory: 6 hours to be arranged.  
Cytological aspects of genetical phenomena.

## RELATED COURSES IN OTHER DEPARTMENTS

- Principles of Genetics. (Agriculture: Genetics 100.)  
Cytogenetics. (Agriculture: Genetics 101.)  
Advanced Genetics. (Agriculture: Genetics 102.)  
Organic Evolution. (Agriculture: Genetics 103.)  
Technique of Plant Pathology. (Agriculture: Plant Pathology 121.)  
Microscopic Technique. (Zoölogy 4.)  
Cytology. (Zoölogy 107, 107c.)  
Physicochemical Biology. (Zoölogy 101, 101c, 102, 102c, 121, 122.)  
Genetics. (Zoölogy 114.)  
Methods of Biological Investigation with Optical Instruments of Precision. (Zoölogy 119A-119B.)

## General Courses

150. History of Botany. (3) II. Mr. GOODSPEED  
Lectures, discussions and reports.  
Open to students with upper division standing in botany and major students in other biological sciences with the approval of the instructor.
151. Principles of Plant Distribution. (3) I. Mr. MASON  
Open to students with upper division standing in botany and major students in other biological sciences with the approval of the instructor.
155. Botanical Microtechnique. (2) I. Mr. FOSTER, Mr. GOODSPEED  
Prerequisite: courses 105 and 130 or their equivalents and the permission of the instructor.  
Special techniques in the processing of plant material for histological and cytological study.
- 199A-199B. Special Study for Advanced Undergraduates. (1-4; 1-4) Yr.  
The STAFF (Mr. BONAR in charge)  
Open to specially qualified seniors with the approval of the instructor.

## RELATED COURSES IN OTHER DEPARTMENTS

- Tertiary Floras of Western America. (Paleontology 121.)  
Principles of Forest Ecology. (Forestry 103.)  
History of Biology. (Zoölogy 117.)  
Geography of Domesticated Plants and Animals. (Geography 161.)

## GRADUATE COURSES

- See page 156 of this CATALOGUE concerning conditions for admission to graduate courses.
- 201A-201B. Research. Yr. The STAFF (Mr. FOSTER in charge)  
Original investigations of special problems in the field, laboratory, herbarium, or botanical garden. Credit according to the work accomplished.
203. Seminar in Plant Physiology. (1) II. Mr. DAVIS
204. Seminar in Plant Cytology. (1) II. Mr. GOODSPEED
- 205A. Seminar in Morphology and Taxonomy of Vascular Plants. (1) I.  
Mr. MASON, Mr. FOSTER



**BUSINESS ADMINISTRATION**

- IRA B. CROSS, Ph.D., Professor of Economics on the Flood Foundation.  
 WILLIAM L. CRUM, M.A., Sc.D. (hon.), Ph.D., Professor of Economics.  
 STUART DAGGETT, Ph.D., Professor of Transportation on the Flood Foundation.
- MALCOLM M. DAVISSON, J.D., Ph.D., Professor of Economics.  
 ROBERT A. GORDON, Ph.D., Professor of Economics.  
 EWALD T. GREYHER, Ph.D., Professor of Economics on the Flood Foundation  
 (Chairman of the Department of Business Administration).  
 CLARK KERR, Ph.D., Professor of Industrial Relations.  
 PERRY MASON, Ph.D., C.P.A., Professor of Accounting.  
 ALBERT H. MOWBRAY, A.B., Fellow of the Actuarial Society of America, Professor of Insurance.
- LEONARD A. DOYLE, Ph.D., C.P.A., Associate Professor of Accounting.  
 FRANK L. KIDNER, Ph.D., Associate Professor of Economics.  
 MAURICE MOONITZ, Ph.D., C.P.A., Associate Professor of Accounting.  
 ROYAL A. ROBERTS, M.B.A., Associate Professor of Business Administration.  
 \* CHARLES C. STAEBLING, M.S., C.P.A., Associate Professor of Accounting.  
 PHILIP B. BERGFELD, J.D., Assistant Professor of Commercial Law.  
 CATHARINE DE MOTTE QUIRE, Ph.D., Assistant Professor of Accounting.  
 PAUL F. WENDT, Ph.D., Assistant Professor of Finance.  
 F. THEODORE MALM, Ph.D., Instructor in Business Administration.  
 JULIAN H. BRADSHAW, M.A., Associate in Business Administration.  
 LEONARD E. CHADWICK, M.S., Associate in Accounting.  
 DONALD A. CORBIN, M.B.A., Associate in Accounting.  
 ELDON S. HENDRIKSEN, B.S., Associate in Accounting.  
 KENNETH F. SULLIVAN, B.S., Associate in Accounting.  
 WILLIAM F. TAUCHAR, A.B., Associate in Business Administration.
- 
- JOHN P. CARTER, A.B., Lecturer in Business Administration.  
 ALFRED S. CLEVELAND, Ph.D., Lecturer in Business Administration.  
 JAMES A. CRUTCHFIELD, JR., M.A., Lecturer in Business Administration.  
 DONALD A. FERGUSSON, M.B.A., Lecturer in Finance.  
 ROY W. JASTRAM, A.B., Lecturer in Business Administration.  
 REGINALD H. LINFORTH, J.D., Lecturer in Commercial Law.  
 OLOF LUNDBERG, C.P.A., Lecturer in Accounting.  
 PAUL W. MCGANN, A.B., Lecturer in Business Administration.  
 DAVID A. REVZAN, Ph.D., Lecturer in Marketing.  
 ARTHUR M. ROSS, Ph.D., Lecturer in Business Administration.  
 WILLIAM K. SCHMELZLE, B.S., M.B.A., Lecturer in Business Administration.  
 LAWRENCE L. VANCE, M.A., C.P.A., Lecturer in Accounting.

\* In residence spring semester only, 1947-1948.

The requirements for the curriculum in the School of Business Administration are listed on page 123.

*Letters and Science List.*—Courses 6A, 6B, 10, 107, and 151 are included in the Letters and Science List of Courses. For regulations governing this list, see page 82.

#### LOWER DIVISION COURSES

- 6A-6B. Principles of Accounting. (3-3) Yr. Beginning each semester.  
Mr. CHADWICK, Mr. MASON, Mr. MOONITZ, Mr. VANCE  
Prerequisite: at least sophomore standing. 6A is a prerequisite to 6B.  
Two lectures and one two-hour laboratory section weekly to be arranged.  
It is recommended that students who plan to enter the School of Business Administration complete this course in their sophomore year.
10. General Accounting. (3) I and II. Mrs. QUIRE  
Open to sophomore students in all departments of the University except those who have taken or who are planning to take course 6A-6B.  
A survey of accounting principles and procedures, particularly as they affect the individual.
18. Commercial Law. (3) I and II. Mr. BERGFELD, Mr. LINFORTH  
Prerequisite: at least sophomore standing. Prescribed for students in the School of Business Administration.

#### UPPER DIVISION COURSES

Prerequisite: Economics 1A-1B, 40, and junior standing except where special provision has been made for students in certain curricula.

107. Economics of Enterprise. (3) I and II.  
Mr. BRADSHER, Mr. CARTER, Mr. CLEVELAND, Mr. CRUTCHFIELD,  
Mr. DOYLE, Mr. JASTRAM, Mr. MCGANN, Mr. REVZAN, Mr. TAUCHAR  
Not open to students taking Economics 100A. Primarily for juniors.
108. Business Fluctuations and Forecasting. (3) I and II.  
Mr. BRADSHER, Mr. CARTER, Mr. CRUTCHFIELD, Mr. FERGUSSON,  
Mr. GORDON, Mr. MALM, Mr. MCGANN, Mr. TAUCHAR  
Not open to students who have taken Economics 103.  
Prerequisite: course 107.
118. Advanced Commercial Law. (3) I and II. Mr. BERGFELD, ———  
Primarily for upper division students in the School of Business Administration, but also open to other upper division students. The work is based on the study of important cases. Students are advised to complete course 18 or to obtain a substantial knowledge of contracts before registering.
120. Business Organization and Management. (3) I and II.  
Primarily for juniors. Mr. CLEVELAND, Mr. MALM, Mr. SCHMELZLE
121. Management Problems and Policies. (3) I and II. Mr. CLEVELAND  
Prerequisite: senior standing and courses 107, 120, and 123. Recommended: courses 134 and 151.
123. Marketing. (3) I and II.  
Mr. CRUTCHFIELD, Mr. GREYER, Mr. JASTRAM,  
Mr. REVZAN, Mr. ROBERTS

- 124A-124B. Retail Store Management. (3-3) Yr. Mr. ROBERTS
125. Advertising. (3) II. Mr. ROBERTS  
Prerequisite: course 123.  
The basic concepts of advertising dealing with the preparation and execution of copy for various types of media. Study of the English used in advertising, illustration, and other elements of copy. The evaluation of principal types of media. Study of underlying psychology in copy and the psychology of the consumer as developed through product and market research.
126. Sales Analysis and Sales Management. (3) I. Mr. ROBERTS  
Prerequisite: course 123.
127. Production Planning and Control. (3) I and II. Mr. SCHMELZLE  
Prerequisite: course 120; recommended: course 128.
128. Industrial Procurement. (3) II. Mr. ROBERTS
129. Advertising Policy. (3) I. Mr. JASTRAM  
Prerequisite: courses 123 and 125, or permission of the instructor.  
Executive consideration of advertising in relation to price policy and the competitive problems of the firm.
133. Investments. (3) I. Mr. WENDT  
Prerequisite: course 134.
134. Corporation Finance. (3) I and II. Mr. CRUM, Mr. FERGUSON, Mr. WENDT  
Prerequisite: course 6A-6B.
136. Foreign Exchange. (3) I. Mr. CROSS  
Prerequisite: Economics 135.
144. Life Insurance. (3) I. Mr. MOWBRAY  
Prerequisite: Economics 143.  
A nontechnical study of principles and practice.
145. Property Insurance. (3) II. Mr. MOWBRAY  
Prerequisite: Economics 143.
146. Casualty Insurance. (3) II. Mr. MOWBRAY  
Prerequisite: Economics 143.
151. Industrial Relations. (3) I and II. Mr. KERR, Mr. ROSS, ——  
Students will not receive credit for both Economics 150A and course 151.  
Background of the problems faced by management in the field of industrial relations and labor legislation with an introduction to personnel administration.
153. Personnel Administration. (3) I and II. Mr. MALM, ——  
Prerequisite: course 151 or Economics 150A, or the permission of the instructor.

## 154. Collective Bargaining Systems. (3) I and II.

Mr. KERR, Mr. ROSS, ———

Prerequisite: course 151 or Economics 150A.

Collective bargaining systems in American industries such as steel, automobile, coal, clothing. Labor agreements, conciliation, mediation, and arbitration of labor disputes.

## 155. Labor Law. (3) I and II.

Mr. DAVISSON

Prerequisite: course 151 or Economics 150A and course 154.

A study of federal and state laws and court decisions affecting hours, wages, strikes, boycotts, picketing, union recognition and operation, legality of collective agreements, etc. A discussion of the National Labor Relations Act, Fair Labor Standards Act, and other legislation.

## 160A-160B. Advanced Accounting. (3-3) Yr.

MR. DOYLE, MR. MOONITZ, MR. STAEHLING, MR. VANCE

A two-hour laboratory period to be arranged. Prerequisite: course 6A-6B, with average grade not lower than C. Course 160A with at least a C average is prerequisite to course 160B.

## 161. Cost Accounting. (3) I and II.

Mr. VANCE

Prerequisite: course 6A-6B, with an average grade not lower than C; course 160A is recommended.

## 162. Auditing. (3) I and II.

Mr. VANCE

Prerequisite: courses 6A-6B, 160A.

## 163. Budgetary Control and Accounting Systems. (3) I.

Mr. VANCE

Prerequisite: courses 6A-6B, 160A-160B, 161.

## 164. Governmental and Institutional Accounting. (2) I and II.

Mr. LUNDBERG

Prerequisite: courses 6A-6B, 160A-160B, or consent of the instructor.

## 166. Analysis of Financial Statements. (3) II.

Mr. STAEHLING

Prerequisite: courses 6A-6B, 160A-160B with at least a C average and the permission of the instructor.

## 173. Air Transportation. (3) II.

Mr. CARTER

Prerequisite: Economics 170A and course 107 or Economics 100A.

The financing and operation of terminals and airways; factors determining the demand for freight and passenger service, the pricing of the air-line service; the financial results of air-line operation; aircraft manufacturing and subsidiary trades; evaluation of government regulation of air transport.

## 174. Traffic Management. (3) I and II.

Mr. DAGGETT

## 180. Introduction to Real Estate and Urban Land Economics. (3) I and II.

Mr. WENDT

Prerequisite: Economics 1A-1B, 40, and junior standing. The nature of real property; the principles of urban land utilization; classification of property rights; urban development; real property valuation; the real estate market and its functions; the organization of the real estate business; government regulation of real estate practices.

181. Valuation of Real Property. (3) II. Mr. WENDT  
 Prerequisite: course 180.  
 The concepts, methods and principles of land valuation; the factors influencing real estate values and income; trends in real property values and appraisal procedures in the urban real estate market.
183. Real Estate Law. (3) II. \_\_\_\_\_  
 Prerequisite: course 180.  
 A survey of the historical development of the law of real property; types of estates in land; provisions of constitutional, statutory, and common law and equity affecting real estate, and the relationship between real estate brokers, agents, and the public.
- 198A-198B. Directed Group Study. (1-3; 1-3) Yr.  
The STAFF (Mr. GREETHER in charge)
- 199A-199B. Special Study for Advanced Undergraduates. (1-3; 1-3) Yr.  
The STAFF (Mr. GREETHER in charge)

## GRADUATE COURSES

Concerning conditions for admission to graduate courses, see page 156.

221. Seminar in Business Policy. (3) I and II. Mr. SCHMELZLE
- 223A-223B. Seminar in Marketing. (3-3) Yr. Mr. GREETHER
226. Advanced Marketing. (3) I and II. Mr. REVZAN  
 Prerequisite: course 123, and graduate standing.  
 Readings, case, problem, and special report work. Intended primarily for graduate students in business administration who are candidates for the professional M.B.A. degree but are not qualified for Business Administration 223A-223B, Seminar in Marketing.
234. Problems of Business Finance. (3) II. Mr. CRUM
236. Seminar in Money and Credit. (3) II. Mr. CROSS  
 Prerequisite: course 136 and Economics 135.
242. Business Investigations and Analysis. (3) I and II.  
Mr. GORDON, Mr. KIDNER, Mr. REVZAN  
 I: Mr. Kidner. II: Sec. 1 (Gordon); Sec. 2 (Revzan).
251. Seminar in Industrial Relations. (3) II. Mr. KERR
- 260A-260B. Seminar in Accounting Theory. (2-2) Yr.  
Mr. MASON, Mr. MOONITZ  
 Prerequisite: graduate standing and course 160A-160B.  
 I: Mr. Mason. II: Mr. Moonitz.
- 261A-261B. Public Accounting Problems. (3-3) Yr. Beginning either semester.  
Mr. DOYLE, Mr. MOONITZ, Mr. STAEBLING  
 Prerequisite: courses 160A-160B, 161.  
 261A: I: Mr. Moonitz. II: Mr. Staehling.  
 261B: I: Mr. Doyle. II: Sec. 1 (Moonitz); Sec. 2 (Doyle).  
 Advanced accounting problems.
- \*264. Specialized Accounts. (2) I. Mr. VANCE

\* Not to be given, 1947-1948.

269. Income Tax Procedure. (3) I and II.

Mr. MASON, ———

Prerequisite: course 160A-160B.

I: ———. II: Mr. Mason.

A study of the federal and California laws relating to personal, estate, and corporation income taxes, from the accounting point of view, including a brief survey of social security, gift, and estate taxes.

270A. Seminar in Transportation. (2) I.

Mr. DAGGETT

297. Research in Business Problems. (1-6) I and II.

The STAFF (Mr. GREYER in charge)

Primarily for candidates for the degree of Master of Business Administration.

## CHEMISTRY

- GERALD E. K. BRANCH, Ph.D., Professor of Chemistry.  
 MELVIN CALVIN, Ph.D., Professor of Chemistry.  
 WILLIAM F. GIAUQUE, Ph.D., Professor of Chemistry.  
 GEORGE E. GIBSON, Ph.D., Professor of Chemistry.  
 JOEL H. HILDEBRAND, Ph.D., ScD., Professor of Chemistry.  
 WENDELL M. LATIMER, Ph.D., Professor of Chemistry (Chairman of the Department).  
 AXEL R. OLSON, Ph.D., Professor of Chemistry.  
 KENNETH S. PITZER, Ph.D., Professor of Chemistry.  
 GERHARD K. ROLLEFSON, Ph.D., Professor of Chemistry and Director of the Laboratories.  
 GLENN T. SEABORG, Ph.D., Professor of Chemistry.  
 THOMAS D. STEWART, Ph.D., Professor of Chemistry.  
 WALTER C. BLASDALE, Ph.D., Professor of Chemistry, Emeritus.  
 CHARLES W. PORTER, Ph.D., Professor of Chemistry, Emeritus.  
 MERLE RANDALL, Ph.D., Professor of Chemistry, Emeritus.  
 THEODORE VERMEULEN, Ph.D., Associate Professor of Chemical Engineering.  
 LEO BREWER, Ph.D., Assistant Professor of Chemistry.  
 JAMES CASON, Ph.D., Assistant Professor of Chemistry.  
 ROBERT E. CONNICK, Ph.D., Assistant Professor of Chemistry.  
 WILLIAM G. DAUBEN, Ph.D., Assistant Professor of Chemistry.  
 WILLIAM D. GWINN, Ph.D., Assistant Professor of Chemistry.  
 GEORGE JURA, Ph.D., Assistant Professor of Chemistry.  
 EDWIN F. ORLEMANN, Ph.D., Assistant Professor of Chemistry.  
 RICHARD E. POWELL, Ph.D., Assistant Professor of Chemistry.  
 CHARLES R. WILKE, Ph.D., Assistant Professor of Chemistry.  
 BRUNNO H. ZIMM, Ph.D., Assistant Professor of Chemistry.  
 LEROY A. BROMLEY, M.S., Instructor in Chemistry.  
 DONALD N. HANSON, Ph.D., Instructor in Chemistry.  
 JACK W. PETERSEN, Ph.D., Instructor in Chemistry.  
 HENRY RAPOPORT, Ph.D., Instructor in Chemistry.  
 THOMAS R. SIMONSON, Ph.D., Instructor in Chemistry.  
 CHARLES W. KOCH, B.S., Associate in Chemistry.  
 D. THOMAS STANTON, JR., M.S., Associate in Chemistry.
- 
- ISADOR PERLMAN, Ph.D., Associate Professor of Chemistry, Radiation Laboratory.  
 BURRIS B. CUNNINGHAM, Ph.D., Assistant Professor of Chemistry, Radiation Laboratory.  
 MARSHAL W. CROBYN, Ph.D., Lecturer in Chemistry.

*Letters and Science List.*—All undergraduate courses except 143, 144, 145A-145B, 146A-146B, 147, and 149H are included in the Letters and Science List. For regulations governing this list, see page 82.

*Entrance with Advanced Standing.*—All undergraduate students entering the University with advanced standing, and students returning to the University after an absence of two years or more, who desire to take courses in chemistry more advanced than course 1B, must present themselves on or before the date of their registration to Professor Rollefson, 116 Gilman Hall, who will determine from their credentials or by an informal examination which courses they may undertake.

*Choice of College.*—A student may pursue the study of chemistry by enrolling either in the College of Chemistry (see page 95) or in the College of Letters and Science with a major in chemistry. In order to decide between the two alternatives, the student may note that the College of Letters and Science has certain general lower division requirements (see page 63) outside the preparation for the major, while the curriculum of the College of Chemistry is restricted mainly to chemistry, physics, and mathematics during the first two years.

*Letters and Science Upper Division Major Adviser:* Mr. GIAUQUE.

*Preparation for the Major in the College of Letters and Science.*—The recommended preparation is as follows: course 1A-1B, and one or more of courses 5, 12A and 12B; Physics 4A, 4B, 4C; Mathematics 3A, 3B, 4A, 4B; and a reading knowledge of German. For certain purposes involving less extensive advanced work than the normal major, the shorter course in physics (2A-2B, with or without 3A-3B), may be accepted for Physics 4A, 4B, 4C.

The above-mentioned courses, though recommended, are actually required only in so far as they constitute prerequisites for courses included in the major. Prospective major students should familiarize themselves with such prerequisites, and the possible course sequence governed by them. Thus Mathematics 4A is prerequisite to Chemistry 110A which in turn is prerequisite to many upper division courses.

High school students should note that the preparation for the major is simplified if their high school program includes chemistry, physics, four years of mathematics, and two years of German.

*The Major.*—The major consists of from 24 to 30 units of upper division work in chemistry and allied subjects, taken in accordance with a plan approved by the Departmental Adviser. Normally at least 18 units of the major must be taken in the Department, and must include two of the four courses, Chemistry 100, 105, 111, 120. If one year of quantitative analysis has been completed elsewhere, Chemistry 104 may be substituted for Chemistry 105.

All units in chemistry in excess of 13, are counted as upper division units toward the major; all units in chemistry in excess of 13, taken in the upper division, will count as upper division credit toward the 36-unit requirement. Ordinarily an average of at least 1.5 grade points per unit undertaken is required for admission to, or retention in, the major.

*Honor Students in the Upper Division.*—Upper division students in the College of Letters and Science who propose to make chemistry their major, are placed on the honors list when they have attained a scholarship average of at least grade B. Honor students are given a larger share of personal instruction and a greater opportunity to choose courses, and work within courses, in the manner best suited to individual needs and aims. Students not in the honors group are not, except in unusual circumstances and with the express permission of the instructor, permitted to enroll for honors courses (marked H) nor for undergraduate research. Students will not ordinarily be recommended for honors in chemistry at graduation unless their work includes courses 114H and 180H or other advanced courses approved by the Committee.



## LOWER DIVISION COURSES

- 1A. General Chemistry. (5) I and II.  
 Mr. HILDEBRAND, Mr. GIAUQUE, Mr. GIBSON, Mr. LATIMER, Mr. PITZER,  
 Mr. BREWER, Mr. CONNICK, Mr. JURA, Mr. POWELL, Mr. ZIMM,  
 Mr. GWINN, M. ROLLEFSON  
 I and II: Lectures (Hildebrand, Latimer).  
 Prerequisite: high school chemistry or high grades in high school physics  
 and mathematics. Admission will be determined by the student's high school  
 grade and by the results of an aptitude test, to be given during the week  
 of enrollment.
- 1B. General Chemistry. Qualitative Analysis. (5) II.  
 Mr. GIBSON, Mr. HILDEBRAND, Mr. GIAUQUE, Mr. LATIMER,  
 Mr. PITZER, Mr. CONNICK, Mr. JURA, Mr. BREWER,  
 Mr. POWELL, Mr. ROLLEFSON, Mr. ZIMM  
 Lectures (Hildebrand).  
 Prerequisite: course 1A.
5. Quantitative Analysis. (3) I and II.  
 Lecture and laboratory. Mr. OLSON, Mr. KOCH, Mr. ORLEMANN  
 Prerequisite: course 1B with a grade of C or higher.
8. A Short Survey of Organic Chemistry. (3) I and II. Mr. STEWART  
 Prerequisite: course 1A.
9. Organic Chemistry—Laboratory. (3) I and II.  
 Lecture and laboratory. Mr. BRANCH, Mr. CRONYN, Mr. PETERSEN  
 Prerequisite: course 1B with a grade of C or higher. Course 8 may be  
 taken concurrently.
- 12A. Organic Chemistry. (5) I and II.  
 Mr. CALVIN, Mr. CASON, Mr. RAPOPORT  
 Prerequisite: course 1B with a grade of C or higher.  
 Lectures and laboratory work designed for students whose major is  
 chemistry.
- 12B. Organic Chemistry. (5) II. Mr. CALVIN, Mr. RAPOPORT  
 Prerequisite: courses 12A, or 8 and 9.  
 Lectures and laboratory.

## UPPER DIVISION COURSES

## GROUP I

102. Advanced Organic Chemistry. (3) I. Mr. STEWART  
 Prerequisite: courses 8, 9 or 12A; 109 or 110B; and a reading knowledge  
 of German.  
 Kinetics and mechanisms of organic reactions; the determination of  
 structure.
103. Advanced Organic Chemistry. (3) II. Mr. BRANCH  
 Prerequisite: courses 8, 9 or 12A; 109 or 110A; and a reading knowledge  
 of German.  
 Applications of electron structures and resonance to the chemical and  
 physical properties of organic compounds.

104. Inorganic Chemistry. (3) I. Mr. LATIMER  
Prerequisite: course 5.  
The interpretation and correlation of inorganic reactions.
105. Advanced Quantitative Analysis. (3) II. Mr. ORLEMANN  
Lectures and laboratory.  
Prerequisite: course 5.
109. Physical Chemistry—Brief Course. (3) I. Mr. POWELL  
Prerequisite: course 5; one year of college physics.  
Selected topics in physical chemistry.  
Primarily for nonchemistry majors.
- 110A–110B. Physical Chemistry. (3–3) Yr. Mr. GWINN, Mr. ROLLEFSON  
110A. I: Mr. Gwinn. II: Mr. Rollefson.  
110B. I: Mr. Rollefson. II: Mr. Gwinn.  
Prerequisite: course 5, Mathematics 4A, and Physics 4B.  
The general principles of physical chemistry and elementary thermo-  
dynamics.

## UPPER DIVISION COURSES

## GROUP II

The courses in this group are designed primarily for honor students, but, with the approval of the instructor, other students of high academic standing may be admitted to any of these courses except those marked with the letter H.

100. Organic Chemistry—Analytical Methods. (3) I and II. Mr. DAUBEN  
Prerequisite: courses 5 and 12B.
101. Organic Chemistry—Synthetic Methods. (3) I and II.  
Mr. CASON, Mr. DAUBEN  
Prerequisite: course 12B. A reading knowledge of German is recom-  
mended.
- 111, 111H. Physical Chemistry—Laboratory. (3) I and II.  
Mr. GIBSON, Mr. JURA, Mr. STANTON, Mr. ZIMM  
Prerequisite: course 110A, 110B (may be taken concurrently), or 109  
with the permission of the instructor; and calculus.
- 114H. Physical Chemistry—Thermodynamics. (3) I and II.  
Mr. GIAUQUE, Mr. PITZER, Mr. BREWER  
Prerequisite: courses 5, 110A–110B; Physics 4C or equivalent; mathe-  
matics; familiarity with differential and integral calculus.
118. Chemistry of Surfaces and Colloids. (2) I. Mr. JURA  
Before enrolling, the student must satisfy the instructor that he has  
sufficient preparation in chemistry and physics to be able to read the litera-  
ture in this field intelligently.
119. Photochemistry. (2) II. Mr. ROLLEFSON  
This course is offered in the form of independent study, with reports at  
regular intervals, and a final examination.  
Before enrolling, the student must satisfy the instructor that he has  
sufficient preparation in chemistry and physics to be able to read the litera-  
ture of this field intelligently.

120. Advanced Inorganic Chemistry. (3) I and II.  
Lecture and laboratory. Mr. CONNICK, Mr. POWELL  
Prerequisite: courses 5, 104 or 105, and 109 or 110B.
122. Phase Rule. (2) I. Mr. BREWER  
Prerequisite: course 109 or 110B.
123. Nuclear Chemistry. (2) I. Mr. SEABORG  
Prerequisite: senior standing.
- 180H. Research. (3-15) I and II. The STAFF (Mr. LATIMER in charge)  
Prerequisite: Chemistry 110B.  
Students who have completed with high credit a satisfactory number of advanced courses may prosecute original research under the direction of one of the members of the instructing staff. The consent of the instructor must be obtained.
185. Chemical Preparations. (2-5) I and II.  
The STAFF (Mr. LATIMER in charge)  
Laboratory work for advanced undergraduates.
199. Special Study for Advanced Undergraduates. (2-3) I and II.  
The STAFF (Mr. LATIMER in charge)  
Any properly qualified student who wishes to pursue a problem of his own choice, through reading or nonlaboratory study, may do so if his proposed project is acceptable to the member of the staff with whom he works.

## UPPER DIVISION COURSES

## GROUP III

*Chemical Engineering Courses.* For program of upper division work in this field, see College of Chemistry, page 97.

143. Introduction to Chemical Engineering. (2) II. Mr. VERMEULEN  
Prerequisite: course 109 or 110A (may be taken concurrently).  
A survey of chemical industry in relation to processes; major inorganic chemical products; equipment and economics.
144. Chemical Engineering Stoichiometry. (3) I and II.  
Mr. BROMLEY, Mr. HANSON  
Prerequisite: course 110B; may be taken concurrently.  
Behavior of gases; vaporization and condensation; weight and heat balances; properties of fuels; equilibria; energetics and kinetics of chemical processes.
- 145A-145B. Unit Operations Laboratory. (2-2) Yr. Beginning either semester.  
Mr. BROMLEY, Mr. HANSON  
Prerequisite: courses 144, 146A-146B (which may be taken concurrently). 145A is prerequisite to 145B.  
Material and energy measurements illustrating fundamental principles.  
145A: pumping of fluids; turbulent and streamline flow; pressure drop in pipes and tower packings; heat transfer and evaporation.  
145B: mixing, filtration, drying of solids, continuous distillation, extraction, and control of catalytic reactions.

- 146A. Chemical Engineering Unit Operations. (3) I. Mr. VERMEULEN  
Prerequisite: courses 110B, 144 (may be taken concurrently).  
Flow of liquids and gases: thermodynamics, friction. Heat transmission, including film coefficients, vaporization and condensation, radiation and pyrometry.
- 146B. Chemical Engineering Unit Operations. (3) II. Mr. BROMLEY  
Prerequisite: course 146A or equivalent, or courses 114H and 144.  
Diffusional operations: absorption, extraction, filtration, drying. Distillation: bubble-plate and packed columns, reflux requirements. Humidification. Crushing, grinding, mechanical separation.
147. Organic Chemical Unit Processes. (3) II. Mr. STEWART, Mr. WILKE  
Prerequisite: course 144; and 100 or 107, or the consent of the instructor.  
Reaction variables and kinetics, and product recovery problems in catalytic processes such as chlorination, nitration, sulfonation, fermentation, esterification, hydrolysis, alkylation, hydrogenation, cracking, and polymerization.
- 149H. Design of Chemical Process Plants. (2) II. Mr. WILKE  
Prerequisite: courses 146A-146B.  
Class discussion of sources of data and of design principles, with individual and team study of selected plant design problems.

## GRADUATE COURSES

Concerning conditions for admission to work for higher degrees see the ANNOUNCEMENT OF THE GRADUATE DIVISION, NORTHERN SECTION.

- 207A. Organic Chemistry. (2) I. The STAFF (Mr. CASON in charge)  
Open to properly qualified graduate students.  
Advanced synthetic topics such as the applications of Grignard reaction and enolate condensations. The chemistry of the carbohydrates.
- 207B. Organic Chemistry. (2) II. The STAFF (Mr. CASON in charge)  
Open to properly qualified graduate students. 207A is not prerequisite to 207B.  
The chemistry of heterocyclic compounds, including the alkaloids.
216. Physical Chemistry, Advanced. (3) II. Mr. GIAUQUE  
Prerequisite: courses 111H and 114H. Open to senior honor students with the permission of the instructor.  
Selected topics. Use of variables other than pressure, temperature and composition. Third Law of Thermodynamics. Evaluation of thermodynamic quantities from spectroscopic and other molecular data. Interionic attraction theory of electrolytic solutions.
217. Quantum Theory. (3) II. Mr. PITZER  
Recommended preparation: differential equations or advanced calculus, atomic physics and thermodynamics. Open to senior honors students with the permission of the instructor.
223. Chemistry of Radioactive Isotopes. (2) II. Mr. SEABORG  
Prerequisite: course 123.  
Certain advanced topics relating to the chemistry of the products formed by nuclear fission and other types of nuclear disintegration.

## 280. Research. (1-9) I and II.

The STAFF (Mr. LATIMER in charge)

Students limited to a program of 4 units may be allowed to enroll for 1 unit.

The laboratory is open at all times to a limited number of qualified graduate students who wish to pursue original investigations. Students who wish to enroll for this work should communicate with the Chairman of the Department well in advance of the opening of the semester in which the work is to be done. Such work will ordinarily be under the direction of some member of the instructing staff, who will determine the credit value. A list of publications indicating the types of problems now under investigation in the laboratory will be sent on request.

## 290. Seminar. (1-4) I and II.

The STAFF (Mr. LATIMER in charge)

As a rule several seminars are offered each semester. The subjects will vary from year to year and will be announced at the beginning of each semester. The following subjects have been studied in recent seminars: atomic structure and magnetic phenomena; nuclear chemistry and the use of tracers; mechanisms of reactions; stereochemistry; the chemical bond; molecular arrangements; color of organic molecules; resonance and molecular structure; statistical mechanics; the liquid state; photochemistry. A seminar on topics of interest in chemical engineering will also be offered.

## 299. Special Study for Graduate Students. (2-4) I and II.

The STAFF (Mr. LATIMER in charge)

Any properly qualified graduate student who wishes to pursue a problem of his own choice, through reading or nonlaboratory study, may do so if his proposed project is acceptable to the member of the staff with whom he works.

Research Conference.—Members of the instructing staff and students engaged in graduate research meet once a week to discuss the various investigations in progress in the laboratory. No credit.

## Chemical Engineering

Chemistry 146B or its equivalent is prerequisite to all courses in this group.

## 244. Distillation. (3) I.

Mr. HANSON

Design calculation methods for fractionation columns in binary and multicomponent separations.

## 245. Diffusional Operations. (2) I.

Mr. WILKE

Advanced treatment of absorption, adsorption, and drying of solids, in relation to mass-transfer theory.

## 246. Phase Equilibria in Extraction Operations. (2) II.

Mr. VERMEULEN

Theory of ternary liquid systems; design of liquid-liquid contact equipment; azeotropic and extractive distillation.

## 249. Special Study for Graduate Students in Chemical Engineering. (2-4) I and II.

The STAFF (Mr. WILKE in charge)

Properly qualified graduate students who wish to pursue independent study may work on the development of new calculation methods for a single unit operation or the application of existing design data to a single process.

## 250. Research in Chemical Engineering. (1-6) I and II.

The STAFF (Mr. VERMEULEN in charge)

Research facilities will be provided for graduate study in the unit physical operations and the unit chemical processes.

## CHILD DEVELOPMENT

Instruction in child development is not organized as a single administrative unit in the University but is offered in its several aspects by a number of departments. Research in the field is carried on, in varying degree, by all of these departments and also by the Medical School, the Institute of Child Welfare, and the College of Dentistry.

An undergraduate major in child development in the Department of Home Economics and the following courses offer material of special interest to students in the field of child development. Further information in regard to instruction, including the opportunities which exist for the planning of programs of study, may be obtained from the chairman or major adviser of any of the departments indicated in this list.

- Growth and Development of Children. (Education 111, Mrs. BAILEY)  
 The Exceptional Child. (Education 116, Mr. KEYS)  
 Counseling, Child Welfare and Parent Education. (Education 284, Mrs. BAILEY)  
 Social Development of Children and Youth. (Education 285, Mrs. BAILEY)  
 Child Psychology. (Home Economics 132, Miss LANDRETH)  
 Laboratory in Child Development. (Home Economics 133, Miss LANDRETH)  
 Child Care. (Home Economics 134, Miss LANDRETH)  
 Techniques with Young Children. (Home Economics 135, Miss LANDRETH)  
 Nursery School Administration. (Home Economics 435, Miss LANDRETH)  
 Principles of Pediatrics. (Nursing 444A. Given in the School of Nursing, Medical Center, San Francisco.)  
 Pediatric and Communicable Disease Nursing. (Nursing 444E, Miss MUNSON. Given in the School of Nursing, Medical Center, San Francisco.)  
 Physiology of Growth and Development in the Child. (Physiology 102, Mr. COPP)  
 Adolescence. (Psychology 113, Mr. JONES)  
 Tests and Measurements of Infants and Preschool Children. (Psychology 116, Miss BAYLEY)  
 Laboratory Tests and Measurements of Infants and Preschool Children. (Psychology 117, Miss BAYLEY)  
 Mental Deficiency. (Psychology 160, Miss BRIDGMAN)  
 Clinical Techniques. (Psychology 163, Mr. COFFEY, Mr. SHERRIFFS)  
 Clinical Psychology. (Psychology 162, Mrs. MACFARLANE, Miss HAMILTON)  
 Advanced Clinical Psychology. (Psychology 164, Miss HAMILTON)  
 Child Psychology. (Psychology 112, Mr. JONES)  
 Laboratory in Adolescent Development. (Psychology 115, Mr. JONES)  
 Child Hygiene. (Public Health 121, Mr. COHEN)  
 Child Welfare. (Social Welfare 253A-253B, Mrs. FREDERICKSEN)  
 Emotional Development of Children. (Social Welfare 266A-266B, Mrs. MAENCHEN, Mr. ERIKSON)

## CLASSICS

WILLIAM H. ALEXANDER, Ph.D., LL.D., F.R.S.C., Professor of Latin (Chairman of the Department).

HAROLD F. CHERNISS, Ph.D., Professor of Greek.

MURRAY B. EMENEAU, Ph.D., Professor of Sanskrit and General Linguistics.

IVAN M. LINFORTH, Ph.D., Professor of Greek.

H. R. W. SMITH, Ph.D., Professor of Latin and Classical Archaeology and Associate Curator of Classical Archaeology.

JAMES T. ALLEN, Ph.D., Professor of Greek, Emeritus.

MONROE E. DEUTSCH, Ph.D., LL.D., Professor of Latin, Emeritus.

LEON J. RICHARDSON, A.B., LL.D., Professor of Latin, Emeritus.

JOSEPH FONTENROSE, Ph.D., Associate Professor of Classics.

ARTHUR E. GORDON, Ph.D., Associate Professor of Latin.

WILLIAM M. GREEN, Ph.D., Assistant Professor of Latin.

BEN L. CHARNEY, Ph.D., Instructor in Latin.

JOHANNA GOETZL, Ph.D., Instructor in Latin.

LEVI ARNOLD POST, Ph.D., Sather Professor of Classical Literature, for the spring semester, 1948.

*Letters and Science List.*—All undergraduate courses in Classics, Greek, Latin, and Sanskrit are included in the Letters and Science List of Courses. For regulations governing this list, see page 82.

*Departmental Major Adviser:* Mr. ALEXANDER.

*Preparation for the Major in Classics.*—Required: Greek 1 or 1A-1B; Latin 1, 2, 3 (or the corresponding courses in the high school), 4.

*The Major in Classics.*—Required: Greek 100, 101, 102, 103; Latin 105, 106, 107, 108.

## GREEK

*Major Adviser:* Mr. LINFORTH.

*Preparation for the Major.*—Required: Greek 1 or 1A-1B. Recommended: Latin 1, 2, 3, 4.

*The Major.*—The following courses must be included in the major of 24 units: (a) Greek 100, 101, 102, 103, unless they have been taken in the lower division; (b) at least 6 units in advanced upper division courses in Greek. The remaining units of the 24 must be chosen, with the advice of the department, from the following: upper division courses in Classics, Greek, Latin, Sanskrit; Art 156, 157, 158; History 111A.

## LATIN

*Major Adviser:* Mr. ALEXANDER.

*Preparation for the Major.*—Required: Latin 1, 2, 3 (or the corresponding courses in the high school), 4. Recommended: Greek 1 or 1A-1B.

*The Major.*—The following courses must be included in the major of 24 units: (a) Latin 105, 106, 107, 108, unless they have been taken in the lower

division; (b) at least 6 units in advanced upper division courses in Latin. The remaining units of the 24 should be chosen, with the advice of the department, from the following: upper division courses in Classics, Latin, Greek, Sanskrit; Art 156, 157, 158; History 111B; but the department will consider as well other courses which the student may suggest.

## CLASSICS

COURSES WHICH DO NOT REQUIRE A KNOWLEDGE OF THE GREEK OR THE  
LATIN LANGUAGE

(NOTE.—Courses in this group are designated Classics 34, Classics 170, etc.)

34. Epic Poetry: Homer and Virgil. (2) I. Mr. FONTENROSE  
A study of the *Iliad*, *Odyssey*, and *Aeneid* with reference to content, structure, significance, and influence.
- 170A. Classical Archaeology. (2) II. Mr. SMITH  
Vase painting in Greece before 600 B.C.
- 170C. Classical Archaeology. (2) I. Mr. SMITH  
Vase painting in Greece and Italy from 500 B.C.
178. Greek and Roman Mythology. (2) II. Mr. FONTENROSE  
Myths, legends, and folk tales of ancient Greece and Italy; their place in the literature and art of both the ancient and the modern world.
- 180A–180B. The Latin Classics in English. (2–2) Yr. Mr. ALEXANDER  
I: The Republic.  
II: The Early Empire.  
Open to lower division students by permission of the instructor.
- 182A–182B. Ancient Classical Civilization. (2–2) Yr. Mr. GORDON  
Open also to lower division students to the extent of the room available.  
I: Greek Civilization.  
II: Roman Civilization.
- \*193. Introduction to General Linguistics. (2) II. Mr. EMENEAU  
The principles and techniques of descriptive and comparative grammar.  
Prerequisite: some knowledge of one language other than English.
194. Phonetics and Phonemics. (2) I. Mr. EMENEAU  
(Formerly numbered 193.)  
Lectures on the phonetic phenomena employed in language utterances, and on the technique of their analysis into phonemic entities and patterns. Practice in the hearing and transcribing of exotic languages with the aid, when possible, of native speakers. Open to students who, in the opinion of the instructor, are properly qualified.
195. Linguistic Analysis. (2) II. Mr. EMENEAU  
Designed to continue 194 (which will usually be a prerequisite), with lectures and practice in analysis of morphology and syntax. Open to students who, in the opinion of the instructor, are properly qualified.

\* Not to be given, 1947–1948.



- \*196. Introduction to Indo-European Comparative Grammar. (2) I.

Mr. EMENEAU

Prerequisite: a fair knowledge of at least one of the older Indo-European languages (e.g. Latin) and of one of the modern Indo-European languages other than English or a Romance language.

197. India. (2) I.

Mr. EMENEAU

The social, economic, and political structure of modern India.

#### GREEK

(NOTE.—Courses in this group are designated Greek 1, Greek 1A, Greek 1B, etc.)

#### Language and Literature

##### LOWER DIVISION COURSES

1. Greek for Beginners. Double Course. (5) II.

- 1A-1B. Greek for Beginners. (3-3) Yr.

Mr. LINFORTH, Mr. CHERNISS

##### UPPER DIVISION COURSES

Greek 100, 101, 102, 103 should be completed before the other courses (except 198) are undertaken. Greek 101 is prerequisite to 102 and 103.

100. Xenophon, *Anabasis*, and Attic Prose Writing. (3) I. Mr. LINFORTH

101. Homer. (3) II. Mr. LINFORTH

102. Plato: *Apology and Crito*. (3) I. Mr. CHERNISS

103. Drama. (3) II. Mr. LINFORTH

114. Aristophanes. (3) II. Mr. CHERNISS

118. Demosthenes, *De Corona*. (3) I. Mr. LINFORTH

120. Aristotle, *The Poetics*. (3) II. Mr. POST

198. Directed Group Study in Modern Greek. (1-3) I and II.

Prerequisite: Greek 1 or 1A-1B.

Mr. FONTENROSE

199. Special Study for Advanced Undergraduates. (1-5) I and II.

Mr. LINFORTH in charge

#### LATIN

(NOTE.—Courses in this group are designated Latin 1, Latin 2, etc.)

#### Language and Literature

##### LOWER DIVISION COURSES

1. Latin for Beginners. (4) I and II.

Mr. GORDON, Mr. GREEN, Mr. CHARNEY, Miss GOETZL

2. Elementary Latin Readings. (4) I and II.

Mr. GORDON, Mr. GREEN, Mr. FONTENROSE,  
Mr. CHARNEY, Miss GOETZL

Prerequisite: two years of high school Latin or Latin 1.  
Reading and composition.

\* Not to be given, 1947-1948.

3. Virgil. (4) I and II. Mr. SMITH, Mr. FONTENROSE  
Prerequisite: three years of high school Latin, or Latin 2. Readings in the *Aeneid* I-VI; grammar review and composition.
4. Cicero and Catullus. (4) I and II. Mr. FONTENROSE, Mr. GREEN  
Prerequisite: four years of high school Latin, or Latin 3. Reading of a selected oration or essay of Cicero and selected poems of Catullus; grammar review and composition.

## UPPER DIVISION COURSES

Prerequisite: Latin 4. Latin 105, 106, 107, 108 should be completed before the other courses (except 109A-109B) are undertaken.

105. Livy. (3) I. Mr. ALEXANDER
106. Horace: *Odes and Epodes*. (3) II. Mr. ALEXANDER
107. Cicero: *De Natura Deorum*. (3) II. Mr. GREEN
108. Ovid, *Metamorphoses*. (3) I. Mr. GREEN
- 109A-109B. Composition and Sight Reading. (2-2) Yr. Mr. SMITH
- 146C. Virgil: *Aeneid* VII-XII. (3) II. Mr. ALEXANDER
- 147A. Horace: *Satires and Epistles*. (3) I. Mr. GREEN
- 151A. Seneca: *Moral Epistles*. (3) I. Mr. ALEXANDER
158. Petronius: *Satyricon*; Seneca, *Apocolocyntosis*. (3) II. Mr. SMITH
- \*166. Latin Verse Composition. (1) I. Mr. SMITH
199. Special Study for Advanced Undergraduates. (1-5) I and II.  
Mr. ALEXANDER in charge

## SANSKRIT

(NOTE.—Courses in this group are designated Sanskrit 190A, Sanskrit 190B, etc.)

## Language and Literature

- 190A-190B. Elementary Sanskrit. (3-3) Yr. Mr. EMENEAU
199. Special Study for Advanced Undergraduates. (1-5) I and II.  
Mr. EMENEAU in charge

## CLASSICS

## GRADUATE COURSES

All graduate courses in this department are designated Classics (Classics 200, Classics 241A, etc.).

Concerning conditions for admission to graduate courses, see page 156.

200. Special Study. (1-5) I and II. Mr. ALEXANDER in charge

\* Not to be given, 1947-1948.

241A. Cicero's <i>Letters</i> . (3) I.	Mr. GORDON
249. Propertius <i>Elegies</i> . (3) II.	Mr. FONTENROSE
271C-271D. Advanced Course in Archaeological Method. (2-2) Yr.	
271C: Numismatics and Vase Painting.	Mr. SMITH
271D: Numismatics and Terra Cottas.	Mr. SMITH
*273. Problems in Attic Topography. (2) II.	Mr. SMITH
281A-281B. The Pre-Socratic Philosophers. (3-3) Yr.	Mr. CHERNISS
290A-290B. Advanced Sanskrit. (1-5; 1-5) Yr.	Mr. EMENEAU

\* Not to be given, 1947-1948.

## DECORATIVE ART

HOPE M. GLADDING, Professor of Decorative Art and Design.

LILA M. O'NEALE, Ph.D., Professor of Decorative Art and Associate Curator of Textiles (Chairman of the Department).

MARY F. PATTERSON, Associate Professor of Decorative Art and Design, Emeritus.

WINFIELD SCOTT WELLINGTON, M.A., Gr.Arch., Associate Professor of Design, Associate Curator of Art, and Director of the Art Gallery.

LEA VAN PUUMBROECK MILLER, M.A., Assistant Professor of Decorative Art and Design.

LUCRETIA NELSON, M.A., Assistant Professor of Design.

MARY A. DUMAS, M.A., Instructor in Decorative Art.

WILLARD V. ROSENQUIST, M.A., Instructor in Decorative Art.

VIRGINIA R. TEMPLEMAN, M.A., Lecturer in Decorative Art.

*Letters and Science List.*—All undergraduate courses in decorative art are included in the Letters and Science List of Courses. For regulations governing this list, see page 82.

*Departmental Major Advisers:* Miss O'NEALE, Miss GLADDING.

*Entrance with Advanced Standing.*—All undergraduate students who enter the department with advanced standing should register in course 16A.

*Preparation for the Major.*—Required: course 16A-16B (4), and Art 2A (2). Recommended: Architecture 1 (3); Art 2B (2), 3A (2), 3B (2); History 4A-4B (6). If desired, this work may be completed in the upper division. The recommended courses are actually required only in so far as they constitute prerequisites for upper division courses included in the major. Prospective major students should familiarize themselves with such course sequences.

In order to gain major status in the department, a student must have attained at least a 1.5 average in the lower division courses in decorative art preparatory to the major. Students who fail to maintain a satisfactory scholarship average may be dismissed from the major at any time.

*The Major.*—Required: 24 units of upper division work in decorative art and allied subjects, including 160A (2), 175A (2) or 175B (2), 176A (2), 180A-180B (6) or 193A-193B (6) or 195A-195B (6); Philosophy 136A (3) and other courses aggregating at least 6 units chosen from the remaining upper division courses in the department.

Three units chosen from the following allied courses in other departments may be taken as major work in decorative art: Anthropology 126 (3); Architecture 110 (1); Art 173 (2); Philosophy 136B (3); Social Institutions 141 (3) or 142 (3).

Courses 175A-175B, 176A, 193A-193B, 195A-195B should normally be taken in the junior year. Courses 130A-130B, 196A-196B should be taken in the senior year.

*Honors.*—Senior students who have attained at least a B average in their major courses may enroll for course 199.

Honors at graduation are awarded to students who have completed their major work with distinction and have attained uniformly high grades in all their college work.

*Exhibits.*—Students' work may be retained by the Department as exhibit material for a specified time.

## LOWER DIVISION COURSES

- 16A-16B. Theory of Design and Color. (2-2) Yr. Beginning each semester.  
Miss NELSON, Mrs. MILLER, Miss DUMAS,  
Mr. ROSENQUIST, Mrs. TEMPLEMAN
- 60A-60B. Theory of Design and Color: Second-Year Problems. (2-2) Yr.  
Mrs. MILLER, Miss NELSON
- Original problems in line, form, and color.

## UPPER DIVISION COURSES

- \*127. Primitive Art. (2) I. Miss NELSON  
Prehistoric, primitive, and barbaric art.
- 130A-130B. Interior Design. (2-2) Yr. Mr. WELLINGTON  
130A is prerequisite to 130B.  
Lectures: the design, selection, and arrangement of furniture with special consideration for its relation to the architectural background.
- 160A-160B. Advanced Design. (2-2) Yr. Beginning each semester.  
Miss GLADDING, Mr. ROSENQUIST  
Prerequisite: course 16A-16B, and Art 2A, or equivalents. With the approval of the instructor, 160A and 160B may be taken out of their normal sequence in either semester. Enrollment limited by laboratory facilities.
166. Principles of Three-dimensional Abstract Design. (3) II. Miss NELSON  
Enrollment limited by laboratory facilities.  
Prerequisite: course 16A-16B, and Art 2A and 160A or 160B.  
Recommended: Art 2B, Architecture 14.  
Laboratory problems involving composition in three-dimensional space with lines, planes, masses. Designs to be executed in simple material.
167. Sources of Industrial Design. (2) II. Miss NELSON  
Prerequisite: courses 16A-16B, Art 2A and 160A or 160B.  
Reading and discussion of thought important to the development of machine art from its inception during the Industrial Revolution.
- 175A-175B. Primitive and Folk Textiles. (2-2) Yr. Miss O'NEALE  
Either half of this course may be taken independently.
- 176A-\*176B. Textile Design. (2-2) Yr. Mrs. MILLER  
Enrollment limited by laboratory facilities.  
Prerequisite or concurrent: courses 16A and 16B, or equivalent, and 175A or 175B. Course 176A is prerequisite to 176B.  
Analyses, reconstructions, and experiments on the loom.
179. Textile Analysis. (2) II. Miss O'NEALE  
Prerequisite: courses 175A, 176A-176B or equivalent.  
Enrollment limited by laboratory facilities. The permission of the instructor must be obtained.
- 180A-180B. Survey of Expressions in Materials. (3-3) Yr. Mr. WELLINGTON  
A study of form as exemplified by significant objects made from metals, wood, glass, clay, etc. Either half of this course may be taken independently.

\* Not to be given, 1947-1948.

- 193A-193B. Historic Costume. (3-3) Yr. Miss O'NEALE  
 Either half of this course may be taken independently.  
 I: 193A. From Ancient Times to 1400.  
 II: 193B. 1400 to 1900.
- 195A. The Great Periods in Interior Design. (3) I. Miss GLADDING  
 The study of the periods as applied to domestic interiors.
- 195B. American Decorative Art from the First Colonial Periods to 1850. (3) II.  
 Miss GLADDING  
 Spanish, English, Dutch Colonial Periods, and the Federal Period.  
 Lectures, with slides, from material in museum collections and private  
 houses showing the work of the more significant artists, housewrights, and  
 craftsmen.
- 196A-196B. Interior Design. (2-2) Yr. Mr. WELLINGTON  
 Prerequisite: courses 16A-16B, 130A-130B, 195A, Architecture 1. 196A is  
 prerequisite to 196B.  
 130A and 130B may be taken concurrently with 196A and 196B respec-  
 tively. Upper division students in architecture are not required to fulfill  
 design course prerequisites and 195A.  
 Periods of individual criticism and discussion of theory involved. Drawn  
 problems.
199. Special Study for Advanced Undergraduates. (1-2) I and II.  
 The STAFF (Miss NELSON in charge)  
 Prerequisite: senior standing in decorative art and a B average or  
 higher in major courses. Candidates for the master's degree will be ex-  
 pected to consult with the graduate adviser concerning specific requirements.

## GRADUATE COURSES

Concerning conditions for admission to graduate courses, see page 156.

Seminar in Decorative Art. (2) I and II.

The STAFF (Miss GLADDING in charge)

294A. Period Interiors. (2) II.

Miss GLADDING

\*294B. Textiles. (2) I.

Miss O'NEALE

Studies based upon materials selected from the various collec-  
 tions in the Museum of Anthropology.

294C. Decorative Motives in Oriental Art. (2) I.

Mr. WELLINGTON

299. Directed Research. (2-4) I and II.

The STAFF (Miss O'NEALE in charge)

\* Not to be given, 1947-1948.

## DRAMATIC ART

FRED O. HARRIS, M.F.A., Associate Professor of Dramatic Art (Chairman of the Department).

CHARLES D. VON NEUMAYER, Professor of Dramatic Art, Emeritus.

SARA HUNTSMAN STURGESS, B.S., Assistant Professor of Dramatic Art, Emeritus.

HENRY SCHNITZLER, Lecturer in Dramatic Art.

WARREN C. LOUNSBURY, Lecturer in Stage Crafts, and Technical Director of the University Theater.

MARQUIS DE BASSECOURT PATTERSON, M.F.A., Lecturer in Dramatic Art.

ALAN R. THOMPSON, Ph.D., Associate Professor of Dramatic Literature and Speech.

*Letters and Science List.*—All undergraduate courses are included in the Letters and Science List, except the following: courses 20, 190, 191, 192, and 193. For regulations governing this list, see page 82.

*Departmental Major Adviser:* Mr. HARRIS.

*Preparation for the Major.*—Twelve units in the following courses: Courses 10A-10B (3-3), 20 (3), 407 (3) or Speech 2A (3).

*The Major.*—Required: 24 units of upper division courses including 15 units in dramatic art, with not more than 6 units of Dramatic Art 190, 191, 192, 193, and 9 units in dramatic literature, history of drama, and history of theater.

(A) Dramatic Art Courses: Theory. Courses 130A, 130B, 130C, 130D (3-3-3-3). (These courses offered in sequence in alternate years. Not more than 6 units to apply to the major.) Courses 135 (3), 160A-160B (3-3).

(B) Dramatic Art Courses: Practice. Courses 190, 191, 192. Not more than 6 units to apply to the major.

(C) Courses in Dramatic Literature, History of Drama, and History of Theater: Course 157A-157B (3-3), English 114A-114B, 117A-117B (3-3-3-3), 117E (3), 154 (3), Spanish 105A-105B (2-2), 109A-109B (2-2), 111A-111B (2-2), French 115A-115B (2-2), 120A-120B (2-2), German 104 (3), 108A (3), Italian 100 (3), Classics 103 (3), 108 (3).

(D) Recommended Courses: Lower Division: Music 27A-27B (3-3), Classics 35 (2), English 1A-1B (3-3), Speech 2A-2B (3-3). Upper Division: Classics 178 (2), Philosophy 136A-136B (3-3).

*The University Theater.*—Under the direction of the Department of Dramatic Art, the University Theater presents a major and a studio series of play productions. These presentations have a twofold purpose: (1) to present to the University community a program of distinguished dramas of all times and all countries; (2) to afford the students in the University an effective experience in dramatic art. Participation in the presentations is open to all students.

NOTE.—The attention of the student is directed to the major in dramatic literature (see page 72).

## LOWER DIVISION COURSES

- 10A-10B. Principles and Theory of Acting. (3-3) Yr. Beginning each semester.  
Mr. HARRIS, Mr. SCHNITZLER, Mr. ULMAN, Mr. PATTERSON  
Sections are limited to 20 students each, admitted by permission of the instructor.
20. Stagecrafts. (3) I and II. Mr. LOUNSBURY

## UPPER DIVISION COURSES

## Group A. Dramatic Art: Theory and Practice

- 130A-130B. Advanced Theory of Acting and Directing. (3-3) Yr.  
Sections are limited to 20 students. Mr. HARRIS, Mr. SCHNITZLER  
I: 130B. Shakespearean Drama (Schnitzler).  
II: 130A. Greek Drama (Harris).  
Prerequisite: courses 10A, 10B, 407 or Speech 2A, and the consent of the instructor.
- \*130C-130D. Advanced Theory of Acting and Directing. (3-3) Yr.  
Sections are limited to 20 students. Mr. HARRIS, Mr. SCHNITZLER  
I: 130C. Seventeenth- and Eighteenth-Century Drama (Schnitzler).  
II: 130D. Modern Drama (Harris).
135. Theory of Directing. (3) I and II. Mr. HARRIS, Mr. SCHNITZLER  
Prerequisite: courses 10A, 10B, 20, and the consent of the instructor.
- 160A-160B. Dramatic Theory. (3-3) Yr. Mr. THOMPSON  
160A. Masterpieces of dramatic art and criticism, from the Greeks to the Nineteenth Century.  
160B. Contemporary problems of dramatic art.
190. Laboratory Projects in Acting. (1-6) I and II.  
The STAFF (Mr. HARRIS in charge)  
Prerequisite: courses 10A-10B, 407 or Speech 2A, and the permission of the department.
191. Laboratory Projects in Directing. (1-6) I and II.  
The STAFF (Mr. HARRIS in charge)  
Prerequisite: courses 10A-10B, 135, 407, and the permission of the department.
192. Laboratory Projects in Stagecrafts. (1-6) I and II.  
The STAFF (Mr. HARRIS in charge)  
Prerequisite: courses 10A-10B, 20, and the permission of the department.  
NOTE.—Not more than 6 units from courses 190, 191, 192 will be credited toward the major.
199. Special Study for Advanced Undergraduates. (1-5) I and II.  
The STAFF (Mr. HARRIS in charge)
407. Speech for the Stage. (3) I and II. Mr. PATTERSON  
Sections are limited to 20 students each.  
Prerequisite: courses 10A, 10B, and the permission of the instructor.

---

\* Not to be given, 1947-1948.



**Group B. Dramatic Literature and History of Drama**

157A-157B. Modern European Drama. (3-3) Yr.

Mr. THOMPSON

## COURSES IN OTHER DEPARTMENTS

English 114A-114B. The English Drama. (3-3) Yr.

English 117A-117B. Shakespeare. (3-3) Yr.

English 117E. Shakespeare. (3).

English 154. Great Dramatists, Ancient and Modern. (3) I.

Spanish 105A-105B. Modern Drama: From the Romantic Movement to the Present. (2-2) Yr.

Spanish 109A-109B. The Spanish Drama of the Sixteenth and Seventeenth Centuries. (2-2) Yr.

Spanish 111A-111B. Cervantes. (2-2) Yr.

French 115A-115B. Modern French Drama. (2-2) Yr.

French 120A-120B. The Seventeenth Century. (2-2) Yr.

German 104. Dramas of the Nineteenth Century. (3) II.

German 108A. Schiller's Life and Works. (3) I.

Italian 100. Survey of Modern Drama from Goldoni to the Present. (3) II.

Greek 103. Drama. (3) II.

Latin 108. Roman Comedy. (3) I.

## ECONOMICS

ROBERT A. BRADY, Ph.D., Professor of Economics.

<sup>2</sup> NORMAN S. BUCHANAN, Ph.D., Professor of Economics.

JOHN B. CONDLIFFE, Sc.D., LL.D., Professor of Economics.

IRA B. CROSS, Ph.D., Professor of Economics on the Flood Foundation.

WILLIAM L. CRUM, M.A., Sc.D. (hon.), Ph.D., Professor of Economics.

STUART DAGGETT, Ph.D., Professor of Transportation on the Flood Foundation.

MALCOLM M. DAVISSON, J.D., Ph.D., Professor of Economics (Chairman of the Department).

HOWARD S. ELLIS, Ph.D., Professor of Economics.

ROBERT A. GORDON, Ph.D., Professor of Economics.

ERWALD T. GRETHER, Ph.D., Professor of Economics on the Flood Foundation.

\* CHARLES A. GULICK, JR., Ph.D., Professor of Economics.

EMILY H. HUNTINGTON, Ph.D., Professor of Economics.

MELVIN M. KNIGHT, Ph.D., Professor of Economics.

CARL LANDAUER, Ph.D., Professor of Economics.

PAUL S. TAYLOR, Ph.D., Professor of Economics.

LUCY W. STEBBINS, A.B., Litt.D., Professor of Social Economics, Emeritus.

JOE S. BAIN, JR., Ph.D., Associate Professor of Economics.

WILLIAM J. FELLNER, Ph.D., Associate Professor of Economics.

FRANK L. KIDNER, Ph.D., Associate Professor of Economics.

SANFORD A. MOSK, Ph.D., Associate Professor of Economics.

EARL R. ROLPH, Ph.D., Assistant Professor of Economics.

---

GRIFFITH C. EVANS, Ph.D., Professor of Mathematics.

DOROTHY S. THOMAS, Ph.D., Professor of Rural Sociology.

GEORGE L. MEHREN, Ph.D., Assistant Professor of Agricultural Economics.

ROY W. JASTRAM, A.B., Lecturer in Business Administration.

JOHN M. LETICHE, M.A., Lecturer in Economics.

*Upper Division Prerequisites.*—For students with a major in economics, courses 1A-1B and 40 are prerequisite to all upper division work in the department unless otherwise specified. For students not majoring in economics, course 1A-1B and junior standing are prerequisite to all upper division work in the department, except for courses where Economics 40 is listed as a specific prerequisite.

*Letters and Science List.*—All undergraduate courses in economics are included in the Letters and Science List. For regulations governing this list, see page 82.

*Departmental Major Advisers:* MR. MOWBRAY, Chairman; MR. BAIN, MISS HUNTINGTON, MR. MOSK, MR. ROLPH.

<sup>2</sup> In residence spring semester only, 1947-1948.

\* Absent on leave, 1947-1948.

*Preparation for the Major.*—Required: courses 1A–1B and 40, and a minimum average grade of C in these courses. Recommended: course 10, Business Administration 6A–6B, and at least an introductory course in another social science (6 units in political science, history, or social institutions preferred). It is recommended that students who intend to make economics their major, and students in the School of Business Administration, complete courses 1A–1B and 40 in the freshman year, and Business Administration 6A–6B in the sophomore year.

*The Major.*—Required: 24 units of upper division economics. Courses in Business Administration listed below in the fields of concentration will be accepted in lieu of courses in economics.

Junior Year: courses 100A–100B (6); 110, 112 or 113 (3); 135 (3).

Senior Year: 9 units in one of the fields of concentration listed below. Courses required to be included in the 9 units in a concentration are indicated by an asterisk.

- I. Economic Theory: courses 101A, 101B, 102, 103.
- II. Economic History: one course in the group of Economics 110\*, 112\*, and 113\* not taken in satisfaction of the junior year requirement listed above; courses 101A, 101B, 150B.
- III. Monetary and Fiscal Policy: courses 103, 130A, 130B, 137.
- IV. Labor Economics: courses 150A\*, 150B\*; Business Administration 153, 154, 155.
- V. Economic Systems: courses 101B, 106, 110, 117A\*, 117B\*.
- VI. Industrial Organization and Public Policy: courses 116A\*, 116B\*, 117B, 122; Business Administration 134.
- VII. Statistics: courses to be selected in consultation with the departmental adviser.
- VIII. International Economic Relations: courses 114, 190A\*, 190B\*, 197; Business Administration 136.
- IX. Social Economics: courses 150A, 180\*, 185, 188A, 188B.
- X. Transportation and Public Service Regulation: courses 122, 170A\*, 170B, 175.

Students majoring in economics shall consult the faculty member responsible for the basic course in their field of concentration regarding their choice of electives.

It is recommended that students elect upper division courses in other related social sciences as part of their programs.

The program of each student majoring in Economics must be approved by one of the departmental advisers.

The department will certify to the completion of the major program for graduation only on the basis of at least a C average in the upper division courses taken in the department and in courses in Business Administration taken in satisfaction of major requirements. Students who do not maintain such an average may be required at any time to withdraw from the major in Economics.

#### LOWER DIVISION COURSES

1A–1B. Elements of Economics. (3–3) Yr. Beginning each semester.

Mr. CROSS, Mr. GORDON, Mr. KIDNER, Mr. LETICHE

Prerequisite: 1A is prerequisite to 1B. Open to freshmen and others.

Two lectures; one weekly recitation section to be arranged.

1A. I: (Cross, Kidner, Letiche); II: (Gordon, Letiche).

1B. I: (Gordon, Letiche); II: (Cross, Kidner, Letiche).

10. Economic History. (3) I and II. Mr. KNIGHT, Mr. MOSK  
I: Mr. Knight; II: Mr. Mosk.
40. Elementary Statistics. (3) I and II. Mr. JASTRAM  
Two lectures; one discussion meeting; one two-hour laboratory section per week.  
Open to any student with two years of high school algebra or one year of high school algebra and Mathematics D.  
NOTE.—Credit in this course is limited to 2 units for students who have received credit for Education 114 or Psychology 5.  
The mathematical treatment is reduced to the simplest possible terms, but it is urgently recommended that students who intend to take this course obtain at least the equivalent of two years of high school algebra.

## UPPER DIVISION COURSES

Primarily for undergraduates. Prerequisite for major students in Economics: courses 1A-1B, 40 and junior standing; for others, 1A-1B and junior standing except where course 40 is prerequisite for a specific course.

- 100A-100B. Economic Theory. (3-3) Yr. Beginning each semester.  
Mr. BAIN, Mr. ELLIS, Mr. FELLNER, Mr. GORDON,  
Miss HUNTINGTON, Mr. LANDAUER, Mr. ROLPH  
100A is not open to students taking Business Administration 107. It is recommended that this course be taken in the junior year. 100A is prerequisite to 100B.  
100A. I: (Ellis, Huntington, Landauer, ———); II: (Bain, Fellner, Rolph).  
100B. I: (Bain, Fellner, Rolph); II: (Ellis, Gordon, Huntington, ———).
- 101A-101B. History of Economic Doctrine. (3-3) Yr. Mr. BRADY, ———  
I: Mr. Brady; II: ———.
102. Advanced Economic Theory. (3) I and II. Mr. FELLNER  
Analysis of the determinants of the aggregate level of output and employment, and of the allocation of resources to specific uses. Includes advanced value and distribution theory, and a brief review of modern monetary theory.  
Prerequisite: course 100A-100B.
103. Dynamic Economics and Business Fluctuations. (3) I and II. Mr. KIDNER  
Prerequisite: courses 40, 135 and 100A or Business Administration 107. It is recommended that this course be taken in the senior year.
104. Economic Policy. (3) I and II. ———  
Discussions in the daily press and periodical literature will be followed.  
Open to all upper division students who have completed course 1A-1B.
105. Economics of Consumption. (3) I. Miss HUNTINGTON  
A general survey of consumption in the United States, with an analysis of the determination of consumer demands, and of the relation of the consumer to the price system.
106. Social Reform Movements. (3) II. Mr. LANDAUER

110. Economic History Since 1850. (3) II. Mr. KNIGHT  
Economic development since 1850 in the leading industrialized countries.  
Prerequisite: one course in economic history and the permission of the instructor.
112. Economic History of Europe. (3) I. Mr. KNIGHT
113. Economic History of the United States. (3) I and II. Mr. MOSK
114. Economic Problems of Latin America. (3) I. Mr. MOSK
- \*115. Economic Problems of the Far East. (3) I. Mr. KNIGHT
- 116A-116B. Industrial Organization and Public Policy. (3-3) Yr. Mr. BAIN  
The economics of large-scale industry, with particular reference to the organization of industrial markets, to price making in these markets, and to public policy toward concentrated industry.
- 117A-117B. Problems of Economic Planning. (3-3) Yr. Mr. LANDAUER  
117A. General theory of economic planning.  
117B. Comparative study of economic planning in different countries.
122. Theory of Domestic Trade. (3) II. Mr. MEHREN  
Primarily for seniors.  
Prerequisite: course 100A; Business Administration 107, or their equivalents.  
The theory of interregional and intraregional movements of trade; the nature of competition in the channels of distribution; an evaluation of the economic consequences of selected marketing activities; the regulation of trade.
- 130A-130B. Public Finance and Taxation. (3-3) Yr. Beginning each semester.  
Mr. DAVISSON, Mr. ROLPH  
130A. I and II: Davisson. 130B. II: Rolph.
135. Money and Credit. (3) I and II. Mr. CROSS, Mr. ROLPH  
Primarily for juniors.  
I: (Cross, Rolph); II: (Cross).
137. Money, Banking, and Monetary Policy. (3) I and II. \_\_\_\_\_  
Prerequisite: course 135.  
Analysis of the mechanics of the monetary system of the United States, with studies of monetary systems of other countries; problems involved in monetary management and evaluation of programs for monetary and banking reform.
142. Advanced Statistics. (3) I. Mr. MOWBRAY  
Prerequisite: course 40, the consent of the instructor, and adequate mathematical preparation.
143. Economics of Insurance. (3) I and II. Mr. MOWBRAY  
An introduction to the underlying principles of insurance followed by a descriptive study of the practices in the more important branches of the insurance business.

---

\* Not to be given, 1947-1948.

- 150A-\*150B. Labor Economics. (3-3) Yr. Mr. TAYLOR  
 150A. The social background of labor legislation and trade unionism.  
 In 1947-1948 course 150A will be given both fall and spring semesters.  
 \* 150B. History of the labor movement. Course 150A is recommended but  
 not required as a prerequisite for 150B.  
 NOTE.—Students will not receive credit for both course 150A and Busi-  
 ness Administration 151.
- 170A-170B. Transportation. (3-3) Yr. Mr. DAGGETT  
 170A. Inland transportation; a general discussion of the economics of  
 transportation including the inland waterway, the railroad, the street rail-  
 way, the automobile, and the airplane.  
 170B. Ocean transportation; historical development of ships and ship-  
 ping; ocean routes, ports and terminals; rates, documents; legislation;  
 current problems of American shipping. Course 170A is not prerequisite to  
 170B.
175. The Regulation of Business Affected with a Public Interest. (3) II.  
 Mr. DAGGETT  
 The basis of control, administrative and judiciary machinery employed,  
 problems of service, price, competition, and monopoly.
180. Problems of Poverty. (3) I. Miss HUNTINGTON  
 Facts, conditions, and current explanations of poverty; public and  
 private action to prevent destitution; theories concerning minimum stand-  
 ards of living.
185. Social Insurance. (3) II. Miss HUNTINGTON  
 An analysis of the theories underlying social insurance and social insur-  
 ance legislation throughout the world.
- 188A-188B. Population and Migration. (3-3) Yr. Mrs. THOMAS  
 Social and economic consequences of population change with special  
 reference to population movements in the past century, determinants of the  
 rate of population growth and decline, the impact of population changes on  
 economic development.
- 190A-190B. International Economic Relations. (3-3) Yr. Mr. CONDLIFFE  
 Fundamental factors in international economic relations.
197. Problems in International Economic Relations. (3) I and II.  
 Prerequisite: course 190A-190B. MR. LETICHE  
 Research in problems of international economic policy for advanced  
 undergraduate students.
199. Special Study for Advanced Undergraduates. (1-3) I and II.  
 The STAFF (Mr. MOSK, Mr. ROLPH in charge)  
 I: Mr. Mosk; II: Mr. Rolph.  
 Designed primarily for seniors on the Honors List of the College of  
 Letters and Science.

\* Not to be given, 1947-1948.

## GRADUATE COURSES

Concerning conditions for admission to graduate courses, see page 156.

200A-200B. Advanced Economic Theory. (3-3) Yr. Mr. ELLIS, Mr. FELLNER  
I: Mr. Ellis; II: Mr. Fellner.

201A-201B. History of Economic Thought. (2-2) Yr. MR. BRADY

202. Seminar in Advanced Economic Analysis. (2) I and II.

Mr. ELLIS, Mr. FELLNER

I: Mr. Fellner: National income and the theory of employment.

II: Mr. Ellis: International finance: the theory of capital movements developed in the classical, neo-classical, and more recent literature; historical directions of international investment, its present status, and the International Fund and Bank; international investment and economic progress.

203A-203B. Dynamic Economics and Business Fluctuations. (2-2) Yr.

I: (Gordon). II: (Kidner).

Mr. GORDON, Mr. KIDNER

204A-\*204B. Seminar in Contemporary Economic Theory. (3-3) Yr.

Prerequisite: course 200A-200B.

During 1947-1948, course 204A will be offered in the spring semester.

206A-206B. Seminar in Social Reform. (2-2) Yr.

Mr. LANDAUER

208. Mathematical Economics. (3) II.

Mr. EVANS

Prerequisite: Mathematics 121.

212A-212B. European Economic History. (2-2) Yr.

Mr. KNIGHT

213A-\*213B. American Economic History. (2-2) Yr.

Mr. MOSK

In 1947-1948 course 213A will be given both fall and spring semesters.

216A-216B. The Structure of Business Enterprise and Public Policy. (2-2) Yr.

Mr. BAIN

Functioning of the industrial sector of an economy geared to large-scale production and responding to prices determined in imperfectly competitive markets. Ownership and entrepreneurial situation created by the large corporation. Implications for public policy.

217. Seminar in Economic Planning. (2) I.

Mr. BRADY

231A-231B. Public Finance. (2-2) Yr.

Mr. ROLPH

235A-235B. Advanced Money and Credit. (3-3) Yr.

Mr. ELLIS

241. Statistical Methods in Social Investigation. (3) II. Miss HUNTINGTON

250A-250B. Seminar in Labor Economics. (3-3) Yr.

Mr. TAYLOR

\*252A-252B. Advanced Labor Economics. (3-3) Yr.

Mr. GULICK

Prerequisite: course 150A (course 252A is not prerequisite to 252B). An intensive study of problems concerning labor organizations and legislation.

\* Not to be given, 1947-1948.

- 290A-290B. Principles of International Economic Relations. (2-2) Yr.  
Prerequisite: course 190A-190B. Mr. CONDLIFFE  
History and literature of the theory of international trade and commercial policy and their application to current international economic questions.
291. Research in International Economic Relations. (2) I and II.  
Mr. CONDLIFFE  
Research on current problems of international economic interest.
298. Research. (1-6) I and II. Mr. FELLNER, Mr. GORDON  
I: Mr. Gordon; II: Mr. Fellner.  
Open to candidates for the Ph.D. degree who have passed the qualifying examination and who are engaged in research for the thesis, and in special cases, with the approval of the instructor in charge, to qualified graduate students who desire to do special work in a particular field.



## EDUCATION

- \*EDNA W. BAILEY, Ph.D., Professor of Education and Associate Director of Supervised Teaching.
- FRANK N. FREEMAN, Ph.D., D.Sc., Professor of Educational Psychology (Chairman of the Department).
- LUTHER C. GILBERT, Ph.D., Professor of Education.
- <sup>1</sup>FRANK W. HART, Ph.D., LL.D., Professor of Education.
- <sup>2</sup>MERTON E. HILL, Ed.D., Professor of Education.
- NOEL KEYS, Ph.D., Professor of Education.
- GEORGE C. KYTE, Ed.D., Professor of Education.
- DAVID H. RUSSELL, Ph.D., Professor of Education and Associate Director of Supervised Teaching.
- GEORGE A. RICE, Ed.D., Professor of Education, Emeritus.
- L. A. WILLIAMS, Ph.D., Professor of Education, Emeritus.
- <sup>2</sup>HAROLD D. CARTER, Ph.D., Associate Professor of Education.
- WILSON LITTLE, Ph.D., Associate Professor of Education.
- JOHN U. MICHAELIS, Ph.D., Associate Professor of Education and Director of Supervised Teaching.
- J. CECIL PARKER, Ed.D., Associate Professor of Education.
- LARS H. PETERSON, Ph.D., Associate Professor of Education.
- GLENN E. BARNETT, Ed.D., Assistant Professor of Education.
- WATSON DICKEMAN, Ph.D., Assistant Professor of Education.
- R. BERTRAND EVANS, Ph.D., Assistant Professor of English and Education.
- FREDERIC LILGE, Ph.D., Assistant Professor of Education.
- RICHARD D. MOSIER, Ph.D., Assistant Professor of Education.
- SIDNEY S. SUTHERLAND, M.S., Assistant Professor of Education and Supervisor of Teacher-Training in Agriculture, at Davis.
- FRANKLIN CARTER, Lecturer in Musical Education and Supervisor of the Teaching of Music.
- CLINTON C. CONRAD, Ph.D., Lecturer in Education and Associate Director of Supervised Teaching.
- <sup>1</sup>MALCOLM H. FINLEY, B.S., M.A., M.D., Lecturer in Special Education.
- LAWRENCE F. FOSTER, Ph.D., Lecturer in Education and Supervisor of the Teaching of Science.
- MABEL F. GIFFORD, Lecturer in Special Education.
- EDITH LINDSAY, Ed.D., Lecturer in Education.
- ELWYN A. MOREY, Lecturer in Education.
- DOROTHY B. NYSWANDER, Ph.D., Lecturer in Education.
- ILMA BADGLEY OATMAN, M.S., Lecturer in Education and Supervisor of the Teaching of Home Economics.
- HENRY SCHAEFER-SIMMERN, Lecturer in Art and Education.
- <sup>2</sup>MILDRED SHRINER, B.S., Lecturer in Special Education.

\* Sabbatical leave in residence, 1947-1948.

<sup>1</sup> In residence fall semester only, 1947-1948.

<sup>2</sup> In residence spring semester only, 1947-1948.

HERMAN A. SPINDT, Ph.D., Lecturer in Education.

ESTA ROSS STUART, M.A., Lecturer in Education and Supervisor of the Teaching of Commercial Subjects.

ROXIE ALEXANDER, Ed.B., Supervisor of Junior High Elementary Education.  
MARION AVERY, A.B., Supervisor of the Teaching of Physical Education for Girls.

JESSIE E. BOYD, M.A., Supervisor of School Library Practice.

DONETTA C. BRAINARD, A.B., Assistant Supervisor of the Teaching of English.

ROBERT E. BROWNLEE, A.B., Director of Curriculum Laboratory.

GEORGE J. BURKHARD, M.A., Principal of the University Elementary School.

RUBY L. HILL, M.A., Principal, Washington School, Oakland.

HARRY H. HINDMAN, A.B., Supervisor of the Teaching of Physical Education for Boys.

JAMES W. HOGE, M.A., Supervisor of the Teaching of Mathematics.

KATHARYN HOLE, Supervisor of the Teaching of Drawing.

BEULAH L. HOSTETTER, Supervisor of Music Education in the Elementary School.

LOIS A. LEAR, Supervisor of Physical Education in the Elementary School.

VIBELLA MARTIN, M.A., Associate Director of Curriculum Laboratory.

HENRY MECKEL, Ph.D., Supervisor of the Teaching of English.

ANNE F. MERRILL, M.A., Elementary Supervisor.

VERA D. MILLER, M.A., Supervisor of the Teaching of Modern Languages.

THOMAS C. POLSON, Ph.D., Assistant Supervisor of the Teaching of Science.

MARGARET RYAN, M.A., Assistant Supervisor of Speech Correction.

THOMAS A. SHELLHAMMER, M.A., Assistant Supervisor of the Teaching of Social Studies.

LESLIE SMITH, M.A., Principal, Claremont Junior High School, Oakland.

JOSIE W. STEWART, M.A., Supervisor of the Teaching of Kindergarten Work.

OLIVE STEWART, M.S., Supervisor of the Teaching of Social Studies in the Junior High School.

PORTIA F. WAGENET, A.B., Supervisor of the Teaching of Physical Education for Girls.

*Letters and Science List.*—Course 110 and not more than 3 units from 101, 102 and 105 are included in the Letters and Science List of Courses. For regulations governing this list, see page 82.

*Departmental Major Adviser:* Mr. FREEMAN.

*Preparation for the Major.*—Psychology 1A, and Zoölogy 10, and not less than 6 units in economics (preferably 1A-1B) or political science (preferably 1, 2) or social institutions (preferably 10A-10B) or philosophy (preferably 6A-6B).

*The Major.*—The major here described is the 24-unit major for the A.B. degree in the College of Letters and Science. A major in education is not an acceptable major for a Certificate of Completion of the teacher-training curricula.

Required, 18 units in education including the following 11 units: Education

101, 106, 110, 119, and a sequence of courses consisting of one of the following groups with additional courses from the remaining groups sufficient to make a total of 7 units.

- I. History of Education 102; 105.
- II. Educational Psychology 111; 113, 115, 116, 117, or 118.
- III. Elementary Education 118; 130; 134 or 138.
- IV. Educational Organization and Administration 141; 142; 145.
- V. Vocational Education 160; 161; 164.
- VI. Secondary Education 170; 117 or 172.
- VII. Social Education 111; 107.

The remaining 6 units may be chosen, with the approval of the department, from upper division courses in the Letters and Science List in the following departments: economics, education, history, philosophy, political science, psychology, or zoölogy. Students who transfer from normal schools or teachers colleges will not be permitted to elect courses in education for these 6 units. It is recommended that students include Philosophy 104 in the major program. Courses numbered in the 300 series are not accepted toward the major for the A.B. degree.

The department will certify to the completion of a major for graduation only on the basis of at least a C average in the upper division courses taken in the department. Students who cannot maintain this average may be required at any time to withdraw from the major in education.

#### TEACHER-TRAINING CURRICULA

Special provision is made for the professional training of teachers of three classes:

A. Those preparing to become teachers in elementary and secondary schools or in colleges.

B. Those preparing to engage in school administration, to become principals or superintendents of public schools, or to teach in normal schools or in college departments of education.

C. Graduates of normal schools, who are making further preparation for supervisory or administrative positions in elementary schools.

For detailed requirements see ANNOUNCEMENT OF THE SCHOOL OF EDUCATION.

#### UPPER DIVISION COURSES

Prerequisite: junior standing and Psychology 1A or equivalent.

101. The History of Education—General Course. (3) I and II.

MR. LILGE, MR. MOSIER, MR. SPINDT

The development of educational thought and practice viewed as a phase of social progress.

102. The History of American Education. (2) I.

MR. MOSIER

The leading ideas and ideals of American education and the institutions in which they have been embodied.

105. Education in Foreign Countries. (2) I.

MR. LILGE

Education as an instrument of political power and propaganda; its dependence on national cultural traditions. Especially valuable to students pursuing the study of a specific region.

106. Philosophy of Education. (2) I and II. MR. LILGE, MR. MOSIER  
The great educational classics and their meaning for modern man.
107. The School in the Social Order. (2) I and II. MR. MOSIER  
A study of the interrelations of the school and society, of the complexity of culture in which education functions, and of the political and social relations of the school in contemporary American society.
110. Introduction to Educational Psychology. (3) I and II.  
MR. H. D. CARTER, MR. GILBERT, MISS MOREY  
Original nature and tendencies of man; the learning process; individual differences and their measurement.
111. Growth and Development of Children. (2) I and II. MRS. BAILEY  
Prerequisite: course 110 or Psychology 2.
113. Individual Tests in Guidance. (2) I. MISS MOREY  
Prerequisite: 6 units in psychology or educational psychology.
114. Statistical Methods in Education. (2) II. MR. H. D. CARTER, MISS MOREY  
Prerequisite: course 110. Mathematics D is also recommended.
- \*115. Objective Tests and Measurements. (2) I. MR. H. D. CARTER  
Prerequisite: course 110, or equivalent and 114.  
Principles and functions of measurement in education; varieties of measurement in common use; the construction and validation of objective examinations; the improvement of school marks.
116. The Exceptional Child. (2) I. MR. KEYS  
Prerequisite: course 110, or a course in psychology additional to Psychology 1A.
117. Psychology of High School Subjects. (2) I and II. MR. GILBERT  
Prerequisite: course 110.
118. Psychology of Elementary School Subjects. (2) I and II.  
Prerequisite: courses 110, 130. MR. RUSSELL  
A psychological analysis of the various subjects of the elementary school curriculum with particular attention to psychological experiments.
119. Standard Tests in Education. (3) I and II.  
MR. H. D. CARTER, MISS MOREY  
A critical survey and evaluation of standard tests, including achievement and psychological tests available for school purposes; practice in giving and scoring tests, and interpreting results for the improvement of instruction; organization of a testing program.
124. Principles of Curriculum Development. (2) I. MR. PARKER  
Prerequisite: courses 130 or 170, 110, 111.  
Principles underlying the development of curricula on the elementary and secondary levels in the light of contemporary social needs and with the application of present knowledge in the field of psychology, theory, and biology.

---

\* Not to be given, 1947-1948.

125. Audio-Visual Education. (2) I and II. MR. FOSTER  
Prerequisite: course 130 or 170.  
An introduction to audio-visual, radio, and other aids to teaching; their selection, use, and evaluation. Laboratory work will include making and collecting teaching materials, such as slides, film strips, graphs, and charts; operating commonly used audio-visual equipment; and practicing demonstration and blackboard techniques.
130. Elementary Education. (3) I and II. MR. BARNETT  
Prerequisite: course 110 (completed or taken concurrently).
131. Special Problems of Teaching in Elementary Schools. (2) I and II. MR. KYTE  
Newer trends and teaching problems in oral and written language, spelling, handwriting, creative expression, arithmetic, health and physical education, art, and music.
134. Reading and Literature in the Elementary School. (2) I and II. MR. RUSSELL
138. Social Studies in the Elementary School. (2) I and II. MR. MICHAELIS
- \*140. The Teacher and Administration. (2) II. MR. PETERSON  
Principles of educational administration as applied to the duties and responsibilities of the classroom teacher.
- \*141. The Administration of City School Systems. (2) II. MR. LITTLE  
Interpretation of the principles and policies involved in city school organization and administration.
142. The Administration of State School Systems. (2) I. MR. LITTLE  
The organization and administration of state school systems with special reference to the interrelation of federal, state, and county support and organization.
145. Problems in Public School Finance and Business Administration. (2) I. MR. LITTLE  
Prerequisite: courses 140 or 141, and 142, and teaching experience.
148. Public Education in California. (2) II. MR. LITTLE  
Organization and administration of the California school system, as given in the school law of the state and as interpreted by the rulings of the State Superintendent of Public Instruction and the Attorney General.
149. See under *Special Education*, page 264.
151. Administration of the School Health Program. (2) II. Miss LINDSAY, Mrs. NYSWANDER  
Organization and administration of school health work; public health aspects of school hygiene in relation to school physician, nurse, principal, and teachers.
152. Health Problems in the Secondary Schools. (2) I. Miss LINDSAY

\* Not to be given, 1947-1948.

- \*153. Mental Hygiene—Elementary. (2) I. Mr. FINLEY  
Prerequisite: course 110.  
A basic course concerned with problems of childhood. Development from infancy through adolescence; factors contributing to mental health and those causal in personal, educational, and social problems. Aggressive and withdrawing types of behavior; speech problems as symptoms of mental hygiene difficulties. The teacher as a positive influence in the child's mental condition.
154. Mental Hygiene—Advanced. (2) I. Mr. FINLEY  
Prerequisite: course 153 or its equivalent.  
The adult personality in relation to childhood and adolescent influences. Physical factors in personality. Approaches to the study of personality. Analysis and correction of minor maladjustments. Principles of positive mental health in personal and vocational adjustment.
160. Vocational Education. (2) I and II. ———, Mr. SUTHERLAND  
I. Sec. 1 (at Berkeley); Sec. 2 (at Davis); II. Sec. 2 (at Davis).  
Philosophy and organization of vocational education of less than college grade, with particular reference to principles underlying education for industry, agriculture, commerce, homemaking, and continuation education.
161. Occupational Information. (2) I and II. ———, Mr. SUTHERLAND  
I. Sec. 1 (at Berkeley); Sec. 2 (at Davis); II. Sec. 2 (at Davis).  
Community occupational surveys; interpretations; employment trends; sources of information; use of data.
162. Aptitude Test Construction, Administration, and Evaluation of Results. (2) II.  
Prerequisite: a previous course in test administration or its equivalent in experience.  
Advantages and present limitations in the use of tests for employee selection and for vocational counseling and guidance.
163. Social and Economic Backgrounds of Vocational Education and Counseling. (2) II. ———  
Relation of vocational education and guidance to changes in economic conditions, supply and demand of workers, labor unions, inventions, changes in occupations, and social conditions.
164. Counseling and Guidance. (2) I and II. ———  
Objectives, problems, programs, types of counseling; contributions by teachers, principals, specialists; community aids; evaluating the counseling service.
165. Business Education in Secondary Schools. (3) I and II. Mrs. STUART  
Functions of business education; its relation to general education; organization, administration and teaching; special emphasis on curricula and current problems in California; analysis of tests; significant research. This course is prerequisite to 320E, Section 13.

\* Not to be given, 1947-1948.

## 166. Homemaking Education in Secondary Schools. (2) I and II.

Mrs. OATMAN

The development, scope and organization of homemaking education in the public schools. Current trends and practices in curriculum planning; analysis of teaching materials; designed for students interested in teaching general home economics and nutrition.

## 167. Individual Inventory. (2) I.

Types of information needed; procedures and techniques; records, forms, case studies; interpretation of data.

## 170. Secondary Education. (2) I and II.

MR. CONRAD, MR. SPINDT

Prerequisite: courses 110 and 111; ordinarily juniors will not be admitted. (These requirements will be administered without exception for all University of California students. Graduates from other institutions may take the prerequisites together with the course, but are advised that this will be a decided handicap.) Students in both sections must have Mondays at 1 o'clock free for group activities.

## 172. Junior High School Education. (2) I and II.

MR. BARNETT

Prerequisite: course 110 already completed or taken concurrently. Methods, curricula, organization, and supervision.

## 181. Adult Education. (2) I.

MR. DICKEBMAN

A general overview of the field of adult education; history, aims, methods and materials, organization and administration.

## 199. Special Study for Advanced Undergraduates. (1-5) I and II.

MR. FREEMAN, MR. SUTHERLAND

Sec. 1 (at Berkeley), Mr. Freeman in charge.  
Sec. 2 (at Davis), Mr. Sutherland in charge.

## GRADUATE COURSES

As a condition for enrollment in a graduate course the student must submit to the instructor in charge of the course satisfactory evidence of preparation for the work proposed; adequate preparation will consist normally of the completion of at least twelve units of upper division work basic to the subject of the graduate course.

The admission of undergraduates to graduate courses is limited to seniors who have an average of at least B in the basic courses; the study-list limits in such cases are the limits imposed by the rules of the Graduate Division.

## 200. Research Techniques. Seminar. (2) II.

Miss MOREY

Research problems in education; historical and scientific methods; design of investigations; bibliographical techniques, statistical methods, survey methods, and laboratory techniques; methods of reporting results.

## 201A-201B. History of Education. Seminar. (2-2) Yr.

MR. MOSIER

Admission on consultation with instructor.

Application of methods of historical research in a selected field in the history of education.

## 206A-\*206B. Philosophy of Education. Seminar. (2-2) Yr.

MR. LILGE

Systematic studies of individual authors or selected problems in the philosophy of education.

\* Not to be given, 1947-1948.

- 210B-210A. Advanced Educational Psychology. (2-2) Yr.  
Prerequisite: courses 110 and 114. Mr. FREEMAN, Mr. KEYS  
I: 210B, Mr. Freeman.  
II: 210A, Mr. Keys.
212. Analysis of Difficulties in Reading and Language Arts. (2) II.  
Mr. GILBERT  
Clinical procedures in the study of pupils who are failing in reading, spelling, oral and written composition; various types and causes of failures; physical handicaps to learning; personality and emotional maladjustments; use of educational and psychological tests, informal analyses, rating scales, inventories and interviews; specific, corrective procedures.
- \*214. Advanced Statistics with Application to Methods of Educational Investigation. (2) I.  
Mr. H. D. CARTER  
Prerequisite: a course in elementary statistics, and the permission of the instructor.  
For students conducting investigations involving statistical analysis or expecting to teach tests and measurements, and statistical methods in college.
- 216A-216B. Educational Psychology. Seminar. (2-2) Yr.  
The EDUCATIONAL PSYCHOLOGY STAFF (Mr. FREEMAN in charge)  
Admission on consultation with Mr. Freeman.  
Conferences for the presentation and discussion of methods and results of investigations in progress. In addition to the general sessions, the seminar will meet in groups according to the interests of those enrolled, under the supervision and direction of Mrs. Bailey, Mr. H. D. Carter, Mr. Freeman, Mr. Gilbert, or Mr. Keys.
217. Experimental Education. (2) I and II. Mr. GILBERT  
Admission on consultation with instructor.  
Laboratory experiments, with special reference to the more elaborate techniques applied to the various school subjects. The course includes voice recording, photographing eye-movements in reading and spelling, analysis of rhythm in reading, arithmetic, and writing; and studies of the motor responses accompanying appreciation. Each member of the class will participate in all experiments.
- 220A-220B. Problems of Curriculum and Instruction in Art. (2-2) Yr.  
Mr. SCHAEFER-SIMMEEN  
Both 220A and 220B will be given each semester.  
Designed for supervisors and teachers of art in the elementary school or high school. Deals with problems in curriculum and instruction from the point of view of establishing a mental foundation of art education which aims at the unfolding and organic development of inherent artistic potentialities.
- 224A-224B. School Curricula. Seminar. (2-2) Yr. Mr. PARKER  
For advanced students who wish to study intensively some topic in the field of curriculum. Admission only on consultation with instructor.
226. Curriculum Construction. (2) II. Mr. PARKER  
Problems of curriculum construction as they relate to the selection of material for instruction and organization of such material into suitable units of instruction.

---

\* Not to be given, 1947-1948.



## 227. Problems in Curriculum Development. Practicum. (2) I and II.

MR. PARKER

Prerequisite: two courses in elementary and/or secondary curriculum, teaching experience, graduate standing, and consent of the instructor.

Designed especially for administrators, supervisors, and teachers in elementary and secondary schools and county officers who have problems in curriculum development. Major emphasis on process of scientifically selecting and organizing teaching-learning materials. The laboratory approach characterizes the method of the course.

## 230A-230B. Elementary Education. Seminar. (2-2) Yr.

MR. BARNETT

Prerequisite: 12 units in education with teaching experience and the permission of the instructor.

Selected topics pertaining to improvement of instruction. For advanced students who are candidates for higher degrees.

## 231. Administration of Elementary Education: Practicum. (2) I.

Admission on consultation with the instructor.

MR. KYTE

The work of the principal and his assistant in organizing, administering, and supervising an elementary school in order to improve instruction.

## 232A-232B. The Elementary School Curriculum. Seminar. (2-2) Yr.

MR. RUSSELL, MR. MICHAELIS

Admission on consultation with the instructor.

## 233A-233B. Supervision of Elementary Education: Practicum. (2-2) Yr.

Admission on consultation with the instructor.

MR. KYTE

## 234A-234B. Supervision of Elementary Education. Seminar. (2-2) Yr.

Admission on consultation with the instructor.

MR. KYTE

## 235. The Elementary School Curriculum. (2) II.

MR. KYTE

Principles and procedures in curriculum making for the elementary school.

Admission on consultation with the instructor.

## 240A-240B. Educational Administration. Seminar. (2-2) Yr.

MR. HART, MR. PETERSON, MR. LITTLE

Limited to candidates for the master's or doctor's degree, whose special interest is administration.

Admission on consultation with instructor.

## 244. Problems in Schoolhousing. (2) I and II.

MR. HART, MR. LITTLE, MR. PETERSON

Prerequisite: course 248A-248B or extensive experience in school administration.

## 248A-248B. Educational Administration. (2-2) Yr.

MR. HART, MR. PETERSON, MR. LITTLE

Prerequisite: 12 units of education or extensive teaching and administrative experience.

Intended to serve the fundamental needs of state, county, and city superintendents or other school administrative officers. The basic material of study will be the school surveys, superintendents' reports, and contributions to education in the field of administration.

## 249A-249B. School Surveys. Practicum. (2-2) Yr.

MR. HART, MR. PETERSON, MR. LITTLE

Limited to students enrolled in course 248A-248B.

Training in the practical application of the principles and technique developed in the companion course (248A-248B) including additional field work equivalent to two hours per week. Opportunity to organize and participate in the conduct of school surveys and field studies.

## 260A-260B. Counseling, Guidance, and Vocational Education. Seminar.

(2-2) Yr.

## 264. Organization and Administration of Counseling and Guidance Programs.

(2) II.

Basic principles; staff relationships; relationship between the school counseling and guidance program and other personnel and welfare activities in the community.

## 270A-270B. Secondary Education. Seminar. (2-2) Yr. MR. LITTLE, MR. HILL

Admission on consultation with the instructor.

## 272A. Secondary School Curriculum: Basic Principles. (2) I. MR. PARKER

Prerequisite: courses 110, 111, 170, or their equivalents, graduate standing, and permission of the instructor.

For advanced students who wish to make a thorough study of basic principles of curriculum development, with special reference to the secondary school.

## 272B. Secondary School Curriculum: Techniques of Curriculum Making. (2) II.

MR. PARKER

Prerequisite: course 272A, graduate standing, and permission of the instructor.

For advanced students who wish to make critical studies of current practices in curriculum making in secondary schools. This course will place emphasis upon criteria for the selection and organization of instructional materials and activities. It will also stress practice in the analysis and evaluation of courses of study in current use.

## 273. Supervision in Secondary Schools. (2) II.

MR. HILL

Prerequisite: course 130 or 170, teaching experience, and the permission of the instructor.

## 275. Secondary Education: Survey. (2) I.

MR. LITTLE

Survey and critical review of secondary education literature, including research studies, yearbooks, reports, and other documents. Study of the scope, status and trend of significant problems and aspects of the high school and junior college. For advanced students. Admission on consultation with the instructor.

## 276. The Administration of Secondary Education. Practicum. (2) II.

Prerequisite: courses 170 and 141 or 142.

MR. HILL

## 279. The Junior College: A Practicum. (2) II.

MR. HILL

Limited to candidates for advanced degrees or for the junior college credential whose special interest is teaching in or the administration of the junior college. Each student will be required to select a problem in the junior college field and develop it fully during the semester.

281. Adult Education. Seminar. (2) I and II. MR. DICKERMAN  
 Review of recent literature and discussion of critical problems in adult education. Opportunity for individual and group research. Open only to graduate students who have completed course 181 or who have had equivalent study or experience.
- \*284. Counseling, Child Welfare and Parent Education. (2) I. Mrs. BAILEY  
 For counselors, supervisors of attendance and child welfare, and school administrators. Current practices with regard to pupil personnel services. Techniques in studying individual pupils; child guidance procedures frequently used; adaptations to different grade levels, to rural and urban situations. In-service training for cooperation in these techniques. Community resources in child welfare, especially parents' organizations and study classes. Techniques of parent education as part of adult education and as a factor in children's welfare.
- \*285. Social Development of Children and Youth. (2) II. Mrs. BAILEY  
 Admission on consultation with the instructor.
- \*290. Biological Foundations of Education. (2) I. Mrs. BAILEY  
 Discussion of fundamentals of human nature; consideration of significance of knowledge in this field in our thinking with regard to problems of growth, development, education, and guidance.
298. Directed Research. Seminar. (2-4) I and II.  
The STAFF (Mr. FREEMAN in charge)  
 Admission only with permission of instructor in charge.  
 Open only to candidates for the Ph.D. and Ed.D. degrees who have passed the departmental qualifying examinations and who present an approved plan of research, and in special cases, to students who present evidence of qualifications and approved plans for carrying on a particular type of research.

### Supervised Teaching

320. Supervised Teaching, Professional Methods. I and II.  
Mr. MICHAELIS, Mrs. BAILEY, Mr. RUSSELL,  
Mr. CONRAD, and SUPERVISORY STAFF  
 The University of California will accept for teacher-training those candidates who meet the requirements set up by the State Department of Education in health including specifically sight and hearing; the University of California will not admit to teacher-training in Education 320C, inexperienced applicants who are over 35 years of age.
- 320A. Introduction to Teaching. (1) I and II. MR. MICHAELIS, MR. BARNETT  
 Lectures, conferences, laboratory, and field work. Observations and participation in some form of public school work. A limited number of juniors and seniors will be admitted. It is strongly recommended that students reserve at least a two-hour period for field work.  
 Sec. 1 (Secondary), Mr. Michaelis; Sec. 2 (Elementary), Mr. Michaelis, Mr. Barnett, assisted by supervisors and members of the Curriculum Laboratory staff.

\* Not to be given, 1947-1948.

## 320B. Audio-Visual, Radio, and other Instructional Resources. (2) I and II.

Mr. MICHAELIS, Mr. FOSTER, Miss BOYD,  
Miss HOLE, Mr. POLSON, Mrs. STUART

Lectures, conferences, demonstrations, laboratory, and school experiences.

Introduction to the materials and methods of audio-visual-radio education. Instruction in the operation and care of equipment; selection and use of appropriate audio-visual materials; making of lantern slides; preparation of material for opaque projection; graphic presentations; collecting, organizing, and processing pamphlet and picture materials; evaluation procedures.

## 320C. Supervised Teaching. (3) I and II.

Mr. MICHAELIS, Mrs. BAILEY, Mr. CONRAD,  
Mr. RUSSELL, and SUPERVISORY STAFF

Prerequisite: courses 320A and 320B. Other prerequisites depend upon the type of credential desired. For Junior College Credential: courses 110 and 279 or 170; for Secondary Credential: courses 110 and 170; for General Junior High School Credential and General Elementary School Credential: courses 110, 118, 130, 134. In addition: a grade-point average of 1.5 or higher is required in the work of the junior and senior years, and a bachelor's degree.

Application for supervised teaching may be made at Room 107, Haviland Hall during the registration period of the last semester of the senior year.

Candidates who are graduates of institutions other than the University of California must submit two transcripts of records at the time of application.

## 320E. Methods of Teaching. (2) I and II.

Mr. MICHAELIS, Mr. RUSSELL, and SUPERVISORY STAFF

Lectures, conferences, and laboratory.

All students enrolled in 320C or 324 or 326 must carry concurrently one of the following sections:

## Sec. 1. Agriculture (at Davis).

Mr. SUTHERLAND

The principles and methods of teaching agriculture in the secondary schools of California in accordance with the provisions of the Federal and State Vocational Education Acts. Hours to be arranged.

## Sec. 2. Life Science and Physical Science. Mr. FOSTER, Mr. POLSON

The development and evaluation of science teaching objectives, content outlines and activity schedules. Emphasis upon science teaching techniques and evaluation of teaching procedures.

## Sec. 3. Mathematics.

Mr. HOGG

Objectives; selection and organization of subject matter; technique of presenting critical topics in junior and senior high school mathematics; classroom procedure; recent developments in the teaching of mathematics.

## Sec. 4. English.

Mr. MECKEL

Objectives in teaching literature and language in secondary schools; means of attainment; selection and handling of materials; general classroom procedure and special problems involved.

- Sec. 5. Foreign Languages. Miss MILLER  
 Survey of trends; unit planning: objectives, selection of content and teacher-pupil activities, timing, evaluation; application of audio-visual, graphic, library, evaluation techniques; investigation of current professional literature and source materials.
- \*Sec. 6. Latin. \_\_\_\_\_  
 Objectives; selection and handling of material, classroom procedure and special problems.
- Sec. 7. Social Studies. Miss STEWART  
 Planning for teaching: objectives, selection and organization of materials in terms of pupil needs; selected teaching procedures, classroom management, evaluation; current literature and trends.
- Sec. 8. Physical Education for Men. Mr. HINDMAN  
 Purpose and function of physical education. Evaluation, selection and adaptation of activities. Teaching procedures: organization, administration and supervision of the entire program in physical education classes, intramural and interschool.
- Sec. 9. Physical Education for Women. I Miss WAGENET  
 Objectives and methods of teaching physical education in junior and senior high schools. Class organization and management; selection and organization of activities.
- Sec. 10. Art. Miss HOLE  
 Methods of teaching art, with emphasis on individual development; examination of courses in fine arts, commercial art, stage design, crafts, special subjects; discussion of the role of the art teacher in relation to the school in general.
- Sec. 11. Homemaking. Mrs. OATMAN  
 Planning for teaching: bases for selection and organization of materials, their use and evaluation; teaching methods and classroom aids. Practices in class and department management. Relation of department programs to school and community. Recommended prerequisite: course 166.
- Sec. 12. Public School Music. Mr. F. CARTER  
 Principles of music education; specific aids to teaching choral, instrumental, and theoretical music; choice of materials; public performance; professional and community relationships.
- Sec. 13. Business Education. MRS. STUART  
 Application of psychological principles to the teaching of skill subjects; selection and organization of subject matter and materials, including visual aids; teaching procedures and techniques. Course 165 is prerequisite to supervised teaching in Business Education.
- \*Sec. 14. German. \_\_\_\_\_  
 Objectives; selection and handling of material; classroom procedure and special problems.

---

\* Not to be given, 1947-1948.

Sec. 15. General Junior High School or General Elementary School.

Mr. RUSSELL, Mrs. HOSTETTER, Miss LEAR, Miss MERRILL, \_\_\_\_\_

Restricted to candidates for the General Junior High School Credential or General Elementary School Credential.

Sec. 16. Junior College.

Mr. CONRAD

Principles and methods of organizing instruction in junior colleges with individual assignments especially related to the student's teaching major.

\*Sec. 17. Special Education.

Principles and methods of teaching handicapped children. Individual assignments related to the student's special field of work. Admission on approval of instructor. Hours to be arranged.

Librarianship 206.

Miss BOYD

School Library Administration is required of all candidates applying for special secondary credential in public school librarianship. This course must be taken in addition to course 320E to fulfill the requirements for the General Secondary Credential.

321. Supervised Teaching: Materials of Instruction and Class Management.

(2) I and II.

Mr. RUSSELL, Miss MERRILL, \_\_\_\_\_

Prerequisite: courses 110, 118, 130, 134, and a bachelor's degree. Open only to students who plan to complete requirements for the Recommendation for the General Junior High School Credential or the General Elementary Credential. Course 321 must be taken concurrently with course 320c.

Instructional materials and their use in the elementary school program; industrial arts activities; audio-visual materials and other learning aids in the classroom.

\*322. Methods and Practice in Adult Education. (4) II. Mr. DICKERMAN

Prerequisite: course 181 or experience in adult education.

The class sessions will provide a review of the principles of adult education and a discussion of the psychology of adult learning and of methods and materials appropriate for work with adult groups. The field work, which is likely to be at night, will provide observation of adult study groups and practice in working with them. The course may be offered in partial fulfillment of the requirements of the State Board of Education for the Special Secondary Credential in Adult Education.

323. Practicum in Supervised Teaching. (2-4) I and II.

Mr. CONRAD, Mr. SUTHERLAND

I and II. Sec. 1, Mr. Conrad; Sec. 2 (at Davis), Mr. Sutherland.

Prerequisite: course 320c, or experience as a teacher and the consent of the instructor. Candidates who are graduates of other institutions must submit two transcripts of records at the time of application.

An opportunity to obtain more extended and varied experience under supervision. Approximately one hundred hours, including preparation, will be devoted to the course.

324. Practicum in Supervised Teaching. (4) I and II.

Mr. CONRAD

Prerequisite: course 279, or 170, which may be taken concurrently if circumstances require, or an equivalent course if previously taken. 320E,

\* Not to be given, 1947-1948.

Sec. 16, must be taken concurrently. Open only to candidates for the Junior College Credential who are teaching assistants employed by the University.

- \*325. Supervised Practice in Study of Personnel Services Related to School Children. (2) II. MRS. BAILEY  
 Methods of social investigation related to the child in home, school, and community life. Field work in schools and in other social agencies.

### Special Education

- \*149. Administration, Organization, and Procedures in Special Education. (2) I.  
 A survey of current practices in the education of the exceptional child; national, state, and local organization of agencies dealing with the physically handicapped and mentally defective; problems of guidance and placement; teacher training; numbers, social and economic statuses. Special attention will be given to sources of information, books, pamphlets, and current periodicals in all major fields.
- \*326. Supervised Teaching in Special Education. (4) II.  
\_\_\_\_\_ and the STAFF in Special Education  
 Prerequisite: course 149, which may be taken concurrently if circumstances require. Course 320E, Sec. 17, must be taken concurrently with 326. Open only to candidates for a credential in special education and only after consultation with the instructor in charge of the course.  
 Teaching in near-by schools and institutions; conferences.
370. Basic Speech Development. (2) II. MRS. GIFFORD  
 Prerequisite: course 110.  
 Designed to familiarize classroom teachers and administrators with the development of normal speech. Methods and procedures for preventing poor and defective speech habits in children.
379. Educational Treatment of Cerebral Palsied Children. (2) II.  
 Admission only on consultation with instructor. MRS. SHRINER  
 Presentation of problems, including research and educational experiments. Adaptation of equipment for the individual child. Methods and curricular activities which aid coordination, speech, and walking. The social development of the child as integrated in the total school learning program.

### COURSES IN OTHER DEPARTMENTS ACCEPTED AS ELECTIVES FOR CREDENTIALS IN EDUCATION

- English 300. Problems in Teaching English Literature and Composition in Secondary Schools. (2) I. MR. EVANS
- French 300. Problems in the Teaching of French. (2) I. MR. MEYLAN
- Librarianship 206. School Library Administration. (2) II. MISS BOYD
- Mathematics 107. Mathematics in Secondary Schools. (2) I. MRS. McDONALD
- Music 328. Methods of Teaching Vocal Techniques. (1/2) I. MRS. JONES

\* Not to be given, 1947-1948.

- Music 329A. Methods of Teaching Stringed Instruments. (1) I and II.  
Mr. F. CARTER
- Music 329B. Methods of Teaching Brass Instruments. (1) I. Mr. KNUTH
- Music. 329C. Methods of Teaching Wood-Wind Instruments. (1) II.  
Mr. KNUTH
- Music 445D. Bassoon. ( $\frac{1}{2}$ ) I. Mr. KUBITSCHER
- Music 455A. French Horn. ( $\frac{1}{2}$ ) I. Mr. TRUTNER



**ENGINEERING**

\*MORROUGH P. O'BRIEN, B.S., Professor of Engineering (Chairman of the Department).

EVERETT D. HOWE, M.S., Associate Professor of Engineering (Acting Chairman of the Department).

**CIVIL ENGINEERING**

RAYMOND E. DAVIS, C.E., D.Eng., Professor of Civil Engineering and Director of the Engineering Materials Laboratory.

FRANCIS S. FOOTE, E.M., Professor of Railroad Engineering.

HAROLD B. GOTAAS, Sc.D., Professor of Sanitary Engineering.

SIDNEY T. HARDING, B.S., Professor of Irrigation.

BRUCE JAMEYSON, B.S., Professor of Civil Engineering (Chairman of the Division).

WILFRED F. LANGELIER, M.S., Professor of Sanitary Engineering.

GEORGE E. TROXELL, B.S., Professor of Civil Engineering.

CLEMENT T. WISKOCIL, C.É., Professor of Civil Engineering.

CHARLES DERLETH, JR., C.E., LL.D., Professor of Civil Engineering, Emeritus.

CHARLES G. HYDE, B.S., Professor of Sanitary Engineering, Emeritus.

HARMER E. DAVIS, M.S., Associate Professor of Civil Engineering.

HOWARD D. EBERHART, M.S., Associate Professor of Civil Engineering.

JOE W. KELLY, B.S., Associate Professor of Civil Engineering.

TUNG-YEN LIN, M.S., Assistant Professor of Civil Engineering.

EGOR P. POPOV, Ph.D., Assistant Professor of Civil Engineering.

NED P. CLYDE, M.S., Instructor in Civil Engineering.

• JOHN H. JONES, B.S., Instructor in Civil Engineering.

BORIS BRESLER, M.S., Lecturer in Civil Engineering.

ROBERT L. GREEN, B.S., Lecturer in Civil Engineering.

<sup>2</sup> ROBERT HORONJEFF, B.S., Lecturer in Civil Engineering.

FREDERICK L. HOTES, B.S., Lecturer in Civil Engineering.

JOHN D. ISAACS, B.S., Lecturer in Civil Engineering.

GEORGE D. MELKNER, B.S., Lecturer in Civil Engineering.

LAURENCE W. MILNES, B.S., Lecturer in Civil Engineering.

ARNOLD OLITT, B.S., Lecturer in Civil Engineering.

DAVID PIETZ, B.S., Lecturer in Civil Engineering.

KARL S. PISTER, B.S., Lecturer in Civil Engineering.

MILOS POLIVKA, M.S., Lecturer in Civil Engineering.

ELDON M. STOCK, M.S., Lecturer in Civil Engineering.

BERNARD A. VALLERGA, B.S., Lecturer in Civil Engineering.

RAY L. WALKER, B.S., Lecturer in Civil Engineering.

RICHARD J. WOODWARD, JR., B.S., Lecturer in Civil Engineering.

\* Absent on leave, 1947-1948.

<sup>2</sup> In residence spring semester only, 1947-1948.

## ELECTRICAL ENGINEERING

LAURISTON C. MARSHALL, Ph.D., Professor of Electrical Engineering.  
LESTER E. REUKEMA, Ph.D., Professor of Electrical Engineering.  
BURTIS L. ROBERTSON, Ph.D., Professor of Electrical Engineering.  
LEONARD J. BLACK, Ph.D., Associate Professor of Electrical Engineering.  
CHARLES F. DALZIEL, E.E., Associate Professor of Electrical Engineering.  
THOMAS C. MCFARLAND, M.S., Associate Professor of Electrical Engineering  
(Chairman of the Division).  
PAUL L. MORTON, Ph.D., Associate Professor of Electrical Engineering.  
HERBERT J. SCOTT, E.E., Associate Professor of Electrical Engineering.  
DAVID H. SLOAN, Ph.D., Associate Professor of Electrical Engineering.  
WILTON R. ABBOTT, Ph.D., Assistant Professor of Electrical Engineering.  
DAN M. FINCH, B.S., Assistant Professor of Electrical Engineering.  
TROY D. GRAYBEAL, D.Eng., Assistant Professor of Electrical Engineering.

JOHN T. BOLLJAHN, B.S., Lecturer in Electrical Engineering.  
ROBERT A. BRUNS, M.S., Lecturer in Electrical Engineering.  
ROBERT DE LIBAN, B.S., Lecturer in Electrical Engineering.  
ROBERT W. DOWNING, B.S., Lecturer in Electrical Engineering.  
JOSEPH T. GIER, M.S., Lecturer in Electrical Engineering.  
RUSSELL L. LINTON, JR., B.S., Lecturer in Electrical Engineering.  
DARREL J. MONSON, B.S., Lecturer in Electrical Engineering.  
MILLET G. MORGAN, Ph.D., Lecturer in Electrical Engineering.  
JOHN H. PRIEDIGKEIT, B.S., Lecturer in Electrical Engineering.  
WILSON S. PRITCHETT, M.S., Lecturer in Electrical Engineering.  
ROBERT M. SAUNDERS, M.S., Lecturer in Electrical Engineering.  
WILLIAM K. STONEY, M.S., Lecturer in Electrical Engineering.  
GEORGE F. TEALE, B.S., Lecturer in Electrical Engineering.  
JOHN R. WHINNERY, B.S., Lecturer in Electrical Engineering.

## IRRIGATION

BERNARD A. ETCHEVERRY, B.S., Professor of Irrigation and Drainage (Chairman of the Division).  
SIDNEY T. HARDING, B.S., Professor of Irrigation.

## MECHANICAL ENGINEERING

ALLAN BEENE-ALLEN, JR., Ph.D., Professor of Mechanical Engineering.  
RICHARD G. FOLSOM, Ph.D., Professor of Mechanical Engineering.  
FRANCIS W. HUTCHINSON, M.S., M.E., Professor of Mechanical Engineering.  
BENEDICT F. RABER, B.S., Professor of Mechanical Engineering.  
CARL J. VOGT, M.S., Professor of Mechanical Engineering (Chairman of the Division).  
BALDWIN M. WOODS, Ph.D., Professor of Mechanical Engineering.  
JOSEPH N. LECONTE, M.M.E., Professor of Mechanical Engineering, Emeritus.

- FLOYD H. CHERRY, B.S., Associate Professor of Mechanical Engineering, Emeritus.
- HERBERT B. LANGILLE, A.B., Associate Professor of Mechanical Engineering, Emeritus.
- ALEXANDER BOODBERG, M.S., M.E., Acting Associate Professor of Mechanical Engineering.
- HANS ALBERT EINSTEIN, D.S.T., Acting Associate Professor of Mechanical Engineering.
- E. PAUL DEGARMO, M.S., Associate Professor of Mechanical Engineering.
- CLYNE F. GARLAND, M.S., Associate Professor of Mechanical Engineering.
- HAROLD A. JOHNSON, M.S., Associate Professor of Mechanical Engineering.
- JOE W. JOHNSON, M.S., Associate Professor of Mechanical Engineering.
- EDMUND V. LAITONE, M.A., Associate Professor of Mechanical Engineering.
- ALEXANDER S. LEVENS, M.S., C.E., Associate Professor of Mechanical Engineering.
- \*RAYMOND C. MARTINELLI, Ph.D., Associate Professor of Mechanical Engineering.
- <sup>2</sup>JOHN A. PUTNAM, Ph.D., Associate Professor of Mechanical Engineering.
- ISRAEL I. CORNET, Ph.D., Assistant Professor of Mechanical Engineering.
- LOUIS E. DAVIS, M.S., Assistant Professor of Mechanical Engineering.
- RAYMOND C. GRASSI, M.S., Assistant Professor of Mechanical Engineering.
- FRED HIRSCH, M.S., Assistant Professor of Mechanical Engineering.
- HAROLD W. IVERSEN, M.S., Assistant Professor of Mechanical Engineering.
- JAMES T. LAPSLEY, M.S., Assistant Professor of Mechanical Engineering.
- ARTHUR S. LEONARD, M.S., Assistant Professor of Mechanical Engineering.
- RICHARD W. LEUTWILER, M.S., Assistant Professor of Mechanical Engineering.
- JAMES L. MERIAM, Ph.D., Assistant Professor of Mechanical Engineering.
- \*EUGENE F. MURPHY, M.E., Assistant Professor of Mechanical Engineering.
- CARL W. NELSON, Ph.D., Assistant Professor of Mechanical Engineering.
- PRENTISS C. NELSON, M.S., Assistant Professor of Mechanical Engineering.
- SAMUEL A. SCHAAF, Ph.D., Assistant Professor of Mechanical Engineering.
- ERICH G. THOMSEN, Ph.D., Assistant Professor of Mechanical Engineering.
- ROBERT V. DUNKLE, B.S., Instructor in Mechanical Engineering.
- ROSTISLAV A. GALUZEVSKI, M.S., Instructor in Mechanical Engineering.
- WARREN H. GIEDT, M.S., Instructor in Mechanical Engineering.
- WERNER GOLDSMITH, M.S., Instructor in Mechanical Engineering.
- JOHN W. HARMAN, M.S., Instructor in Mechanical Engineering.
- HYMAN D. LIFTON, B.S., Instructor in Mechanical Engineering.
- RUSSELL F. RHYNE, M.S., Instructor in Mechanical Engineering.
- FRED M. SAUER, M.S., Instructor in Mechanical Engineering.
- CYRIL P. ATKINSON, B.S., Lecturer in Mechanical Engineering.
- FRANCIS R. BICHOWSKY, Ph.D., Lecturer in Mechanical Engineering.

\* Absent on leave, 1947-1948.

<sup>2</sup> In residence spring semester only, 1947-1948.

DON M. CUNNINGHAM, M.S., Lecturer in Mechanical Engineering.  
 LEO K. EDUARDE, B.S., Lecturer in Mechanical Engineering.  
 LEONARD FARBAR, M.S., Lecturer in Mechanical Engineering.  
 LAWRENCE M. GROSSMAN, M.S., Lecturer in Mechanical Engineering.  
 FRANK M. HAMAKER, M.S., Lecturer in Mechanical Engineering.  
 HENRY E. HARRIS, M.S., Lecturer in Mechanical Engineering.  
 ENEAS D. KANE, M.S., Lecturer in Mechanical Engineering.  
 YAO H. KENG, M.S., Lecturer in Mechanical Engineering.  
 DANIEL O. KLUTE, B.S., Lecturer in Mechanical Engineering.  
 W. ROSS LAURENSEN, B.S., Lecturer in Mechanical Engineering.  
 ARTHUR S. LEONARD, M.S., Lecturer in Mechanical Engineering.  
 JAY SCHEINMAN, B.Eng., Lecturer in Mechanical Engineering.  
 RALPH A. SEBAN, M.S., Lecturer in Mechanical Engineering.  
 NATHAN W. SNYDER, M.S., Lecturer in Mechanical Engineering.

#### MINING AND METALLURGY

PHILIP B. BUCKY, E.M., Professor of Mining and Metallurgy.  
 ANDERS J. CARLSON, C.E., Ph.D., Professor of Petroleum Engineering.  
 LIONEL H. DUSCHAK, Ph.D., Professor of Metallurgy.  
 LESTER C. UREN, B.S., Professor of Petroleum Engineering (Chairman of the Division).  
 EDWARD H. WISSER, B.S., Professor of Mining and Metallurgy.  
 ERNEST A. HERSAM, B.S., Professor of Metallurgy, Emeritus.  
 JOHN E. DORN, Ph.D., Associate Professor of Physical Metallurgy.  
 RALPH R. HULTGREN, Ph.D., Associate Professor of Physical Metallurgy.  
 EARL R. PARKER, Met.E., Associate Professor of Physical Metallurgy.  
 BERNARD YORK, E.M., Assistant Professor of Mining.  
 WILBUR H. SOMERTON, M.S., Instructor in Petroleum Engineering.

DAVID W. MITCHELL, M.S., Lecturer in Metallurgy.

Lower Division courses in the Department of Engineering which are of general interest to students in various curricula are listed below:

#### ENGINEERING

1A-1B. Plane Surveying. (3-3) Yr. Mr. FOOTE and STAFF  
 I, II. Fifteen recitation sections; fifteen field sections.  
 1b, I. Six sections.  
 1a, II. Six sections.  
 Prerequisite: plane trigonometry and one high school unit in mechanical drawing.  
 Principles; field practice; calculations and mapping.

## 1x. Supplementary Course in Plane Surveying: Field Work. (1) I and II.

Open only to students entering the colleges at Berkeley with 2 units credit for recitations and lectures in courses 1A, 1B.

## \*3. Summer Class in Plane Surveying. (4)

The STAFF

The course will last four weeks. The camp site is near Fairfax, Marin County. For details see the ANNOUNCEMENT OF THE SURVEYING CAMP.

Prerequisite: Engineering 1A-1B.

## 8. Materials of Engineering Construction. (2) I and II.

Mr. KELLY, Mr. TROXELL, Mr. WALKER, Mr. WISKOCIL

Prerequisite: sophomore standing in Civil Engineering.

Structural properties and adaptability of various materials.

## 10B. Production Engineering. (3) I and II. Mr. THOMSEN in charge

Two lectures and one laboratory period weekly.

## I. For Electrical Engineering students.

Prerequisite: Chemistry 1A-1B; Mathematics 3A-3B; Physics 1A-1B, or 4A.

Heat treatment of ferrous metals, mechanical treatment of metals and manufacturing processes as aids in fabrication of machine parts. Experiments on gauges and measuring instruments, machine tools, plastic-forming equipment, casting, heat treating, and welding.

## II. For Mechanical and Industrial Engineering students.

Prerequisite: Chemistry 1A-1B; Mathematics 3A-3B; Physics 1A-1B, or 4A; and courses 10A, or 40.

Mechanical treatment of metals and manufacturing processes as aids in fabrication of machine parts. Experiments on gauges and measuring instruments, machine tools, plastic-forming equipment, and welding.

## 18A-18B. Strength of Materials. (3-3) Yr.

Mr. JAMEYSON, Mr. KELLY, Mr. WOODWARD

For students in Architecture. Prerequisite: Mathematics 4A, Physics 2A and 3A or 4A. Note that course 18B will be offered in the fall semester only.

Elementary analytic mechanics; application of statics and theory of elasticity to elements of structural design.

## 21. Plane Surveying. (3) II.

Mr. OLITT, Mr. MILNES

Lectures and field work.

Prerequisite: plane trigonometry and one high school unit in mechanical drawing. Prescribed for students in architecture, and landscape design; not open to students in engineering.

Principles; field practice; calculations and mapping.

## 22. Engineering Drawing. (2) I and II.

Mr. LEVENS in charge

Lectures and drafting.

Prerequisite: plane geometry, trigonometry, and mechanical drawing. Geometric constructions; freehand pictorials; theory of orthogonal projection; simple auxiliaries; sectioning, fasteners; dimensioning; simple working drawings.

\* To be given if conditions warrant.

23. Descriptive Geometry. (2) I and II. Mr. LEVENS in charge  
Lectures and drafting.  
Prerequisite: course 22 and Mathematics 3A or 3 (may be taken concurrently).  
The fundamental principles of descriptive geometry and their applications to the solution of three-dimensional problems arising in the various branches of engineering.
24. Advanced Engineering Drawing. (2) I and II. Mr. LEVENS in charge  
One lecture and five laboratory hours per week.  
Prerequisite: course 23.  
Working drawings of machine parts; freehand sketching; structural detailing; piping layouts; and introduction to graphic integration and differentiation.
35. Engineering Statics. (3) II. Mr. GARLAND in charge  
Three lectures per week.  
Prerequisite: Physics 4A, Mathematics 4A and 4B (Mathematics 4B may be taken concurrently).  
Force systems and equilibrium conditions as applied to engineering problems. Includes some graphical methods and the use of diagrams as an aid to algebraic solutions.
40. Elementary Metallurgy. (3) I and II.  
(Replaces Engineering 10A) Mr. DORN, Mr. HULTGREN, Mr. PARKER  
Two lectures and one lecture demonstration period per week.  
Prerequisite: Chemistry 1A, Physics 1A-1B or Physics 4A and 4B or 4C (may be taken concurrently).  
An elementary course for mechanical engineers describing the relationships between microstructure, composition, heat and mechanical treatment, and physical properties of metals and alloys. Heat treatment of steel and nonferrous metals, production of steel, aluminum, and magnesium. Description of many engineering alloys.  
Not open to metallurgy majors. Students specializing in metallurgy should take Chemistry 1B and Metallurgy 150A instead of this course.
- 40K. Elementary Metallurgy. (2) I and II.  
Mr. DORN, Mr. HULTGREN, Mr. PARKER  
Prerequisites: same as for course 40.  
The lecture part of course 40 (formerly 10A).
- \*40L. Elementary Metallurgy Laboratory. (1) I and II.  
Mr. DORN, Mr. HULTGREN, Mr. PARKER  
Prerequisite: course 40K, which may not be taken concurrently.  
The laboratory part of course 40 (formerly 10A).
41. Manufacturing Processes. (4) II. Mr. DEGARMO in charge  
Two lectures, one demonstration period, and one three-hour laboratory period per week.  
Prerequisite: courses 23 and 40; Chemistry 1A; Physics 4A.  
Nonmetals; casting processes; gaging; metal cutting; general purpose and production type machine tools; tooling; jigs and fixtures; hot and cold forming; grinding; protective and decorative surface treatments; gas and electric welding; relation of design to production.

---

\* Not to be given, 1947-1948.

## 48. The Engineering Student and His Profession. (1) I and II.

Mr. WOODS, Mr. VOGT

Prerequisite: freshman standing in an engineering program of study.  
History and development of the fields of engineering, the great engineers and their achievements, the engineering profession and modern trends.

Courses characteristic of the various curricula offered by the College of Engineering are listed under the several division of the Department. These lists follow.

## CIVIL ENGINEERING

## UPPER DIVISION COURSES

101. Engineering Photography. (2) I. Mr. ISAACS  
Prerequisite: Engineering 1A-1B.  
The application of photographic and photogrammetric methods to research and field engineering.
- 102A. Route Surveying. (3) I. Mr. FOOTE, Mr. CLYDE, Mr. PISTER, Mr. WALKER, Mr. WOODWARD  
Lectures and field work.  
Prerequisite: Engineering 1A-1B.  
Simple, compound, and transition curves, reconnaissance, preliminary and location surveys; calculations of earthwork and other quantities; field work.
- 102B. Economics of Railroad Locations. (3) II. Mr. FOOTE  
Prerequisite: course 102A.  
Influence of location upon earning power, with particular reference to effect of changes in distance, grade and curvature upon operating expenses; plotting of maps, profiles, and mass diagrams; drafting of railroad structures.
- †103. Summer Class in Route Surveying. (3) The STAFF
- 104A-104B. Railroad Location, Construction, Maintenance. (2-2) Yr. Mr. FOOTE  
Prerequisite: courses 102A, 102B; 104A is not prerequisite to 104B.  
Location surveys, line and grade changes, tunnels, grading, track laying, maintenance, yards, signaling, valuation.
105. Higher Surveying and Geodesy. (2) II. Mr. FOOTE  
Prerequisite: Engineering 1A-1B.  
Methods of geodetic surveying; adjustment of observations; geodetic positions; map projections.
106. Highway Engineering. (2) I. Mr. JAMEYSON  
Prerequisite: Engineering 8 and junior standing in engineering.  
Location, design, economics, drainage, construction, and maintenance of highways, streets, and pavements; drainage and pavements of airports.

---

† To be given if conditions warrant.

## 107A. Framed Structures. (3) I and II.

Mr. R. E. DAVIS, Mr. H. E. DAVIS, Mr. BRESLER, Mr. GREEN

For students in engineering who have completed courses 108A and Mechanical Engineering 102A.

Computation of stresses in roofs, building frames, and simple bridge trusses, by algebraic and graphical methods.

## 107C-107D. Framed Structures. (3-3) Yr.

Mr. EBERHART, Mr. JAMEYSON, Mr. OLITT,  
Mr. MITCHELL, Mr. VALLERGA

Prerequisite: courses 107A and 108A-108B. For students in civil engineering.

Lectures and drafting. Continuation of course 107A. Stress computations for steel-framed structures; design of plate girders, roof and bridge trusses; bridge shop practice.

## 107E-107F. Framed Structures. (3-3) Yr.

Mr. TROXELL

Prerequisite: courses 108A-108B, 107A, 112, or Engineering 18A-18B.

For architectural students. Stress computations and design of structures in wood, steel, and reinforced concrete, particularly of buildings; foundations and retaining walls; structural specifications.

## 107G. Analysis of Airplane Structures. (3) I.

Mr. EBERHART

For students in civil, electrical and mechanical engineering who have completed course 108A, and Mechanical Engineering 102A, or Engineering 35.

Solution of typical stress analysis problems; load requirements; thin web beams; monocoque construction; plate stringer combinations; beam columns; space frames.

## 108A-108B. Strength of Materials. (3-2) Yr. Beginning each semester.

Mr. R. E. DAVIS, Mr. H. E. DAVIS, Mr. EBERHART, Mr. KELLY,  
Mr. OLITT, Mr. TROXELL, Mr. WISKOCIL, Mr. LIN, Mr.  
POPOV, Mr. CLYDE, Mr. BRESLER, Mr. GREEN, Mr. JONES,  
Mr. MILNES, Mr. PISTER, Mr. WALKER

Both 108A and 108B will be given each semester.

Prerequisites: for civil engineering and mining and metallurgy, Mathematics 4A-4B, Physics 1C-1D or 4B-4C, Mechanical Engineering 102A-102B (or taken concurrently); for electrical and mechanical engineering, Mathematics 4A-4B (or 14A), Physics 1C-1D or 4B-4C, and Mechanical Engineering 102A-102B (or taken concurrently.)

Elastic and ultimate resistance of materials; stress analysis for bars, beams, columns, and shafts; theory of resilience; deflections and combined stresses; elements of design for wood, steel, and reinforced concrete structures.

## 108C. Civil Engineering Laboratory. (1) I.

Mr. R. E. DAVIS, Mr. KELLY, Mr. BRESLER,  
Mr. MITCHELL, Mr. TROXELL

Prerequisite: Engineering 8 and Civil Engineering 108A-108B.

Physical tests of brick, concrete, iron, steel, and wood.



## 108E. Concrete Laboratory. (2) II.

Mr. R. E. DAVIS, Mr. H. E. DAVIS, Mr. EBERHART,  
Mr. KELLY, Mr. TROXELL, Mr. WISKOCIL, Mr.  
OLITT, Mr. POLIVKA, Mr. VALLERGA

One three-hour laboratory period and one drafting period for the preparation of reports.

Prerequisite: Engineering 8 and satisfactory standing in course 108A-108B.

Physical tests of cement, aggregates and concrete; proportioning of concrete mixtures.

## 108F. Civil Engineering Laboratory. (1) I and II.

Mr. R. E. DAVIS, Mr. H. E. DAVIS, Mr. EBERHART, Mr. KELLY,  
Mr. TROXELL, Mr. WISKOCIL, Mr. OLITT, Mr. LIN, Mr.  
ISAACS, Mr. JONES, Mr. PISTER, Mr. POLIVKA, Mr. VALLERGA,  
Mr. BRESLER

For students in electrical and mechanical engineering, mining and metallurgy, and architecture.

Prerequisites (may be taken concurrently): for electrical and mechanical engineering, mining and metallurgy, course 108A, and Engineering 8 or 10A; for architecture, Engineering 18A.

I. For electrical engineering, mining and metallurgy, and architecture.

II. For mechanical engineering, mining and metallurgy, and architecture.

Physical tests of brick, cement, mortar, concrete, steel, iron, and wood.

## 108G. Soils and Asphalt Laboratory. (2) I and II.

Mr. H. E. DAVIS, Mr. OLITT, Mr. MILNES, Mr. VALLERGA, Mr. STOCK

Prerequisite: senior standing in the College of Engineering.

Physical and mechanical tests of soils and bituminous materials.

## 108H. Soil Mechanics Laboratory. (1) I.

Mr. H. E. DAVIS

Prerequisite: course 113 to be taken concurrently.

The physical and mechanical properties of soils for engineering uses.

## 109A. Sewerage Engineering. (2) I.

Mr. GOTAAS

Prerequisite: course 110.

Flow in sewers; fundamental considerations; design and construction of sewerage works.

## 109B. Sewage and Sewage Disposal. (2) II.

Mr. LANGELIER, Mr. GOTAAS

Prerequisite: course 111b.

Chemical and biological character of sewage; its treatment and disposal.

## 110. Hydraulics. (3) I.

Mr. J. W. JOHNSON, Mr. PUTNAM

Prerequisite: Mathematics 4A-4B, Physics 1C-1D or 4B-4C. Mechanical Engineering 102A or Engineering 35 may be taken concurrently.

Theory; application of principles; water-measuring devices; stream gauging.

## 111A. Water Supply Engineering. (2) II.

Mr. GOTAAS

Prerequisite: course 110.

Water supply demands, yields of water sources; design and construction of water works.

- 111B. Character and Sanitation of the Water Supply. (2) I.  
 Mr. LANGELIER, Mr. GOTAAAS  
 Prerequisite: courses 111A and 123A-123B.  
 Water from the aesthetic, commercial, and sanitary points of view; water purification.
112. Elements of Framed Structures. (2) II. Mr. WISKOCIL  
 Prerequisite: Engineering 18A-18B.  
 For students in architecture.  
 Analytical and graphical stress analysis for framed structures.
113. Soil Mechanics and Foundations. (2) I.  
 Mr. H. E. DAVIS, Mr. WOODWARD, Mr. VALLERGA  
 Prerequisite: course 108A-108B.  
 Physical and mechanical properties of soils, exploration and classification of soils; supporting capacity of soil foundations; piles and pile foundations; designs of footings.
114. Heavy Foundations and Masonry Structures. (3) II.  
 Mr. H. E. DAVIS, Mr. JAMEYSON, Mr. OLITT  
 Prerequisite: courses 108A-108B and 113.  
 Construction of heavy foundations, caissons, cofferdams, sheet piling; lateral earth pressure and analysis and design of retaining walls, theory and design of arches; culverts; tunnels, bridge piers, and dams.
116. Engineering Relations, Contracts, and Economics. (2) II. Mr. WISKOCIL  
 Prerequisite: senior standing in engineering.  
 Professional duties and privileges; principles of business law; preparation of contracts and contract documents, including specifications and drawings.
123. Sanitary Engineering Laboratory. (4) I and II. Mr. LANGELIER  
 Prerequisite: Chemistry 1A-1B.  
 Chemical and bacteriological examination of water and sewage, with particular reference to analytical control of water purification and sewage treatment processes.
124. Principles of Public Health Engineering. (3) II. Mr. LANGELIER  
 Prerequisite: junior standing. Open to upper division students in engineering and science.  
 A general course in the engineering approach to problems of municipal sanitation and public health.
125. Sanitation of Buildings. (2) I. Mr. LANGELIER  
 Prerequisite: Chemistry 1A-1B; open also to students in home economics and general science.  
 Water supply, drainage, heating, ventilating, and lighting of buildings.
- †126. Applied Sanitary Science and Municipal and State Sanitation. (2) II.  
 Prerequisite: courses 123 and 111B. Mr. GOTAAAS
151. Hydrology. (2) I. Mr. EINSTEIN  
 Prerequisite: course 110 or Mechanical Engineering 103.  
 Principles involved in determining water supplies and flood flows; application of statistics to hydrologic observations; unit hydrograph, ground water, runoff, storage and flood control problems.

† To be given if a sufficient number of students enroll.

161. Hydraulic Laboratory. (2) I and II. Mr. J. W. JOHNSON  
 Prerequisite: course 110 or Mechanical Engineering 103.  
 Intended primarily for students in civil engineering, electrical engineering, irrigation, and mining.  
 An introductory laboratory course which includes experiments on weirs, pipes and channels, spillways, hydraulic jump, model laws, turbines, pumps, and other hydraulic phenomena. Program largely optional.
198. Directed Group Study for Advanced Undergraduates. (1-5) I and II. Mr. JAMEYSON in charge  
 Prerequisite: senior standing in engineering.  
 Group study of a selected topic or topics in civil engineering.
199. Individual Study and Research for Advanced Undergraduates. (1-5) I and II. Mr. R. E. DAVIS in charge  
 Prerequisite: senior standing in engineering.  
 Individual study and/or investigation of a subject in civil engineering in which the student has a special interest.

## GRADUATE COURSES

Concerning conditions for admission to graduate courses, see page 156.

208. Advanced Soil Mechanics. (3) II. Mr. H. E. DAVIS  
 Prerequisites: Civil Engineering 108G, 113; Mechanical Engineering 103 or Civil Engineering 110.  
 Lectures, reading assignments, laboratory problems, and reports on advanced topics in soil mechanics.
220. Advanced Structural Analysis and Design. (3) I. Mr. JAMEYSON, Mr. OLITT  
 Prerequisite: courses 107C and 107D.  
 Lectures and computations in the analysis of statically indeterminate structures by moment distribution, column analogy and other methods; design of building frames for wind and earthquake loadings.
221. Experimental Structural and Stress Analysis. (3) II. Mr. EBERHART  
 Prerequisite: courses 107C and 107D.  
 Lectures and laboratory in the principal experimental methods used for structural and stress analysis, including similitude and loaded models, elastic line models, mechanical and electrical strain gaging, stress coat analysis, analogy methods, and photoelasticity.
- †222A-222B. Sanitary Design. (3-3) Yr. Beginning each semester. Mr. GOTAAAS  
 Prerequisite: courses 109A, 109B, 110, 111A, 111B. Program to be arranged in each case.  
 Design of elements of systems for water supply, water purification, sewerage, sewage and refuse treatment and disposal, etc.
225. Advanced Sanitary Engineering Laboratory. (3) I and II. Mr. LANGELIER  
 Beginning each semester.  
 Prerequisite: course 123. Program to be arranged in each case.  
 Special laboratory problems in analysis of milk, water, sewage, air, and refuse; tests of plant models and commercial apparatus.

† To be given if a sufficient number of students enroll.

- 230A-230B. Advanced Mechanics of Materials. (2-2) Yr. Mr. POPOV  
Prerequisite: courses 107A, 108A-108B, 108C, Mechanical Engineering 102A, 102B.  
Application of the theory of elasticity to complex states of stress; stress distribution in the range of plastic action; bending of plates, curved bars and beams on compressible supports; stresses in thick-walled cylinders; unsymmetrical bending; torsion of noncircular elements; theories of failure; design of structural elements for fluctuating and sustained loads.
235. Analysis and Design of Masonry Dams. (3) II. MR. HOTES  
Prerequisite: courses 113, 114 and 107C-107D.  
Lecture and design course. Selection of location and type; stability analysis, stress analysis of gravity, arch, multiple-arch, dome, and slab-buttress dams; problems imposed by construction conditions and use of mass concrete.
241. Industrial and Agricultural Waste Treatment. (2) II. MR. GOTAAAS  
Prerequisite: courses 109B, 123.  
Studies of the wastes from industrial and agricultural processes, that may be detrimental to watercourses, water supplies, sewerage systems, or the atmosphere; principles and methods for the disposal and treatment of important wastes and municipal refuse.
261. Advanced Hydraulic Structures Laboratory. (2) II. Mr. J. W. JOHNSON  
Prerequisite: courses 161 and 275.  
Advanced problems including experimental investigations of hydraulic model laws; experimental hydraulic structure, river and harbor models; studies of flood waves, oscillatory waves, beach erosion and protection, sediment transportation, energy dissipation.
270. Airport Engineering. (3) II. MR. HORONJEFF  
The selection of the site, and the planning, design, and construction of airports.
275. River-Harbor Hydraulics. (3) I. Mr. J. W. JOHNSON  
Prerequisite: graduate standing and Mechanical Engineering 162.  
The theory underlying the design of hydraulic structures with particular reference to variable flow, channel waves, tides, transportation of detritus by stream, beach erosion, and the use of hydraulic models.
280. Concrete Construction Practice. (2) I. MR. R. E. DAVIS  
Prerequisite: course 108E and graduate standing.  
Lectures and seminars. Consideration of broad aspects of concrete construction; technical requirements; selection of materials; control of quality; practices in the construction of dams, highways, airfields, canals, bridges, buildings, hydraulic structures.
298. Group Studies, Seminars or Group Research. (1-5) I and II.  
Prerequisite: graduate standing. Mr. H. E. DAVIS in charge  
Studies and investigations in selected advanced civil engineering subjects.
299. Individual Study or Research. (1-5) I and II. Mr. H. E. DAVIS in charge  
Prerequisite: graduate standing.  
Investigation of selected advanced civil engineering subjects.

**ELECTRICAL ENGINEERING****UPPER DIVISION COURSES****100A-100B. Electrical Circuits and Machinery. (3-3) Yr.**

Mr. ROBERTSON, Mr. TEALE, Mr. BLACK, Mr. HINRICKS

Prerequisite: Mathematics 14A or 4A-4B; Physics 1C or 4B.

Required for students in mechanical engineering.

(A) Voltage generation; circuit constants; single-phase and polyphase circuit analysis; single-phase transformers; polyphase connections of transformers.

(B) Machine windings and induced voltages; synchronous, induction, direct current, and single-phase machines; rectification; electronic tubes and their associated circuits; practical engineering problems.

**101. Electrical Engineering. (3) I and II.**

Mr. TEALE

Open to engineering students not registered in electrical or mechanical engineering.

Prerequisite: Mathematics 4A, Physics 1C or Physics 4B.

Electric power generation, transmission, distribution and utilization.

**102. Electrical Engineering Laboratory. (1) I and II.**

Mr. GRAYBEAL

One three-hour period per week to be arranged. Sections limited to 15 students.

Prerequisite: Electrical Engineering 101, which should be taken concurrently if possible.

Experiments designed to illustrate electrical theory and afford practice in the operation of electrical equipment. Designed to accompany and supplement Electrical Engineering 101.

**103A-103B. Engineering Design of Particle Accelerators. (2-2) Yr.**

Mr. MARSHALL

Prerequisite: junior or senior standing in College of Engineering. Design factors, and applications of modern nuclear machines such as: cascade transformers; impulse generator; Van De Graaf generator; betatron; cyclotrons (synchro-cyclotron) and linear accelerators.

**104A-104B. Electrical Laboratory. (1-1) Yr. Mr. ROBERTSON and the STAFF**

Three hours weekly.

Prerequisite: course 100A-100B or 110A-110B which may be taken concurrently.

Introductory experiments illustrating principles of design and operation of alternating and direct-current motors and generators, transformers, vacuum tubes, single and polyphase circuits, metering and control equipment.

**105. Electrical Measurements in Engineering. (3) I.**

Mr. PRITCHETT and the STAFF

Two lectures and one three-hour laboratory period per week.

Prerequisite (may be taken concurrently): course 100A, or 101, or 110A.

Electrical measurements using direct current and low-frequency alternating current. Principles and characteristics of indicating and recording instruments, including oscillographs; potentiometer, bridge, and comparison methods; applications of these in the measurement of temperature, pressure, strain, etc., in various fields of engineering.

\* Not to be given, spring semester, 1948.

106. Basic Electronics. (4) II. Mr. MORTON and the STAFF  
 Three lectures and one three-hour laboratory period per week.  
 Prerequisite: course 100A, or 101, or 110A; 105 is recommended.  
 Electron emission; motion of charges is electromagnetic fields; electrical conduction in vacuum and through gases; electron tubes, high-vacuum and gas-filled; elementary applications of electronic devices in rectifiers and amplifiers.
- 110A-110B. Electrical Circuits and Machinery. (3-3) Yr. Mr. MCFARLAND, Mr. MONSON  
 Prerequisite: Mathematics 14A or 4A-4B; Physics 1C, or Physics 4B.  
 Required for students in Electrical Engineering.  
 110A. Alternating-current circuits.  
 110B. Single-phase transformers, polyphase transformations, polyphase induction motors.
- 111A-111B. Advanced Electrical Machinery. (3-3) Yr. Mr. MCFARLAND, Mr. SAUNDERS  
 Prerequisite: courses 104A-104B, 110A-110B; Mechanical Engineering 102A-102B. Course 111A is not prerequisite to 111B.  
 Construction, theory of operation, and performance characteristics.
113. The Engineer and His Professional Duties. (2) I and II. Mr. MCFARLAND and the STAFF  
 Restricted to seniors in the curriculum in electrical engineering.  
 Oral and written reports on various subjects.
- 116A-116B. Engineering Electronics and Radio Engineering. (3-3) Yr. Mr. SCOTT, Mr. ABBOTT  
 Prerequisite: course 106 and senior standing in electrical or mechanical engineering.  
 Design and operating characteristics of radio transmitters and receivers for both amplitude and frequency modulation, of television transmitters and receivers, and of public address systems, the propagation of radio waves, and the design of antennas and antenna arrays.
- 117A-117B. Electromagnetic Fields and Waves. (3-3) Yr. Mr. WHINNEY  
 Prerequisite: course 106 and Mathematics 110, or equivalent.  
 The mathematics of vector fields, static electric and magnetic fields. Maxwell's equations. Applications to problems in wave propagation, skin effect, wave guides and cavity resonators, electromagnetic radiation, and ultra-high-frequency technique.
- 118A-118B. Power System Protection. (2-2) Yr. Mr. DALZIEL  
 Prerequisite: course 111A, which may be taken concurrently.  
 Symmetrical components, analysis of short circuits, decrement curves, power system protection, fundamentals of instrumentation, including instrument transformers, instruments and metering errors.
- 122A-122B. Electric-Power Transmission and Distribution. (3-3) Yr. Mr. GRAYBEAL  
 Prerequisite: senior standing in electrical or mechanical engineering.  
 Power system layout and economy. Fundamental theory and design of transmission lines, calculation and control of their operating characteristics. Distribution systems and practices; stations, primary and secondary lines, load studies. Inspection of representative plant.

- 123A-123B. Telephone Engineering. (3-3) Yr. Mr. REUKEMA  
Prerequisite: course 106 and senior standing in electrical or mechanical engineering.

Course 123A is not prerequisite to 123B.

Telephone, telegraph, and television transmission over open-wire line, cables and coaxial lines, characteristics of speech and hearing, design of transmitters and receivers, amplifiers, electrical filters, equalizers, phase distortion correctors, delay circuits, impedance balancing circuits, and other electrical networks, and their coordination in communication circuits.

126. Industrial Electronics. (4) I. Mr. BRUNS and the STAFF  
Prerequisite: course 106.

A survey of some important applications of electronic devices in industry with particular emphasis on grid-controlled rectifiers, electronic heating, ignitron control of electric welding and special electronic methods of testing, measurement and control.

127. Automatic Regulators. (4) II. Mr. GRAYBEAL and the STAFF

Prerequisite: courses 110A-110B or 100A-100B, and 104A-104B.

Basic principles of regulators; function and characteristics of component parts; steady-state and transient theory; criteria for, and methods of, obtaining stability; applications to voltage, current, speed, and torque regulators; positioning controls; servomechanisms.

- 132A-132B. Electrical Communications Laboratory. (2-2) Yr.

Mr. BLACK, Mr. SCOTT, and the STAFF

Prerequisite: courses 104A-104B, 110A-110B completed; and 116A, which may be taken concurrently with 132A.

Experiments illustrating the fundamental principles involved in the operation of communication circuits and electronic devices. Particular considerations are given to the special methods of measurement, and technique, which must be employed at high frequencies.

133. Electrical Machinery Laboratory. (2) I and II.

Mr. DALZIEL and the STAFF

Prerequisite: courses 104A-104B, 110A-110B completed; and 111A, which may be taken concurrently.

Selected experiments on direct- and alternating-current machinery, designed to illustrate fundamental principles, applications, and recent developments in electric power machinery.

135. Control of Electric Motors. (3) I. Mr. GRAYBEAL and the STAFF

Prerequisite: courses 110A-110B or 100A-100B, and 104A-104B.

Design, construction, and operation of motor control equipment, electromagnets and relays, mechanism of arc extinction in breakers, wiring diagrams, electronic control devices, controllers for reversing and adjustable-speed motors, and other electrical machinery.

140. Illumination Engineering. (3) I. Mr. FINCH

Prerequisite: senior standing or by special permission of the instructor.

Discussion and laboratory experiments in the basic principles of lighting as related to vision. Spectral characteristics of light sources. Photometric concepts, measurement of light, design of lighting installations.

141. Illumination and Radiation. (3) II. Mr. FINCH  
 Prerequisite: course 140 or equivalent.  
 Advanced illumination, ultraviolet radiation and infrared radiation calculations, and design problems. Surface sources, inter-reflections, black body radiation. Germicidal, erythematous, and fading properties of ultraviolet rays. Special problems in infrared transmitters, receivers and applications. Design of typical installations.
198. Directed Group Studies for Advanced Undergraduates. (1-5) I and II.  
 The STAFF (Mr. MCFARLAND in charge)  
 Prerequisite: senior standing in engineering.  
 Group study of selected topics. Study groups may be organized in advanced electrical engineering subjects.
199. Individual Study and Research for Advanced Undergraduates. (1-5) I and II. The STAFF (Mr. MCFARLAND in charge)  
 Prerequisite: senior standing in engineering.  
 Individual study and/or research on a problem normally chosen from a restricted list. Enrollment is subject to the scholarship requirements imposed by the instructor concerned.

## GRADUATE COURSES

Concerning conditions for admission to graduate courses, see page 156.

216. Advanced Radio Communication. (3) I. Mr. REUKEMA  
 Prerequisite: courses 116A-116B, 117A-117B.  
 Radiation and reception of electromagnetic energy and its propagation through space, advanced theory and design of antennas, beam transmission and reception, radar and radio aids in navigation and aviation.
217. Bessel Functions and Their Applications to Engineering Problems. (3) II.  
 Prerequisite: courses 116A-116B and 117A-117B. Mr. REUKEMA  
 Problems involving Bessel functions, their integration and asymptotic expansion in the fields of frequency modulation, cylindrical wave guides, resonant cavities, skin effect in conductors, vibrations in stretched circular or annular membranes, and design of radiating horns.
218. Power System Stability. (3) II. Mr. DALZIEL  
 Prerequisite: course 118A and 118B, which may be taken concurrently.  
 Reduction of power networks, steady state, and transient stability limits of power systems.
- 220A-220B. Electro-Acoustics. (2-2) Yr. Mr. BLACK  
 Principles and apparatus involved in the production, propagation, measurement, and reception of sound.
221. Transient Phenomena. (2) I. Mr. ROBERTSON  
 Physical and mathematical analysis of transient phenomena, primarily in electrical circuits; single, mesh, and coupled circuits; circuit response to varying voltage; general rules and theorems on circuits; equivalent systems; practical applications.
222. Operational Circuit Analysis. (2) II. Mr. ROBERTSON  
 Prerequisite: Electrical Engineering 221.  
 Application of operational methods of circuit analysis to systems having lumped or distributed constants.



## \*226A-226B. Advanced Industrial Electronics. (3-3) Yr.

Prerequisite: course 126.

Influence of nonlinear circuit parameters on design of high-frequency equipment; electronic instrumentation; counting circuits; medical applications; geophysical prospecting; elementary electron optics; semiconductors; electro-organic chemical processes.

## 298. Group Studies, Seminars, or Group Research. (1-5) I and II.

The STAFF (Mr. MCFARLAND in charge)

Prerequisite: graduate standing.

Advanced study in various fields of electrical engineering. Topics will vary from year to year. In the past, seminars have been arranged on non-linear conductors; symmetrical components; power-system short circuits and stability; electrical networks; electromagnetic radiation.

## 299. Individual Study or Research. (1-5) I and II.

The STAFF (Mr. MCFARLAND in charge)

Prerequisite: graduate standing.

Investigation of advanced electrical engineering problems.

## IRRIGATION

Courses 101, 102A, 102B, 103, 104, 107, and 112 are designed to meet the needs of engineering students. Courses 104, 106, 113 are designed for students in the College of Agriculture. Courses 103, 106, and 113 are also open to students in colleges other than Agriculture and Engineering.

For other courses in irrigation see under Agriculture in earlier pages of this CATALOGUE and in the PROSPECTUS OF THE COLLEGE OF AGRICULTURE.

## UPPER DIVISION COURSES

## 101. Irrigation Institutions and Economics. (2) II.

Mr. HARDING

Prerequisite: course 103 or 113.

Water rights, irrigation institutions and organizations.

## 102A. Irrigation Engineering. (2) I and II.

Mr. ETCHEVERRY

Prerequisite: Civil Engineering 110 or Mechanical Engineering 103.

Investigation and general planning of irrigation systems; conveyance of water; silt problems; design of canals, tunnels, flumes, pipelines, inverted siphons.

## 102B. Irrigation Engineering. (2) I and II.

Mr. ETCHEVERRY

Prerequisite: course 102A completed or in progress.

Principles of design of diversion weirs, headworks, wasteways, sand boxes, falls, checkgates, lateral headgates, road crossings, special types of distribution systems, measuring devices.

## 103. Agricultural Use of Water, and Irrigation Practice. (2) I. Mr. HARDING

Prerequisite: junior standing and course 1A.

Sources of water supply; disposal of irrigation water applied to soil; water requirement of crops; duty of water, preparation of land and methods of irrigation; small pumping plants.

\* Not to be given, 1947-1948.

104. Drainage and Flood Protection. (2) II. Mr. ETCHEVERRY  
Prerequisite: junior standing and course 103 or 113.  
Structure of soils, soil water and their relation to drainage; theory and principles of drainage; planning drainage systems; protection of lands against flood and tidewaters; organization of drainage and levee districts; methods of apportionment of assessments.
106. Irrigation Development and Organizations. (2) II. Mr. HARDING  
Prerequisite: Economics 1A-1B. For students in colleges other than Engineering.  
Principles and administration of rights to use of water; organizations for; and financing of irrigation developments.
107. Operation and Maintenance of Irrigation Systems. (2) I. Mr. HARDING  
Prerequisite: course 113 for agricultural students; courses 102A and 103 for engineering students.
112. Irrigation Design. (2) I and II. Mr. ETCHEVERRY  
Prerequisite: Civil Engineering 108A-108B and 110.  
Design of structures such as flumes, drops, inverted siphons, and head-gates with estimates of cost.
113. Development and Use of Farm Irrigation Water Supplies. (3) I. Mr. HARDING  
Prerequisite: Physics 1A-1B or 2A-2B or 4A-4B-4C; Chemistry 1A-1B.  
Principles of irrigation relating to use of water in agriculture, including the subjects within the responsibilities of owners of irrigated land as distinguished from engineering features. Open to students in any curriculum except civil engineering.
198. Directed Group Study for Advanced Undergraduates. (1-5) I and II. Mr. ETCHEVERRY in charge  
Prerequisite: senior standing in engineering.  
Group study of selected topics. Study groups may be organized in irrigation, drainage, and flood protection.
199. Individual Study and Research for Advanced Undergraduates. (1-5) I and II. Mr. ETCHEVERRY in charge  
Prerequisite: senior standing in engineering.  
Individual study and/or research on a problem normally chosen from a restricted list. Enrollment is subject to the scholarship requirements imposed by the instructor concerned.

## GRADUATE COURSES

Concerning conditions for admission to graduate courses, see page 156.

202. Advanced Irrigation Design. (2) I. Mr. ETCHEVERRY  
Prerequisite: course 112.  
Design of diversion works, irrigation systems, special hydraulic structures.
298. Group Studies. Seminars or Group Research. (1-5) I and II. Mr. ETCHEVERRY in charge  
Prerequisite: graduate standing.  
Special studies and problems relating to drainage, reclamation, and flood protection; irrigation institutions and organizations; development and utilization of water supplies.

## 299. Individual Study or Research. (1-5) I and II.

Prerequisite: graduate standing. Mr. ETCHEVERRY in charge  
Investigation of advanced irrigation, drainage, and flood protection problems.

## MECHANICAL ENGINEERING

## UPPER DIVISION COURSES

## 102B. Kinematics and Dynamics. (3) I and II.

MR. GARLAND

Prerequisite: Mathematics 4A-4B; Physics 4A, Engineering 35, or Mechanical Engineering 102A.

Kinematics and dynamics of a particle and of rigid bodies with emphasis on engineering applications. The force, momentum, and energy methods of solution are utilized.

## 103. Elementary Fluid Mechanics. (3) I and II.

Mr. IVERSEN in charge

Prerequisite: course 102A or Engineering 35 and course 102B.

The principles of mechanics applied to the flow of compressible and incompressible fluids. Includes the hydraulic problems of flow in closed and open conduits.

NOTE.—Class standing in a curriculum requires satisfactory completion of all lower division courses listed in the reference program of study.

## 105A-105B. Thermodynamics. (3-3) Yr.

Mr. RABER in charge

A special section is offered for students in the chemical engineering option.

Prerequisite: junior standing in an engineering program of study.

Energy transformation, equilibrium, reversibility, availability, and thermal properties of gases and vapors. Theoretical cycles, practical engine forms, mechanisms and economic performance of heat power equipment. Heat transmission and heat transmission apparatus.

## 106A. Machine Design. (3) I and II.

Mr. GARLAND in charge

Two lectures and one three-hour laboratory per week. (Not to be given after 1948-1949.)

Prerequisite: course 102A or Engineering 35; course 102B, Civil Engineering 108A and 108B.

Application of principles of mechanics, physical properties of materials, and shop processes to the design of machine parts. Lectures and problems.

## 106. Machine Design. (4) I and II.

Mr. GARLAND in charge

Two lectures and two three-hour laboratory periods per week.

Prerequisite: course 102B and Civil Engineering 108A.

Application of the principles of mechanics, physical properties of materials, and shop processes to the design of machine parts. Empirical and rational methods are employed. Lectures and problems.

## 107. Elementary Heat Power Laboratory. (3) I and II.

Mr. P. C. NELSON in charge

Prerequisite: course 105A and 105B (may be taken concurrently). For students in other than the mechanical engineering program of study.

Heat transfer, thermodynamics, fluid flow, and mechanics.

111. Graphical and Mechanical Computations. (2) II. Mr. LEVENS  
Two lectures a week.  
Prerequisite: senior standing in an engineering program of study.  
Functional scales; theory and construction of nomographic charts for three or more variables; graphical integration and differentiation. Representation and analysis of experimental data.
113. The Engineer and His Professional Development. (2) I and II. Mr. RABER in charge  
Prerequisite: senior standing in the mechanical or industrial engineering programs of study.  
Oral and written reports on various subjects pertinent to the professional relationships, duties, and ethics of the engineer.
115. Reversed Thermodynamic Cycles and Refrigeration. (3) I. MR. HUTCHINSON  
Prerequisite: course 105A-105B, and senior standing in an engineering program of study.  
Theory and practice of refrigeration, illustrated by study trips to actual plants.
116. Industrial Air Conditioning Methods, Economics. (3) II. MR. HUTCHINSON  
Prerequisite: course 105A-105B, and senior standing in an engineering program of study.  
Theory and practice of air conditioning, illustrated by study trips to actual plants.
117. Combined Refrigeration and General Air Conditioning. (3) I. Mr. RABER  
Prerequisite: course 105A-105B, and senior standing in an engineering program of study.  
Theory and practice of refrigeration and air conditioning, illustrated by trips to actual plants. (Formerly 115, sec. 2.)
118. Industrial Power-Plant Design. (3) II. Mr. RABER  
Prerequisite: course 105A-105B, and senior standing in an engineering program of study.  
Theory and practice of industrial power-plant design and economics. Illustrated by study trips to actual plants. (Formerly 116, sec. 2.)
120. Principles of Engineering Investment and Economy. (3) I and II. Mr. DEGARMO, Mr. PINGER  
Prerequisite: senior standing in an engineering program of study.  
Derivation of formulas used in the theory of investment; economy studies applied to original and alternative investments in engineering enterprise; replacement problems; relation of personnel and quality control factors to engineering economy; economy studies of governmental projects.
121. Engineering Aerodynamics. (3) I. Mr. LAITONE  
Prerequisite: course 103, courses 161 or 162 are recommended.  
Wing characteristics, performance determination, loading conditions, static and dynamic stability and control of airplanes.

- 123A-123B. Internal Combustion Engines. (3-3) Yr. Mr. VOGT in charge  
Prerequisite: course 105A-105B. Course 170 is recommended.  
(A) Engine cycles, performance, fuels, carburetion, heat transfer.  
(B) Injection systems, valves and cams, lubrication, dynamics.

- 124A-124B. Mechanical Engineering. (3-3) Yr. Mr. FOLSOM in charge  
Prerequisite: courses 103, 105B, Electrical Engineering 100B and senior standing. Course 106 may be taken concurrently with 124A.  
Review and summary of mechanical engineering; analysis of typical engineering problems, including the selection of equipment to satisfy specific requirements.

- \*126. Applied Naval Architecture. (3) II. .  
Lecture and laboratory.  
Prerequisite: course 128A.  
Preparation of lines and curves of form for a ship of definite requirements, including dimensions, coefficients, displacement and stability under various conditions of loading, power, and propeller requirements. Strength computations and review of classification requirements.

- 128A-128B. Marine Engineering. (3-3) Yr. Mr. LAURENSEN, \_\_\_\_\_  
Prerequisite: Engineering 35 or Mechanical Engineering 102A, 102B, 103, 105A-105B, and Civil Engineering 108A.  
128A. Ship calculations with special consideration of displacement, stability, stress, hull resistance, and propeller thrust.  
128B. The power requirements and the selection of power plants for various types of vessels and the necessary auxiliaries for steam and motor ships will be considered.

- 131A-131B. Mechanical Engineering Laboratories. (4-4) Yr.  
Mr. BOODBERG in charge  
Prerequisite: senior standing in an engineering program of study. It is desirable that restricted electives be completed before taking this course.  
Engineering applications of the properties of substances, fluid mechanics, heat transfer, and dynamics.

Properties and Application of Engineering Alloys. See Metallurgy 170A.

143. Time and Motion Study. (3) I and II. Mr. DEGARMO, Mr. L. E. DAVIS  
Prerequisite: senior standing in an engineering program of study or in the School of Business Administration.  
Laws of motion economy; study of hand motions and their simplification through the use of process charts, micromotion analysis and workplace design; theory and practice of time study, rating of worker performance, rate setting and wage payment.

144. Plant and Equipment Layout. (2) I and II. Mr. GRASSI, Mr. DAVIS  
Prerequisite: senior standing in an engineering program of study or in the School of Business Administration.  
Theory and practice of plant, equipment selection, and layout; factors affecting plant location and design; process charts, equipment selection and layout; materials handling; plant services.

\* Not to be given, 1947-1948.

145. Tool Engineering. (3) I and II. MR. GRASSI, MR. GALUZEVSKI  
Two lectures and one two-hour laboratory period a week.  
Prerequisite: senior standing in an engineering program of study and course 106 (may be taken concurrently).  
The selection of tooling for production; design of tools, jigs, fixtures, dies and production type gages; design and tooling of automatic machines.
151. Industrial Heat Transfer. (3) I and II. MR. BERNE-ALLEN, MR. SEBAN  
Prerequisite: course 105A, 105B or 154. Mathematics 110A-110B (or equivalent) strongly recommended.  
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 graphical methods. Free and forced convection. Transfer of radiant energy.
- 152A-152B. Industrial Mass Transfer. (3-3) Yr. MR. BERNE-ALLEN, ———  
Prerequisite: course 105A, 105B or equivalent. Course 151 and Chemistry 109 recommended.  
Thermodynamic, heat, and mass transfer principles applied to process equipment involving evaporation, humidification, absorption and extraction, distillation, adsorption, drying, filtration, crystallization, mechanical separations, and materials handling.
154. Thermodynamics. (3) I and II. MR. GROSSMAN, MR. DUNKLE  
Prerequisite: course 105A.  
Thermodynamic principles applied to process engineering. General conditions of equilibrium, reaction equilibria and the theory of solutions. The phase rule and phase equilibria of binary and multicomponent systems with application to mass transfer between phases. Thermodynamics of surface phenomena.
161. Applied Fluid Mechanics. (3) I and II. MR. IVERSEN, MR. LAITONE  
Prerequisite: course 103.  
Turbulence, dynamical similarity, models, and hydraulic machinery.
162. Elementary Hydrodynamics. (3) II. MR. PUTNAM, MR. SCHAAF  
Prerequisite: courses 103 and Mathematics 110A-110B.  
Stream function, potential function, and conformal transformation with applications to engineering problems.
163. Flow Problems of the Process Industries. (3) II. MR. FARBAR  
Prerequisite: courses 103 and 105A (course 161 is desirable).  
Properties of mixtures and suspensions, plastic flow, two-phase flow, materials and pumping equipment.
164. Instrumentation and Automatic Control. (2) I. MR. FOLSOM  
Prerequisite: courses 103, 102B and 105A. Mathematics 110A-110B is desirable.  
Descriptive and analytical study of instruments and fundamental mechanical control systems.
170. Mechanics of Machinery. (3) I.  
MR. GARLAND, MR. MERIAM, MR. C. W. NELSON  
(Formerly numbered 104A.)  
Prerequisite: course 102B and Mathematics 110A-110B.  
Introduction to the theory of mechanical vibrations with applications to dynamic balancing, critical speeds, governed systems, and vibration isolation.

171. Design of Mechanical Equipment. (3) I. \_\_\_\_\_  
 Lecture and laboratory.  
 Prerequisite: course 106 and senior standing in an engineering program of study.  
 Continuation of course 106. Application of engineering principles to the design of complete machines, with emphasis upon economic aspects including selection of materials and manufacturing processes; balance between theoretical and experimental methods.
172. Stress Analysis of Machine Parts. (3) II. \_\_\_\_\_  
 Lectures and laboratory.  
 Prerequisite: senior standing in an engineering program of study and Mathematics 110A-110B.  
 Experimental and theoretical methods for the determination of stresses and deflections in typical machine members. Factors affecting failure and the choice of working stresses. Laboratory experiments making use of brittle lacquers, various types of strain gages, photoelastic and other models.
173. Acoustics of Machinery. (3) II. Mr. SNYDER  
 (Formerly numbered 104B.)  
 Prerequisite: course 102B and Mathematics 110A-110B (course 170 recommended).  
 The laws governing the generation, transmission, and reception of small amounts of energy through fluids and solids applied to machines and structures. Consideration given to the reduction of noise produced by machinery installations.
198. Directed Group Studies for Advanced Undergraduates. (1-5) I and II.  
 Prerequisite: senior standing in engineering. Mr. VOGT in charge  
 Group study of selected topics. Study groups may be organized in appropriate fields such as advanced descriptive geometry, engineering statistics, industrial management, instrumentation, refrigeration, air conditioning, and design problems. Students may enroll in one or more separate subjects.
199. Individual Study and Research for Advanced Undergraduates. (1-5) I and II. Mr. VOGT in charge  
 Prerequisite: senior standing in engineering.  
 Individual study and/or research on a problem normally chosen from a restricted list. Enrollment is subject to the scholarship requirements imposed by the instructor concerned.

## GRADUATE COURSES

Concerning conditions for admission to graduate courses, see page 156.

NOTE.—In addition, graduate students must have completed at least Mathematics 110A-110B before undertaking any of the following courses.

- 267A-267B. Heat Transfer. (3-3) Yr. Mr. SEBAN, MR. SNYDER  
 Prerequisite: course 151 (may be taken concurrently); course 161 and Mathematics 119A-119B are desirable.  
 Study of steady-state, transient and periodic problems of heat conduction. Mathematical solution of convection problems, including boundary layer theory and heat transfer during laminar and turbulent flow. Transfer of radiant energy. Geometrical and spectral characteristics of radiant systems.

268. Advanced Problems in Thermodynamics. (3) II. Mr. GROSSMAN  
Prerequisite: graduate standing and course 154.  
The study of nonideal systems including problems in capillary thermodynamics, diffusional processes, catalytic reactions and combustion. An introduction to the Third Law, statistical mechanics, statistical thermodynamics, and the quantum mechanical treatment of rate processes.
271. Theory of Pumping Machinery. (3) II. Mr. FOLSOM  
Prerequisite: graduate standing and course 161 or 162.  
The design and performance of all types of pumping machinery.
272. Flow in Porous Media. (3) II. Mr. PUTNAM  
Prerequisite: graduate standing, course 162 or Mathematics 270.  
Applications of fluid mechanics and thermodynamics to flow of single-phase and multiphase fluids in porous media, with application to reservoir problems.
- Technical Hydrodynamics (see Mathematics 270).
276. Mechanics of Real Fluids. (3) II. Mr. PUTNAM, Mr. LAITONE  
Prerequisite: graduate standing. Courses 161 and 162 are recommended.  
Theory of viscous and turbulent flow with applications to fundamental flow problems.
277. Compressible Fluids. (3) I. Mr. FOLSOM, Mr. SCHAAF  
Prerequisite: graduate standing. Mathematics 270 recommended.  
Fundamentals of subsonic and supersonic flow, shock waves, different theoretical methods, laboratory equipment, and procedures for supersonic investigations.
- 284A-284B. Advanced Dynamics of Machinery. (3-3) Yr. Mr. GARLAND  
Prerequisite: graduate standing. Course 170 is recommended.  
Theory of mechanical vibrations with applications to linear and non-linear systems having several degrees of freedom. Torsional and lateral vibrations of shafts. Energy methods and LaGrange's equations are employed.
- 285A-285B. Applied Elasticity. (3-3) Yr. Mr. MERIAM, Mr. C. W. NELSON  
Prerequisite: graduate standing. Course 285A is not prerequisite to 285B.  
285A. Introduction to the mathematical theory of elasticity with applications.  
285B. Flat plate theory, elastic stability, and advanced design applications.
298. Group Studies, Seminars or Group Research. (1-5) I and II.  
(Formerly numbered 218.) Mr. VOGT in charge  
Seminars may be organized in appropriate fields such as aerodynamics, air conditioning, dynamics, pressure vessel design, thermodynamics, heat transfer, Diesel engines, gas turbines, and automatic control. Students may enroll in one or more separate subjects.
299. Individual Study or Research. (1-5) I and II. Mr. VOGT in charge  
(Formerly numbered 219.)  
Investigation of advanced mechanical engineering problems. Students enrolled in this course will attend the weekly research conference.



## MINING

## LOWER DIVISION COURSE

1. Mine Surveying. (3) II. Mr. YORK  
 Prerequisite: Engineering 1A-1B.  
 Surface and underground mine surveys. Preparation of mine maps.

## UPPER DIVISION COURSES

101. Preliminary Mining Operations. (3) II. Mr. WISSER  
 Prerequisite: Geology 1A, Mineralogy 4A, Mathematics 4A.  
 Survey of mineral industry; prospecting, sampling, breaking and supporting ground; driving of development workings; mining law.
103. Prospecting, Exploration, and Exploitation. (3) I. Mr. WISSER  
 Prerequisite: Mineralogy 4A-4B, Geology 1A, Mathematics 4B; Geology 106 recommended.  
 Mining law, prospecting, exploration methods, ground behavior, ground support, shaft sinking, and mining methods.
- 105A. Mining Machinery and Equipment. (4) I. Mr. YORK  
 Two lectures and two laboratory periods.  
 Prerequisite: Mechanical Engineering 102A-102B, Electrical Engineering 101.  
 The compression of air and its use in mining. Rock drills; explosives, steam and gas power.
- 105B. Mining Machinery and Equipment. (4) II. Mr. YORK  
 Two lectures and two laboratory periods.  
 Prerequisite: Engineering 35, Mechanical Engineering 102A-102B, Electrical Engineering 101. Discussion of power, transportation, drainage, ventilation, and lighting.
107. Valuation of Mines. (3) II. Mr. WISSER  
 Prerequisite: course 103.  
 Sampling and ore estimation, expenses, rates of production, marketing, mine finance, mine taxation, purchase and leasing contracts.
109. Administrative and Operating Records and Reports. (2) I. Mr. YORK  
 Prerequisite: course 103 taken concurrently.  
 Mine accounting and cost-keeping, labor records, purchase and distribution of supplies, production records, depreciation, preparation and use of cost data, administrative reports.
113. Mine Rescue and First Aid. (1) II. Evening classes (for opening dates see official bulletin board).  
 Mr. YORK and the U.S. Bureau of Mines Safety Station Staff  
 Open only to upper division students in the Mining, Petroleum Engineering, Metallurgy, and Economic Geology curricula.
198. Directed Group Study for Advanced Undergraduates. (1-5) I and II.  
The STAFF (Mr. YORK in charge)  
 Prerequisite: senior standing in engineering.  
 Group study of selected topics. Study groups may be organized in advanced mining subjects.

199. Individual study for Advanced Undergraduates. (1-5) I and II.  
The STAFF (Mr. YORK in charge)  
Prerequisite: senior standing in engineering.

## GRADUATE COURSES

Concerning conditions for admission to graduate courses, see page 156.

201. Investigations in Mining Practice. (2-3) I and II. Mr. YORK  
Prerequisite: courses 103, 105A-105B.
298. Group Studies, Seminars, or Group Research. (1-5) I and II.  
Prerequisite: graduate status. The STAFF (Mr. YORK in charge)
299. Individual Study or Research. (1-5) I and II.  
Prerequisite: graduate status. The STAFF (Mr. YORK in charge)

## PETROLEUM ENGINEERING

## UPPER DIVISION COURSES

Course 117 is prerequisite to courses 119, 121A-121B, 123A-123B, 125, and 129.

117. The Petroleum Industry. (2) I. Mr. CARLSON  
Prerequisite: junior standing in an engineering curriculum; open also to juniors in the College of Letters and Science whose major is geology or chemistry.  
A general introductory review of the technology and economics of the several divisions of the petroleum industry.
119. Oil and Gas Testing. (2) II. Mr. CARLSON, Mr. SOMERTON  
Laboratory determinations and studies of physical and chemical properties of petroleum and its products that are of importance in technical studies and specifications.
- 121A. Oil Field Development. (3) I. Mr. UREN  
Petroleum exploration; principles of oil field development; methods of drilling and controlling oil and gas wells.
- 121B. Petroleum Production Methods. (3) II. Mr. UREN  
Exploitation of oil fields; drainage of petroleum from its reservoir rocks; methods of extracting oil from wells; separation of water, sand, and gas from oil; transporting and storing petroleum.
- 123A. Petroleum Engineering Laboratory (2) I. Mr. SOMERTON  
Prerequisite: course 119; complementary to course 121A, which should be taken concurrently.  
Investigation of special problems in oil field development; laboratory studies of core samples from drilling wells, drilling fluids, oil-well cements, oil-well surveying instruments and methods, electrical logging; and analysis of ground waters associated with oil deposits.
- 123B. Petroleum Engineering Laboratory. (2) II. Mr. SOMERTON  
Prerequisite: course 119; complementary to course 121B, which should be taken concurrently.  
Investigation of special problems in petroleum production; laboratory studies of petroleum reservoir conditions and behavior; primary and secondary production methods; metering, sampling, and testing crude petroleum; formation and dehydration of petroleum emulsions.

125. Petroleum Production Economics. (3) II. Mr. UREN  
 Prerequisite: course 121A.  
 Geographic distribution of oil and gas reserves; conservation of oil and gas resources; proration practices and production control; capital requirements and financial results; corporate organization of oil producing companies; management of oil-producing enterprises; labor in oil production; development and production cost accounting; land acquisition and control.
127. Oil Field Mapping Practice. (2) I. Mr. CARLSON  
 Lecture and laboratory.  
 Prerequisite: Engineering 1A-1B, 22 and 23, course 121A (may be taken concurrently).  
 Preparation of field and property maps and well logs; development of geologic sections and structure—contour maps and models from well log data.
129. Production and Utilization of Natural Gas. (2) I. Mr. SOMEETON  
 Control and management of gas wells; valuation of gas-producing properties; metering, compression and transmission of natural gas; its domestic, industrial, and chemical utilization; extraction and manufacture of gasoline from natural gas; cycling and condensate production.
198. Directed Group Studies for Advanced Undergraduates. (1-5) I and II.  
 Time to be arranged. The STAFF  
 Prerequisite: senior standing in engineering.  
 Group study of selected topics; study groups may be organized in advanced petroleum engineering subjects.
199. Individual Study for Advanced Undergraduates. (1-5) I and II.  
 Prerequisite: senior standing in engineering. The STAFF

#### GRADUATE COURSES

Concerning conditions for admission to graduate courses, see page 156.

- 207A. Seminar in Fundamentals of Petroleum Production. (2) I. Mr. CARLSON  
 Prerequisite: courses 121A-121B, 123A-123B; Mathematics 110; Chemistry 109.  
 Subsurface conditions in reservoirs and wells. Thermodynamics and kinetic properties of reservoir fluids. Phase relationships of hydrocarbons. Application of engineering principles to economic production.
- 207B. Seminar in Petroleum Production Technology. (2) II. Mr. UREN  
 Prerequisite: course 121A-121B. May be repeated without duplication of credit.  
 Seminar topics will be changed each year.
- 209A. Seminar in Petroleum Engineering (2-3) I. Mr. CARLSON  
 Prerequisite: course 119 and completion of curriculum in Process Engineering or Chemical Engineering.  
 Modern petroleum refinery practice. Technology of petroleum processing. Plant operation.

- 209B. Seminar in Petroleum Refining. (2-3) II. MR. CARLSON  
Prerequisite: course 209A.  
Evaluation of crude oils, raw stocks, and finished products. Study of factors which determine plan of processing in a petroleum refinery.
213. Valuation of Oil- and Gas-Producing Properties. (2) II. MR. UREN  
Prerequisite: course 121A-121B.  
A study of the physical and economic factors underlying the appraisal of oil-producing properties. Estimation and evaluation of oil and gas reserves.
298. Group Studies, Seminars, or Group Research. I and II. THE STAFF  
Credits and hours to be arranged.  
Prerequisite: graduate status.
299. Individual Study or Research. I and II. THE STAFF  
Credits and hours to be arranged.  
Prerequisite: graduate status.

## METALLURGY

## LOWER DIVISION COURSES

- 2A. Metallurgical Analysis. (3) I. MR. MITCHELL  
One lecture and two laboratory periods.  
Prerequisite: Chemistry 1B with grade C or higher.  
Quantitative analysis of ores, metals, and metallurgical products.
- 2B. Metallurgical Analysis. (3) II. MR. MITCHELL  
One lecture and two laboratory periods.  
Prerequisite: course 2A and Mineralogy 4A.  
Fire assaying of gold and silver ores and solutions. Also the assay of base bullions for the precious metals and fire methods of assay for some of the base metals.

## UPPER DIVISION COURSES

102. General Metallurgy. (2) I. MR. DUSCHAK  
Prerequisite: Chemistry 1A-1B, Physics 4A, 4B, 4C.  
A brief survey of metallurgical materials and processes including the valuation and treatment of mineral raw materials; typical operations in process metallurgy and the structure, properties, and uses of metals and alloys.
106. Metallurgy of Iron and Steel. (2) II. MR. DUSCHAK, MR. HULTGREN  
Prerequisite: junior standing in engineering, chemistry, or equivalent.  
A general survey of the iron and steel industry.
108. Mineral Concentration. (3) I. MR. DUSCHAK  
Prerequisite: course 2B and Mineralogy 4B.  
The principles and practices of mineral concentration; sampling, conventional milling processes, and equipment with particular emphasis on underlying principles; mill arrangement; economics of mineral concentration.
- 110A. Mineral Concentration—Laboratory. (2) II. MR. DUSCHAK  
Enrollment limited to 20 students.  
Prerequisite: course 108.  
Laboratory practice in the fundamental operations involved in mineral concentration; crushing, sampling, grinding, screening, classification, gravity concentration and flotation; quantitative work on the separation and recovery of the valuable constituents of ores.

- 110B. Metallurgical Laboratory. (2) I. Mr. DUSCHAK  
Prerequisite: course 110A.  
Experimental work in the treatment of ores of the nonferrous and precious metals; flotation, amalgamation, the cyanide process; and other wet and dry methods for extracting and recovering metallic products.
112. Nonferrous Pyrometallurgy. (3) I. Mr. DUSCHAK  
Prerequisite: course 102 or 108.  
Treatment of ores and products by high temperature methods; metallurgical fuels; roasting, sintering, smelting and distillation equipment; slags, metallurgical smoke; refining of metallurgical products and separation of precious metal values, with particular reference to copper, lead, and zinc; electrothermal processes.
114. Hydrometallurgy. (3) II. Mr. DUSCHAK  
Prerequisite: course 108 or 112.  
Processes employed in the extraction of metals from ores and mineral products by the use of aqueous solvents; the cyanide process; electrolytic zinc; hydrometallurgical treatment of copper ores and mineral products; the electrolytic refining of copper and other metals.
122. Metallurgical Calculations. (2) II. Mr. DUSCHAK  
Prerequisite: senior standing in metallurgy curriculum.  
A quantitative study of metallurgical operations, power requirements, material and heat balances; costs.
124. Nonmetallics. (2) I. Mr. DUSCHAK  
Prerequisite: senior standing in engineering, chemistry, or equivalent.  
The occurrence, treatment, and utilization of the principal nonmetallics; the raw materials, processes and products of the glass and ceramic industries; Portland cement, lime, refractories, abrasives, fluxes and related products.
- 150A. Physical Metallurgy. (3) I. Mr. HULTGREN  
Two lectures and one laboratory period.  
Prerequisite: Chemistry 1A-1B, Physics 4A, 4B, 4C.  
Relationships between microstructure, composition, heat and mechanical treatment, and physical properties of metals and alloys; the metallic state, phase diagrams and interpretation of microstructures from them; deformation and recrystallization of metals, metallography, and heat treatment of iron and steel.
- 150B. Physical Metallurgy. (3) II. Mr. HULTGREN  
Two lectures and one laboratory period.  
Prerequisite: course 150A or Engineering 40 and course 152.  
A continuation of course 150A. Ternary phase diagrams and alloy steels, cast iron, X-ray metallography, physical properties of metals and the periodic table, metallography of the nonferrous metals.
152. Physical Metallurgy. (1 or 2) I and II. Mr. HULTGREN  
Prerequisite: Chemistry 1A-1B, Physics 4A, 4B, 4C.  
The lecture part of course 150A. Students who have taken Engineering 40 may take this course for 1 unit credit.

- 152L. Physical Metallurgy Laboratory. (1) I. Mr. HULTGREN  
Prerequisite: open only to students who have had course 152 in a previous year. Not open to students who have completed Engineering 40.  
The laboratory part of course 150A.
154. Advanced Metallography. (3) II. Mr. PARKER  
Prerequisite: courses 150A, 150B, 106.  
Advanced laboratory work in metallography, including the synthesis, heat treatment, and metallographic study of alloys; theory and practice of photomicrography. Occasional lectures, conferences, and outside reading. The student is encouraged to pursue projects in the line of his particular interest.
160. X-Ray Metallography. (3) I. Mr. PARKER  
Two lectures and one laboratory period.  
Prerequisite: course 150A or Engineering 40 and course 152.  
Generation of X rays and the application of X-ray diffraction to the study of metals and alloys; phase diagram determination, particle size, internal stresses, cold work, recrystallization, preferred orientation; crystal structure determinations and phase identification.
- 170A. Properties of Metals. (3) I. Mr. DORN  
Prerequisite: Civil Engineering 108A and either course 150A or Engineering 40.  
Engineering properties of metals and their function in design, selection and specification; analysis of the static, impact, endurance and creep resistance of metals under combined stresses; discussions of nature of wear resistance and corrosion resistance of metals.
- 170B. Properties and Forming of Metals. (3) II. Mr. DORN  
Prerequisite: course 170A.  
A study of the application of the principles of elasticity, plasticity, and the properties of metals to the solution of problems in machining and plastic forming of metals.
172. Inspection of Metals. (2) I. Mr. PARKER  
Prerequisite: course 150A or Engineering 40.  
Lectures and laboratory instruction on the industrial techniques for inspection of metals; the principles and application of visual inspection, macrography, magnetic, and fluoroscopic methods of testing; the theory of X-ray radiography and its application to metal inspection.
174. Metal Technology. (3) II. Mr. DORN  
Prerequisite: course 150A (or Engineering 40 and course 152) and Chemistry 110A-110B. Mathematics 110A-110B desirable.  
A study of the application of the principles of equilibrium, kinetics of metallurgical reactions, diffusion, and heat transfer to the problems of casting, heat treating and welding of metals.
176. Metallurgy of Welding. (2) II. Mr. PARKER  
Prerequisite: Metallurgy 150A (or Engineering 40 and course 152).  
Metallurgical problems associated with welding. The influence of welding technique on the metallurgical structures and properties of welds. A study of the origin and effect of weld defects.

198. Directed Group Studies for Advanced Undergraduates. (1-5) I and II.  
Time to be arranged. The STAFF (Mr. DUSCHAK in charge)  
Prerequisite: senior standing in engineering.  
Group study of selected topics. Study groups may be organized in advanced metallurgical subjects.
199. Individual Studies or Research for Advanced Undergraduates. (1-5) I and II.  
The STAFF (Mr. DUSCHAK in charge)  
Prerequisite: senior standing in engineering.

## GRADUATE COURSES

Concerning conditions for admission to graduate courses, see page 156.

- †202. Metallurgy of the Less Common Metals. (2) II. Mr. DUSCHAK  
Hours to be arranged. Prerequisite: courses 112 and 114.
- †210A-210B. Metallurgical Investigation. (2-3; 2-3) Yr. Mr. DUSCHAK  
Program of work and credit to be arranged.  
Prerequisite: courses 110B, 112, and 114.
250. Physics of Metals. (3) I. Mr. HULTGREN  
A theoretical study of the metallic state emphasizing those properties of technologic importance; chemical bonding forces, crystal structures of metals and alloys, compressibility, specific heat, magnetism, electrical and thermal conductivity, thermodynamics.
256. Reaction Kinetics in Metals. (3) I. Mr. DORN  
Prerequisite: course 150A and Chemistry 110A-110B.  
Introduction to the application of statistical mechanics to reaction kinetics in metallic systems. Special emphasis will be given to analytical treatment of recrystallization, phase transformations including decomposition of austenite and precipitation hardening, diffusion in metals, and the hardenability of steels.
260. Properties of Single Metal Crystals. (3) II. Mr. PARKER  
Prerequisite: course 160 and graduate standing.  
Preparation of metallic single crystals, stress strain relationships for crystals having different orientations, theories of strain hardening, internal friction, magnetic properties, preferred orientation in polycrystalline materials, orientation determination and pole figures, relation between properties of single crystal and polycrystalline materials. Lectures and laboratory work.
298. Group Studies, Seminars, or Group Research. I and II.  
The STAFF (Mr. DUSCHAK in charge)  
Credits and hours to be arranged.  
Prerequisite: graduate standing.  
Research conference in Physical Metallurgy. The staff and graduate students meet once a week to discuss research and advanced subjects. No credit.
299. Individual Study or Research. I and II.  
The STAFF (Mr. DUSCHAK in charge)  
Credits and hours to be arranged.  
Prerequisite: graduate standing.
- Research Conference in Physical Metallurgy (no credit).  
The instructing staff and graduate students meet once a week to discuss research and advanced subjects.

† To be given if a sufficient number of students enroll.

## ENGLISH

MYRON F. BRIGHTFIELD, Ph.D., Professor of English.

† ARTHUR G. BRODEUR, Ph.D., Professor of English and Germanic Philology.

BERTRAND H. BRONSON, Ph.D., Professor of English.

JAMES R. CALDWELL, Ph.D., Professor of English.

JAMES M. CLINE, Ph.D., Professor of English.

<sup>2</sup> WILLARD H. DURHAM, Ph.D., Professor of English.

WILLARD E. FARNHAM, Ph.D., Professor of English.

<sup>2</sup> BENJAMIN P. KURTZ, Ph.D., Professor of English.

<sup>2</sup> BENJAMIN H. LEHMAN, Ph.D., Professor of English (Chairman of the Department).

GUY MONTGOMERY, Ph.D., LL.D., Professor of English.

GEORGE R. POTTER, Ph.D., Professor of English (Acting Chairman of the Department, fall semester).

MARK SCHORER, Ph.D., Professor of English.

<sup>2</sup> GEORGE R. STEWART, Ph.D., Professor of English.

WALTER M. HART, Ph.D., LL.D., Professor of English, Emeritus.

JOHN S. P. TATLOCK, Ph.D., Litt.D., LL.D., Professor of English, Emeritus.

G. DUNDAS CRAIG, M.A., Litt.D., Assistant Professor of English, Emeritus.

JAMES D. HART, Ph.D., Associate Professor of English.

GORDON MCKENZIE, Ph.D., Associate Professor of English.

JOSEPHINE MILES, Ph.D., Associate Professor of English.

R. BERTRAND EVANS, Ph.D., Assistant Professor of English and Education.

ROBERT GRINNELL, Ph.D., Assistant Professor of English.

<sup>1</sup> ARTHUR E. HUTSON, Ph.D., Assistant Professor of English.

EDWARD S. LECOMTE, Ph.D., Assistant Professor of English.

ROY H. PEARCE, Ph.D., Assistant Professor of English.

BREWSTER ROGERSON, Ph.D., Assistant Professor of English.

C. WAYNE SHUMAKER, Ph.D., Assistant Professor of English.

LYNN B. BENNION, Ph.D., Instructor in English.

TRAVIS BOGARD, Ph.D., Instructor in English.

WAYNE BUENS, Ph.D., Instructor in English.

JOHN E. JORDAN, Ph.D., Instructor in English.

---

ROSSITER H. BELLINGER, M.A., Lecturer in English.

FREDERIC I. CARPENTER, Ph.D., Lecturer in English.

EDITH D. HENRICH, A.B., Lecturer in English.

HAROLD B. KELLING, Ph.D., Lecturer in English.

† Sabbatical leave in residence, 1947-1948.

<sup>1</sup> In residence fall semester only, 1947-1948.

<sup>2</sup> In residence spring semester only, 1947-1948.



JOHN H. RALEIGH, M.A., Lecturer in English.

IMOGENE B. WALKER, Ph.D., Lecturer in English.

ROBERT WULIGER, A.B., Lecturer in English.

Students must have passed Subject A before taking any course in English.

*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 82.

Alternative programs for the undergraduate major have been adopted: a program for students who intend to become, later, candidates for the M.A. or Ph.D. in English; and a program for all other students.

*Departmental Major Advisers:* MR. J. D. HAERT, Chairman; MR. BELLINGER, Mr. BOGARD, Mr. ROGERSON, Mr. SHUMAKER, Mr. STEWART (second semester).

Plan I. The program for the general undergraduate is as follows:

(A) *Preparation for the Major.*—First Year—Required: course 1A-1B (3-3), Composition and Study of Literature. Second Year—Required: course 46A-46B (3-3) and 3 additional units to be elected from courses 30 (3), 41A-41B (3-3), 25 (3), 44A-44B (3-3), 49 (3).

(B) *The Major.*—Twenty-four units of upper division work with specific requirements as follows: Third Year—Required: The Junior Course, English 100 (3); Methods and Materials of Literary Criticism. Fourth Year—Required: The Senior Course, English 151 (3).

The total program (lower and upper division) must include at least: 3 units in Chaucer or Age of Chaucer, 3 units in Shakespeare, 3 units in the Age of Milton or 3 units in Milton and Donne, 3 units in American Literature, 3 units in a period or type course.

Plan II. The program for the undergraduate expecting to proceed to the M.A. or Ph.D. degrees in English is as follows:

(A) *Preparation for the Major.*—First Year—Required: course 1A-1B (3-3), Composition and Study of Literature.

(B) *The Major.*—Twenty-four units of upper division work, with specific requirements as follows: Third Year—Required: The Junior Course, English 100 (3). Fourth Year—Required: (a) a special section of the Senior Course, English 151 (3), studying a contemporary author, or possibly more than one author; (b) the Comprehensive Examination (3).

The specific upper division requirements total 9 units. The remaining units are to be selected subject to the advice of a departmental adviser.

The Department will certify to the completion of a major program for graduation only on the basis of at least a C average in the upper division courses taken in the Department. Students who cannot maintain such an average may be required at any time to withdraw from the major in English.

*Honor Students in the Senior Year.*—See Honors course, page 301.

*Teacher Training.*—Consult Mr. R. B. Evans; see also the ANNOUNCEMENT OF THE SCHOOL OF EDUCATION.

*Higher Degrees.*—Consult Mr. B. H. Bronson; see also the ANNOUNCEMENT OF THE GRADUATE DIVISION.

The attention of undergraduates contemplating graduate study is called to

the requirements in foreign languages for higher degrees in English. Such students are advised to prepare, during their undergraduate years, to meet these requirements.

## LOWER DIVISION COURSES

## FRESHMAN COURSE

1A-1B. First-Year Reading and Composition. (3-3) Yr. Beginning either semester.

MR. BELLINGER, MR. BENNION, MR. BOGARD, MR. BRONSON, MR. BURNS, MR. CALDWELL, MR. CARPENTER, MR. FARNHAM, MR. GRINNELL, MR. HART, MRS. HENRICH, MR. JORDAN, MR. KELLING, MR. LECOMTE, MR. LEHMAN, MR. MCKENZIE, Miss MILES, MR. MONTGOMERY, MR. PEARCE, MR. RALEIGH, MR. ROGERSON, MR. SCHORER, MR. SHUMAKER, Mrs. WALKER, Mr. WULIGER, and Assistants.

1A. Training in writing and reading.

1B. An introduction to the study of literature, with further training in writing.

Prerequisite for the English major. Course 1A is prerequisite to 1B.

## SOPHOMORE COURSES

25. Language. (3) I.

Mr. HUTSON

The origins and symbols of human speech; patterns, change, and growth in language; the interrelations of language, thought, and civilization. Emphasis on English, as written and spoken in England and America. Designed for sophomores, but open to students in the upper division.

30. Introduction to American Literature. (3) II.

Mr. STEWART

41A-41B. Writing in Connection with the Reading of Important Books of the Nineteenth and Twentieth Centuries. (3-3) Yr.

41A: Mr. Evans; 41B: Mr. Lehman.

MR. EVANS, MR. LEHMAN

Prerequisite: course 1A-1B, Speech 1A-1B, or the consent of the instructor. Course 41A is not prerequisite to 41B.

44A-44B. Masterpieces of Literature. (3-3) Yr.

Mr. LECOMTE

Lectures on great works of the world's literature.

Course 44A is not prerequisite to 44B.

46A-46B. Survey of English Literature. (3-3) Yr.

MR. BELLINGER, MR. BENNION, MR. CLINE, MR. HART,

Mr. MCKENZIE, Mr. ROGERSON

Prerequisite: course 1A-1B.

One lecture each week will present the more important aspects of the history of English literature. In semiweekly sections limited to forty students per section, typical work of the more significant authors from Chaucer to Hardy will be discussed.

49. Twelve Great Books in the English Tradition. (3) II.

Mr. CLINE

The course presents a history, not of English literature, but of English culture. The works selected are those which have expressed for the English people the great aspirations and achievements of the English nation. Readings and lectures.

## UPPER DIVISION COURSES

## Group I—Unrestricted Courses

(Open to all students in the upper division; enrollment not limited, except as noted.)

- 153A\*—153B. Introduction to the Study of Poetry. (3-3) Yr. MR. KURTZ  
An introduction to the principles of criticism for those who desire a general acquaintance with poetry and for those who intend to select a European literature as a major. Course 153A is not prerequisite to 153B.
- \*154. Master Spirits of Literature: Great Dramatists, Ancient and Modern. (3) I. MR. DURHAM
- 114A—114B. The English Drama. (3-3) Yr. MR. FARNHAM, MR. DURHAM  
114A. From the miracle plays to 1642. Mr. Farnham.  
114B. From 1642 to the present. Mr. Durham.  
Course 114A is not prerequisite to 114B.
- 125C—125D. The Novel. (3-3) Yr. MR. BRIGHTFIELD  
Course 125C is not prerequisite to 125D.
116. The English Bible as Literature. (3) I. MR. POTTER
- 117A—117B. Shakespeare. (3-3) Yr. MR. FARNHAM, MR. MONTGOMERY  
117A: Mr. Montgomery. 117B: Mr. Farnham.  
Lectures on the entire works of Shakespeare, including nondramatic poems. Open to both majors and nonmajors. Course 117A is not prerequisite to 117B.
- 117E. Shakespeare. (3) II. MR. DURHAM  
Lectures on fifteen plays of Shakespeare. May not be taken by students whose major is English.
155. The Age of Chaucer. (3) II. \_\_\_\_\_
156. The Age of Elizabeth. (3) I. MR. CLINE
157. The Age of Milton. (3) II. MR. POTTER
166. The Age of Swift and Pope. (3) II. MR. MONTGOMERY
119. The Age of Johnson. (3) II. MR. BRONSON
121. The Romantic Period. (3) II. MR. CALDWELL
122. The Victorian Period. (3) I. MR. MCKENZIE
123. Nineteenth-Century Prose. (3) II. MR. SHUMAKER
149. The English Lyric. (3) I. MR. ROGERSON  
The development of lyric poetry in English. Lectures and readings in ten major poets.
160. British Literature from 1900 to the Present. (3) I. MR. SCHORER
128. Regional Literature: California and the West. (2) II. MR. HART

\* Not to be given, 1947-1948.

- 130A. American Literature before 1840. (2) I. Mr. HART  
 130B. American Literature: 1840-1888. (3) II. Mr. CARPENTER  
 130C. American Literature: 1888 to the Present. (3) I. Mr. PEARCE  
 110. The English Language. (3) I and II. Mr. BRIGHTFIELD, Mr. KELLING  
 I: Mr. Brightfield; II: Mr. Kelling.  
 Anglo-French Literary Relations During the Early Nineteenth Century. (2) I.  
 (French 150.)

### Group II—Restricted Courses

#### A. THE JUNIOR COURSE

(Sections limited to twenty students each.)

Designed primarily for juniors whose major subject is English.

100. Methods and Materials of Literary Criticism. (3) I and II.  
 Mr. BENNION, Mr. CALDWELL, Mr. GRINNELL, Mr. JORDAN,  
 Mr. KELLING, Mr. MCKENZIE, Miss MILES, Mr. RALEIGH,  
 Mr. ROGERSON, Mr. SCHORER, Mr. SHUMAKER  
 Explication and evaluation of literary texts and study of the various  
 principles of literary judgment.

#### B. THE SENIOR COURSE

(Sections limited to twenty students each.)

Designed primarily for seniors whose major subject is English.

Prerequisite: course 100.

- 151L. Chaucer. (3) I and II. Mr. BRONSON, Mr. CLINE, Mr. GRINNELL  
 I: Mr. Bronson; II: Mr. Cline, Mr. Grinnell.  
 151s. Shakespeare. (3) II. Mr. EVANS  
 151J. Donne and Milton. (3) I and II. Mr. POTTER, Mr. SHUMAKER  
 I: Mr. Shumaker; II: Mr. Potter.  
 151E. Emerson and Melville. (3) I. Mr. CARPENTER  
 151G. Dickens. (3) I. Mr. BURNS  
 151H. Hawthorne. (3) II. Mr. PEARCE  
 151K. Contemporary Authors. (3) I and II.  
 Mr. CALDWELL, Miss MILES, Mr. SCHORER  
 T. S. Eliot. I. Mr. Caldwell.  
 W. B. Yeats. I. Miss Miles.  
 D. H. Lawrence. II. Mr. Schorer.

#### C. HONORS COURSE

199. Special Study for Advanced Undergraduates. (1-3) I and II.  
 Mr. ROGERSON and the STAFF

Reading and conference for individual honor students.

Any student who completes not less than 9 units of upper division English in the junior year with an average grade of not less than B may apply for admission to English 199. Such honor students undertake, in a chosen field, a program of reading and of frequent conferences with the instructor. This work will be accepted as the equivalent of from 1 to 3 units (amount of credit to be determined by the instructor).

## D. THE COURSE IN COMPOSITION

(Open only to upper division students who have the consent of the instructor.)

- 106A. The Short Story. (3) II. Mr. SCHOREE
- 106B. Verse. (3) I. Miss MILES
- 106E. Biographical Narrative. (3) II. Mr. STEWART
- 106H. Expository and Critical Writing. (3) I and II.  
Mr. BURNS, Mr. CARPENTER, Mr. MONTGOMERY  
I: Mr. Montgomery, Mr. Carpenter.  
II: Mr. Burns.
- 106L. Advanced Composition. (3) I and II. Mr. EVANS  
Primarily for candidates for the Certificate of Completion of the  
teacher-training curriculum whose teaching major is English.
- 106M. Advanced Composition. (2) I and II. Mr. BOGARD, Mr. BURNS  
Specifically for candidates for the Certificate of Completion of the  
teacher-training curriculum whose teaching major is not English.  
I: Mr. Bogard. II: Mr. Burns.

## E. COMPREHENSIVE FINAL EXAMINATION

The Comprehensive Final Examination for Plan II of the undergraduate major in English must be taken at the end of the senior year. It will consist of two three-hour papers, the second of which will take the form of an essay. The Board of Examiners will set the questions, and at its discretion may supplement them with an oral examination. The student should attend the general conferences held by the board, and may also consult individually with the members of the board. The student's preparation for this examination will presumably extend throughout the entire period of his upper division residence. Upon the student's passing the examination, however, the grade assigned by the department, with the appropriate grade points, will be recorded. Given in the fall and spring semesters and in the summer sessions; credit, 3 units.

MR. MCKENZIE, MR. CALDWELL, MR. EVANS, MR. LECOMTE

## TEACHERS' COURSE

300. Problems in Teaching English Literature and Composition in Secondary Schools. (2) I. Mr. EVANS

For seniors and graduate students offering an English teaching major or minor. Should be taken before practice teaching. This course will be accepted in partial satisfaction of the 18-unit requirement in education for the secondary credential.

## GRADUATE COURSES

Concerning conditions for admission to graduate courses, see page 156.

Except upon special permission of the instructor, only students who have passed the department's examination in French or in German will be admitted to any seminar.

French 206A-206B and German 265 are especially recommended to candidates for higher degrees. Attention is directed to German 201.

The following courses will be given as seminars: 210, 217, 218, 225A-225B, 230, 247, 251, 252, 254A-254B, 258, 262B, 263A-263B.

Attention is directed to the fact that the period courses, 119, 121, 122, 155, 156, and 157, are particularly adapted to graduate study.

200. Techniques of Literary Scholarship. (3) I and II.  
I: Mr. Brightfield; II: Mr. Kurtz. Mr. BRIGHTFIELD, Mr. KURTZ  
Description and analysis of the techniques of literary research and criticism. Outlines of the progress of scholarship in the linguistic, historical, and critical study of English literature. Review and systematic arrangement of the aids to bibliographical research.
202. The History of English Criticism. (3) II. Mr. BRIGHTFIELD
- †204A. Celtic Studies. (3) I. Mr. HUTSON
- 211A. Old English Literature. (3) I. Mr. HUTSON  
Open to seniors by consent of the instructor.  
Rapid reading of Old English texts.
- 211B. The Beowulf. (3) II. Mr. BRODEUR
- 211G-211H. Old and Middle English. (3-3) Yr. Mr. BRODEUR  
Development of the English language from its beginning as illustrated in representative texts. Especially designed for candidates for the Ph.D. degree. Prerequisite: a reading knowledge of German.
213. Readings in Middle English. (3) I. Mr. HUTSON  
Rapid reading of selections in Middle English, and perhaps some entire poems, from the twelfth century to the fifteenth.
210. Chaucer. (3) I. Mr. CLINE  
Some knowledge of Chaucer and his language is presupposed.
217. Studies in Shakespeare. (3) I and II. Mr. DURHAM, Mr. MONTGOMERY  
I: Mr. Montgomery. II: Mr. Durham.
- 254A-254B. Elizabethan Drama. (3-3) Yr. Mr. FARNHAM
218. Milton. (3) II. Mr. LECOMTE
- 220A-220B. The Medieval Mind. (3-3) Yr. Mr. GRINNELL  
220A. Readings in Medieval Latin.  
220B. Dominant Themes in Medieval Life.  
An introduction to the central language and literature of the Middle Ages, presupposing at least such a knowledge of Latin as may be gained in high school.
- \*258. Johnson and His Contemporaries. (3) I. Mr. BRONSON
251. Romantic Poets. (3) I. Mr. CALDWELL
252. English Prose Fiction before 1740. (3) II. Mr. BRIGHTFIELD
- 225A-225B. The Popular Ballad. (3-3) Yr. Mr. BRONSON

† To be given if a sufficient number of students enroll.

\* Not to be given, 1947-1948.

230. American Literature. (3) I and II. Mr. HART, Mr. STEWART  
I: Mr. Hart; II: Mr. Stewart.
- \*262B. Nineteenth Century Literature. (3) II. Mr. LEHMAN
- 263A\*-263B. Literary Criticism in the Nineteenth Century. (3-3) Yr.  
Course 263B to be given in the spring semester. Mr. KURTZ
247. Poetics: Neo-Classical Theory and Practice. (3) II. Miss MILES  
Special reference to an historical period, to be selected.
- 260A-260B. Special Study. (1-4; 1-4) Yr. Beginning each semester.

The STAFF (Mr. BRONSON in charge)

The members of the department are variously engaged in particular research and stand ready to advise and direct properly qualified graduate students in their several fields. Some indication of fields of interest is here-with suggested:

1. Critical Theory (Brightfield, Caldwell, Kurtz, McKenzie, Miles).
2. Prose Fiction (Brightfield, Lehman, Schorer).
3. Drama (Durham, Farnham).
4. Linguistics (Brodeur, Hutson).
5. Early Germanic Literature (Brodeur).
6. Celtic (Hutson).
7. The Ballad (Bronson).
8. Chaucer and the Middle Ages (Brodeur, Caldwell, Cline, Grinnell).
9. Shakespeare, Donne, Sixteenth and Seventeenth Centuries (Cline, Farnham, LeComte, Potter).
10. Eighteenth Century (Bronson, Montgomery, Schorer).
11. Nineteenth Century (Brightfield, Caldwell, Kurtz, LeComte, Lehman, McKenzie).
12. American Literature (Hart, Stewart).

---

\* Not to be given, 1947-1948.

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 34. Epic Poetry: Homer and Virgil.

178. Greek and Roman Mythology.

180A-180B. The Latin Classics in English.

Dramatic Art 157A-157B. Modern European Drama.

French 9A-9B-9C. French Literature in English Translation.

123A-123B. Renaissance and Reformation in French Literature.

German 9A-9B-9C-9D. Great Writers in German Literature.

Italian 150A-150B. Dante's *Divine Comedy* in English Translation.

151A-151B. The Renaissance.

Scandinavian Languages 100A-100B. History of Scandinavian Literature.

106. History of Scandinavian Drama.

Slavic Languages 130. Introduction to Russian Literature of the Nineteenth Century.

131. Recent Russian Literature.

132. Russian Literature since 1917.

133A. Russian Novelists of the Nineteenth Century (except Tolstoy and Dostoyevski).

133B. Tolstoy and Dostoyevski.

134. Russian Literature and Folklore.

135. The Russian Drama.

138. Modern Russia.



## FORESTRY

FREDERICK S. BAKER, F.E., Professor of Forestry (Acting Chairman of the Department).

PERCY M. BARR, Ph.D., Sc.D., Professor of Forestry.

JOSEPH KITTREDGE, Ph.D., Professor of Forestry.

MYRON E. KRUEGER, M.S., Professor of Forestry.

ARTHUR W. SAMPSON, Ph.D., Professor of Forestry.

WALTER MULFORD, F.E., Sc.D., Professor of Forestry, Emeritus.

HAROLD H. BISWELL, Ph.D., Associate Professor of Forestry.

ROBERT A. COCKRELL, Ph.D., Associate Professor of Forestry.

EMANUEL FRITZ, M.E., M.F., Associate Professor of Forestry.

ROBERT N. COLWELL, Ph.D., Assistant Professor of Forestry.

R. KEITH ARNOLD, M.F., Associate in Forestry.

*Letters and Science List.*—Courses 1, 103, and 125 are included in the Letters and Science List of Courses. For regulations governing this list, see page 82.

## LOWER DIVISION COURSE

1. Elements of Forestry. (3) I. Mr. COCKRELL  
 Not open to students with a major in forestry.  
 Forests in their relation to national life; the life history of the tree and the forest; general principles of forestry.

## UPPER DIVISION COURSES

Course 105A-105B is prerequisite to all courses which require senior standing. An average grade of C or higher in all work undertaken is prerequisite to all upper division courses in forestry.

100. Introduction to Professional Forestry. (3) I. Mr. COCKRELL  
 Open only to students whose major is forestry.  
 The branches of forestry, their significance and relationships; values derived from forests; forest policy.
101. Introduction to Range Management. (3) II. Mr. SAMPSON  
 Development and present status; its place in forestry and in agriculture; economic relationships; treatment of the range and handling of livestock on it.
102. Range Management Technique. (3) II. Mr. SAMPSON  
 Lecture and laboratory.  
 Prerequisites: Engineering 1A-1B; Chemistry 8; an elementary course in statistics; course 103 or Botany 151. The additional prerequisites of course 101 and Botany 108 may be taken concurrently.  
 Field and laboratory procedure, designed especially for students who plan to take advanced work in range management. Special field trips will be arranged.
103. Principles of Forest Ecology. (3) I. Mr. BAKER  
 Prerequisite: Botany 1 or 12, Chemistry 1A.  
 Structure of the plant as modified by conditions of habitat; plant succession and societies.

104. Silviculture. (4) I. Mr. BAKER  
 Lectures and laboratory.  
 Prerequisite: courses 103; 105A-105B.  
 Methods of governing growth and reproduction of forests through the application of ecological laws.
- 105A. Summer Field Laboratory Course. No credit. Mr. ARNOLD  
 Prerequisite: courses 103, 110, Engineering 1A-1B.  
 Six weeks' summer camp at Meadow Valley, near Quincy, in the Plumas National Forest.  
 Field laboratory work in forest surveys and mapping, forest mensuration, silviculture, logging and milling operations.
- 105B. Summer Field Laboratory Course. No credit. Mr. ARNOLD  
 Prerequisite: courses 103, 110; Engineering 1A-1B.  
 Continuation of course 105A. Six weeks' summer camp, following 105A. Course 105A-105B is required of all students.
106. Forest Planting. (3) II. Mr. COLWELL  
 Lectures and laboratory.  
 Prerequisite: Botany 1 or 12.  
 Artificial establishment of forests from collection of seed to planting of trees; the physiological, environmental, and genetic factors affecting survival and growth of forest seedlings; financial aspects of forest plantations.
108. Dendrology. (4) I. Mr. COCKRELL  
 Recitation sections and laboratory.  
 Prerequisite: Botany 1 or 12.  
 Identification by morphological characters of important forest trees of North America; their ecological and geographical distribution; field identification of many forest shrubs.
110. Forest Mensuration. (3) II. Mr. BARR  
 Lectures and conferences.  
 Prerequisite: a course in elementary statistics; 3 units of college mathematics.  
 Principles underlying log scaling and the estimation of timber volume and value; growth of stands; the application of statistical analysis to forest measurements.
112. Lumber Manufacturing. (3) I. Mr. FRITZ  
 Prerequisite: senior standing. Senior and graduate students from other departments may be admitted with the consent of the instructor.  
 Organization and characteristics of the lumber industry; the manufacture of lumber from log pond to finished product; seasoning, grading, marketing.
114. Wood Technology. (3) II. Mr. FRITZ  
 Lectures and laboratory.  
 Prerequisite: Chemistry 1A, Botany 1 or 12.  
 Junior and senior students from other departments may be admitted with the consent of the instructor.  
 Anatomy of wood; properties and uses; identification of commercial species.

118. Forest Engineering. (3) II. Mr. KRUEGER  
 Lectures and laboratory.  
 Prerequisite: Engineering 1A-1B, Physics 2A-2B.  
 Engineering methods involved in logging and forest management.
120. Management of Forest Properties. (4) II. Mr. BARR  
 Lectures and laboratory.  
 Prerequisite: courses 104, 105A-105B, and 110.  
 Economic and technical principles involved in the management of forest lands for the continuous production of timber crops.
121. Forest Economics. (3) II. \_\_\_\_\_  
 Lectures and conference.  
 Prerequisite: 6 units of economics, and senior standing. Senior and graduate students from other departments may be admitted with the consent of the instructor.  
 Economic problems and principles involved in the utilization of forest land and timber, and in the distribution of forest products.
122. Forest Policy. (3) II. \_\_\_\_\_  
 Prerequisite: 6 units of economics, and senior standing.  
 Forests in their relation to society. State and national forest policies.
123. Range Utilization. (3) I. Mr. BISWELL  
 Lectures and laboratory.  
 Prerequisite: course 101, 103; Botany 120A, and senior standing. Recommended: course 102.  
 Range use and forage valuations as integral parts of land use planning, including technical problems of range management.
125. Forest Influences. (3) I. Mr. KITTREDGE  
 Lectures and laboratory or field trips.  
 Prerequisite: course 103, Physics 2A-2B, senior standing; Soil Science 100 and Geography 111 recommended.  
 The influences of forests and brush on soil moisture, run-off, stream flow, floods, erosion, local climate, and soil productivity for forest growth.
126. Production Methods in the Forest Industries. (3) II. Mr. KRUEGER  
 Prerequisite: 6 units of economics, and senior standing.  
 Production methods and principles involved in logging; cost analyses.
128. Forest Protection. (3) II. Mr. ARNOLD  
 Open only to students whose major is forestry.  
 Forest fire behavior; ignition and spread of forest fires and factors by which they are influenced; forest fire control organization and equipment; methods of fire prevention and suppression.
132. Elements of Photogrammetry. (3) II. Mr. COLWELL  
 Limited to 30 students.  
 The construction of maps and terrain models from vertical and oblique aerial photographs. The recognition and delineation of physiographic forms and vegetation types appearing on aerial photographs.
198. Directed Group Study. (1-5) I and II. THE STAFF (Mr. BAKER in charge)  
 Prerequisite: senior standing, and approval of the instructor.  
 Group study, or investigation, of special problems.

199. Special Study for Advanced Undergraduates. (1-5) I and II.  
The STAFF (Mr. BAKER in charge)  
Prerequisite: senior standing, and approval of the instructor.  
This course may also be taken during the summer at the Forestry Camp  
at Meadow Valley, Plumas County.

## GRADUATE COURSES

- Concerning conditions for admission to graduate courses, see page 156.
- 201A-201B. Seminar in Forestry. (2-2) Yr. Mr. KITTREDGE, Mr. KRUEGER  
Course 201A is not prerequisite to 201B.  
I: 201A, Mr. Kittredge; II: 201B, Mr. Krueger.
- 202A-202B. Research in Forestry. (1-6; 1-6) Yr.  
The STAFF (Mr. BAKER in charge)  
Course 202A is not prerequisite to 202B.
- 203A-203B. Seminar in Forest Influences and in Forest Ecology. (2-2) Yr.  
MR. KITTREDGE, MR. SAMPSON  
I: 203A, Mr. Kittredge. II: 203B, Mr. Sampson.  
Prerequisite: Plant Physiology (3 units); course 125 for course 203A;  
course 103 and Chemistry 8 for course 203B. Course 203A is not prerequisite  
to 203B.
204. Seminar in Silviculture. (2) I. Mr. BAKER  
Prerequisite: course 104.
205. Seminar in Wood Technology. (2) I. Mr. COCKRELL  
Prerequisite: course 114.
206. Seminar in Forest Management. (2) II. Mr. BARR  
Prerequisite: course 120, 6 units of economics.
- 207A-207B. Seminar in Forest Economics. (2-2) Yr. Mr. KRUEGER, ———  
Prerequisite: 12 units of economics, agricultural economics, or forest  
economics. Course 207A is not prerequisite to 207B.  
I: 207A, ———; II: 207B, Mr. Krueger.
208. Seminar in Range Management. (2) I. Mr. BISWELL  
Prerequisite: courses 102, 103, 123.

## FRENCH

GABRIEL BONNO, Docteur ès Lettres, Professor of French.

PERCIVAL B. FAY, Ph.D., Professor of French.

\*CLIFFORD H. BISSELL, Ph.D., Associate Professor of French.

CLARENCE D. BRENNER, Ph.D., Associate Professor of French.

FRANCIS J. CARMODY, Ph.D., Associate Professor of French.

JACQUELINE DE LA HARPE, Docteur ès Lettres (Lausanne), Associate Professor of French.

MATHURIN DONDO, Ph.D., Associate Professor of French.

EDWARD F. MEYLAN, Ph.D., Associate Professor of French.

ARNOLD H. ROWBOTHAM, Ph.D., Associate Professor of French (Chairman of the Department).

RONALD N. WALPOLE, Ph.D., Assistant Professor of French.

ALVIN EUSTIS, Ph.D., Instructor in French.

MARIE-LOUISE DUFRENOY, Ph.D., Associate in French.

ALICE HABIS-REUTINGER, Ed.D., Associate in French.

<sup>1</sup> LUCIEN WOLFF, Docteur ès Lettres, Recteur de l'Université de Rennes, Visiting Professor of French and Comparative Literature.

HENRIETTE KOLLEWIJN, M.A., Lecturer in French.

IRVING PUTTER, M.A., Lecturer in French.

EDOUARD SONET, Docteur de l'Université de Rennes, Lecturer in French.

*Letters and Science List.*—All undergraduate courses in French are included in the Letters and Science List of Courses. For regulations governing this list, see page 82.

*Departmental Major Adviser:* Mr. CARMODY.

*Preparation for the Major.*—Required: courses 1, 2, 3, 4, 25, or their equivalents. (Students who receive grade A or B in French 4 will be admitted to the upper division courses without the requirement of course 25.) History 4A-4B, Philosophy 10A-10B, English 1A-1B, and Latin are strongly recommended.

*The Major.*—Required: courses 101A-101B, 109A-109B, and either 112A-112B, 120A-120B, or 121A-121B.

Any of the remaining upper division courses may be counted for the major with the exception of 122A-122B, 123A-123B; however, with the permission of the department, 4 units of the 24 may be satisfied by the courses named or by appropriate upper division courses in the following departments: Classics, English, German, History, Italian, Philosophy, or Spanish. Students who fail to maintain an average of one grade point for each unit of work undertaken in the upper division courses in the department of French will, upon approval of the Executive Committee of the College of Letters and Science, be excluded from the major in French.

*Honors.*—To be recommended for honors at graduation, students must have completed with distinction the courses included in the major.

\* Absent on leave, 1947-1948.

<sup>1</sup> In residence fall semester only, 1947-1948.

## LOWER DIVISION COURSES

NOTE: In courses 1, 2, 3, 4, three hours of basic study will be supplemented by two hours of specialized practical work, devoted to reading in some sections, and to conversation in other sections.

1. Elementary French. Beginners' Course. (4) I and II.  
Sections meet five hours weekly. Mr. CARMODY in charge
2. Elementary French (continuation of 1). (4) I and II.  
Sections meet five hours weekly. Miss HABIS-REUTINGER in charge  
Prerequisite: two years of high school French, or course 1.
3. Intermediate French. (4) I and II. Mr. EUSTIS in charge  
Sections meet five hours weekly.  
Prerequisite: three years of high school French, or course 2.
4. Intermediate French, Composition and Conversation. (4) I and II.  
Sections meet five hours weekly. Mr. MEYLAN in charge  
Prerequisite: four years of high school French, or course 3.
8. Intermediate French, Reading. (4) I and II. Mr. BRENNER in charge  
Reading and translation; reports and conferences.  
Prerequisite: course 3 or four years of high school French. Not open to students who wish to take course 25 or upper division work.
25. Advanced French. (3) I and II. Miss DUFRENOY in charge  
Prerequisite: course 4.

## UPPER DIVISION COURSES

The prerequisite to all upper division courses is 16 units of lower division courses, including course 4 with grade A or B, or course 25.

Courses 101A-101B and 109A-109B must usually be taken before any other upper division course, with the exception of course 125

- 101A-101B. Intensive Reading, Grammar and Composition. (3-3) Yr. Beginning each semester. Mr. WALPOLE in charge
- 109A-109B. A Survey of French Literature from the Middle Ages to the Present. (3-3) Yr. Mr. DONDO
- 112A-112B. The Nineteenth Century. (2-2) Yr. Miss DE LA HARPE
- 114A-114B. Contemporary French Literature. (2-2) Yr. Mr. WOLFF
- 115A-115B. Modern French Drama. (2-2) Yr. Mr. BRENNER
- 120A-120B. The Seventeenth Century. (2-2) Yr. Mr. FAY
- 121A-121B. The Eighteenth Century. (2-2) Yr. Mr. ROWBOTHAM
125. The Pronunciation of French. (1) I. Mr. MEYLAN  
Course 125 is required of all candidates for the Certificate of Completion in French. Normally to be taken in the junior year. Enrollment limited to 15 students.

- 130A-130B. Advanced Grammar and Composition. (3-3) Yr. Mr. BONNO  
Prerequisite: course 101A-101B,  
Required of all candidates for the Certificate of Completion of the  
teacher-training curriculum, or for the M.A. degree.
- 134A-134B. Survey of French Culture and Institutions. (2-2) Yr. Mr. DONDO  
Required of all candidates for the Certificate of Completion in French.
150. Anglo-French Literary Relations during the Early Nineteenth Century  
(2) I. Mr. WOLFF  
Prerequisite: reading knowledge of French.
199. Special Study for Advanced Undergraduates. (1-3) I and II.  
The STAFF (Miss DE LA HARPE in charge)  
Consultations in regard to individual investigations in philological or  
literary fields.

## COURSES IN WHICH NO KNOWLEDGE OF FRENCH IS REQUIRED

- 9A-9B-9C. French Literature in English Translation (2-2-2) Yr.  
Lectures (in English) and collateral reading of representative works  
in English Translation.
- 9A. To the End of the Eighteenth Century. I. Mr. ROWBOTHAM  
No prerequisite.
- 9B. The Nineteenth Century. II. Mr. ROWBOTHAM  
No prerequisite.
- 9C. The Contemporary Period. I. Mr. CARMODY  
Prerequisite: course 9B or special permission of the instructor.
- \*122A-122B. Readings in French Literature of the Middle Ages. (2-2) Yr.  
Mr. WALPOLE
- 123A-123B. Renaissance and Reformation in French Literature. (2-2) Yr.  
Mr. MEYLAN

## GRADUATE COURSES

Concerning conditions for admission to graduate courses, see page 156.

Course 201A or 206A is required of all candidates for the M.A. degree.

- 201A-201B. Historical Grammar. (3-3) Yr. Mr. CARMODY
- 202A-202B. Studies in Mediaeval French Literature. (2-2) Yr. Mr. WALPOLE  
Reading knowledge of Old French required.
- 204A-204B. Studies in the French Eighteenth Century. (2-2) Yr.  
204A. Voltaire and the Philosophers. Mr. ROWBOTHAM  
204B. Jean-Jacques Rousseau.  
Courses 204A-204B, 207A-207B, 210A-210B will be offered in rotation,  
one each year.
- 206A-206B. Reading and Interpretation of Typical Old French Texts.  
(2-2) Yr. Mr. FAY
- \*207A-207B. Studies in the Eighteenth-Century Novel. (2-2) Yr.  
Mr. ROWBOTHAM

\* Not to be given, 1947-1948.

- \*210A-210B. Studies in the Eighteenth-Century Drama. (2-2) Yr.  
 MR. BRENNER
212. Seminar in the Nineteenth-Century French Novel. (2) I. MR. WOLFF
- \*214A-214B. French Versification. (2-2) Yr. MR. DONDO
- \*217A-217B. Studies in the French Renaissance. (2-2) Yr. MR. MEYLAN
- 218A\*-218B. French Classicism. (2-2) Yr. MR. BONNO
- 219A-219B. Aspects of French Romanticism. (2-2) Yr. MR. DONDO
- 220A-220B. Explication de Textes. (2-2) Yr. MISS DE LA HARPE
235. Methods of Literary Research with Special Reference to Bibliography.  
 (1) II. MR. BRENNER  
 For prospective doctoral candidates.
298. Special Study for Graduate Students. (1-4) I and II.  
 The STAFF (Mr. BONNO in charge)

---

\* Not to be given, 1947-1948.



## GEOGRAPHY

- \*JOHN B. LEIGHLY, Ph.D., Professor of Geography.  
 CARL O. SAUER, Ph.D., Professor of Geography (Chairman of the Department).
- \*JAN O. M. BROEK, Ph.D., Associate Professor of Geography.  
 JOHN E. KESSELL, Ph.D., Associate Professor of Geography.
- 
- <sup>2</sup> ALFRED H. DEVRIES, Lecturer in Map History.  
 WALTER A. HACKER, Ph.D., Lecturer in Geography.
- <sup>1</sup> EDWIN H. HAMMOND, M.A., Lecturer in Geography.  
 NICHOLAS T. MIROV, Ph.D., Lecturer in Geography.
- <sup>2</sup> JAMES J. PARSONS, M.A., Lecturer in Geography.  
 ERHARD ROSTLUND, M.A., Lecturer in Geography.

*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 82.

*Departmental Major Adviser:* Mr. KESSELL.

*Preparation for the Major.*—Required: courses 1, 2, and 4. Recommended: Botany 12, Geology 1A-1B, and a course in elementary statistics.

*The Major.*—24 units of upper division work in geography or from 18 to 21 units of upper division work in geography and from 3 to 6 units chosen under an approved plan from the following: Anthropology 102, 118A-118B; Botany 151; Economics 110, 113, 188A; Forestry 103, 125; Genetics 100; History 161A-161B; Social Institutions 121A-121B; Soil Science 101, 105.

Each program should normally include courses 101, 105A, 121, and 151.

*Honor Students in the Upper Division.*—Candidates for honors in geography must take course 151 and present a thesis on a subject related to the work in this course.

## LOWER DIVISION COURSES

1. Introduction to Geography: Physical Elements. (3) I and II.  
Two lectures and two section meetings weekly. Mr. ROSTLUND, \_\_\_\_\_
2. Introduction to Geography: Natural and Cultural Regions. (3) II.  
Two lectures and two section meetings weekly. Mr. ROSTLUND
4. Map Reading and Map Interpretation. (3) I. Mr. KESSELL  
One lecture and two two-hour laboratory periods weekly.
- 5A-5B. Economic Geography. (3-3) Yr. Mr. HAMMOND, Mr. PARSONS  
Two lectures and two section meetings weekly.  
The distribution of the world's resources and industries.  
5A. Agricultural production in its regional differentiation.  
5B. Mineral resources, manufacturing regions, trade routes, and trade centers.  
Either half of the course may be taken independently.

\* Absent on leave, 1947-1948.

<sup>1</sup> In residence fall semester only, 1947-1948.

<sup>2</sup> In residence spring semester only, 1947-1948.

UPPER DIVISION COURSES

- \*101. Field Geography. (3) I. Mr. KESSELI  
 Field trips Saturdays.  
 Field study of a unit area with systematic mapping of the elements that constitute the natural region and of the forms of its utilization. Admission only after consultation with the instructor.
102. Field Geography. (3) II. Mr. KESSELI  
 Field trips Saturdays.  
 Study of type areas of physical and cultural interest. Admission only after consultation with the instructor.
- 105A-\*105B. Cartography. (3-3) Yr. Mr. KESSELI  
 One lecture hour and two three-hour laboratory periods a week.  
 105A. Map Projections. 105B. Map Content.  
 The consent of the instructor must be obtained before enrollment.
107. Map History and Map Appreciation. (1) II. Mr. DEVRIES
108. Analysis of Land Forms. (3) I. Mr. HAMMOND  
 Origin of land forms. Review of the varied interpretation of processes involved, with emphasis on recent European views.
109. Topographical Photo Interpretation. (3) II. Mr. KESSELI  
 The identification and classification of data on air photographs; the solution of selected problems in photogrammetry, including cover and relief. Admission only after consultation with the instructor.
111. Elementary Meteorology. (3) I. Mr. HAMMOND
- \*113. Climatology. (3) II. Mr. LEIGHLY  
 Prerequisite: course 111 or consent of the instructor.
121. Geography of North America. (3) I. Mr. ROSTLUND
- 122A. Geography of Middle America. (3) I. Mr. SAUER
- 122B. Geography of South America. (3) II. Mr. SAUER
- 123A. Geography of Mediterranean Europe. (3) I. Mr. ROSTLUND
- 123B. Geography of Northern Europe. (3) II. \_\_\_\_\_
124. Geography of the Soviet Union. (3) I. Mr. MIROV
- 125A. Geography of India and Malaysia. (3) II. Mr. PARSONS
- 125B. Geography of China and Japan. (3) I. Mr. HACKER
131. Geography of California. (3) II. Mr. KESSELI
- \*141. Economic Geography: Primary Production. (3) I. Mr. BROEK  
 Analysis of the distribution of agricultural and mineral raw materials in relation to world commerce.

\* Not to be given, 1947-1948.

142. Economic Geography: Industrial Localization. (3) II. Mr. PARSONS  
Factors and trends in the geographic distribution of manufacturing industries.
143. Political Geography. (3) II. \_\_\_\_\_  
Discussion of the literature and the basic principles of political geography, followed by an analysis of geographic factors influencing the power relations of states: location, size, form, boundaries; human and material resources.
151. Principles of Geography. (2) II. \_\_\_\_\_  
Prerequisite: three upper division courses in geography.  
Reports and conferences on the objectives, subdivisions, and methods of geography, with special reference to different schools of geographic thought as expressed in recent literature.
153. Natural Resources and Their Exploitation. (3) II. Mr. SAUER  
Conservative and destructive uses of habitat (occupied area) by cultures (economic systems) throughout human time, with emphasis on contemporary problems.
161. Geography of Domesticated Plants and Animals. (3) I. Mr. SAUER  
A consideration of the processes, times, and places of appropriation of elements of flora and fauna into agricultural economics and of the successive geographic dispersal of the domesticated forms.
171. Historical Geography of English Overseas Exploration and Colonization. (3) II. \_\_\_\_\_  
Expansion of English civilization in the early modern period, with special attention to the preferred areas of settlement, and the reasons therefor; modification and adaptation of cultural elements in new environments.
199. Special Study for Advanced Undergraduates. (1-3) I and II.  
The STAFF (Mr. KESSELI, Mr. SAUER in charge)

## GRADUATE COURSES

Concerning conditions for admission to graduate courses, see page 156.

201. Seminar in Latin American Geography. (2) I. Mr. SAUER
203. Seminar in Cultural Geography. (2) II. Mr. SAUER
- 205A. Seminar in Physical Geography. (2) I. Mr. KESSELI  
Topic: analysis of land forms.
- \*205B. Seminar in Physical Geography. (2) II. Mr. LEIGHLY  
Topic: applied climatology.
- 219A-219B. Research. (2-2) Yr.  
The STAFF (Mr. SAUER, Mr. KESSELI in charge)

For facilities for research see the ANNOUNCEMENT OF THE GRADUATE DIVISION, NORTHERN SECTION.

\* Not to be given, 1947-1948.

## GEOLOGICAL SCIENCES

PERRY BYERLY, Ph.D., Professor of Seismology.

<sup>1</sup> ADOLF PABST, Ph.D., Professor of Mineralogy.

<sup>2</sup> NICHOLAS L. TALIAFERRO, Ph.D., Professor of Geology.

HOWEL WILLIAMS, Sc.D., Professor of Geology (Chairman of the Department).

ANDREW C. LAWSON, Ph.D., Sc.D., LL.D., Professor of Geology and Mineralogy, Emeritus.

GEORGE D. LOUDERBACK, Ph.D., LL.D., Professor of Geology, Emeritus.

NORMAN E. A. HINDS, Ph.D., Associate Professor of Geology.

CARLTON D. HULIN, Ph.D., Associate Professor of Geology.

FRANCIS J. TURNER, Sc.D., Associate Professor of Geology.

JEAN VERHOOGEN, Ph.D., Sc.D., Associate Professor of Geology.

CHARLES M. GILBERT, Ph.D., Assistant Professor of Geology.

*Letters and Science List.*—All undergraduate courses in geological sciences except course 114 are included in the Letters and Science List of Courses. For regulations governing this list, see page 82.

*Departmental Major Adviser:* Mr. WILLIAMS.

*Preparation for the Major.*—Required: Chemistry 1A-1B; Physics 2A-2B; Engineering 1A-1B; Geology 1A-1B; Mineralogy 4A-4B; Mathematics 3A-3B. It is recommended that prospective major students take Mathematics 4A-4B, and Physics 3A-3B. In selecting a major group the student should note the prerequisites for the individual courses included in the group. Such prerequisites should be completed in the lower division. Certain of the preparatory courses may be postponed to the upper division by permission of the department. A reading knowledge of French and German is required of candidates for the Ph.D. degree.

Recommended: For students going into petrological, mineralogical, or economic undertakings, Chemistry 5 is desirable.

The department will certify to the completion of a major program for graduation only on the basis of at least a C average in the upper division courses taken in the department. Students who cannot maintain such an average may be required at any time to withdraw from the departmental major.

*The Major.*—All major programs must include Geology 102A-102B (4), 103 (4) and 118 (6) or 112A-112B (4). The department will certify to the completion of a major program for graduation only on the basis of at least C grades in Geology 102A-102B and 103. Credits for courses completed in other departments or institutions will not be accepted as equivalent to Geology 102A-102B or 103, except on satisfactory completion of appropriate tests. In addition, at least 12 units chosen from one of the following groups must be included:

I. Emphasis on Petrology: Geology 104A-104B (6), Chemistry 109 (3), and two of the following courses: Geology 116, 110A, 110B, 214A, 214B, Mineralogy 103.

II. Emphasis on Mining Geology: Geology 104A-104B (6), 106 (3), 109 (3) and 114 (3), and one of the following: Geology 116 (2), Mineralogy 103 (3).

<sup>1</sup> In residence fall semester only, 1947-1948.

<sup>2</sup> In residence spring semester only, 1947-1948.

III. Emphasis on Petroleum Geology: Geology 104A-104B (6), 108 (2), and Paleontology 102A-102B (8) or 105 (4). Recommended: Geology 110A-110B (4), 116 (2), 122A-122B (4).

IV. Emphasis on Historical and Stratigraphic Geology: Geology 107 (2), 116 (2), Paleontology 102A-102B (8), and two of the following courses: Paleontology 103, 105; Geology 104A, 104B, 209A, 209B.

V. Emphasis on Mineralogy: Mineralogy 103 (3), 105 (3), 107 (3), Geology 104A (3), Chemistry 109 (3), and one of the following courses: Geology 106, 109, 110A; Chemistry 122.

VI. Emphasis on Invertebrate Paleontology: Paleontology 102A-102B, 103 (13), Geology 107, 116 (4), and one of the following courses: Paleontology 105 (4), Geology 104A (3).

VII. Emphasis on Geophysics: Geology 120 (2), 121 (4), 116 (2), 104A (3), 122A-122B (4), and one of the following: Geology 104B, 107, Mathematics 119A, Physics 105A.

#### GEOPHYSICS

*Departmental Major Adviser:* Mr. BYERLY.

*Preparation for the Major.*—Required: Chemistry 1A-1B; Geology 1A-1B; Mathematics 3A-3B, 4A-4B; Mineralogy 4A; Physics 4A-4B-4C.

*The Major.*—Required: Electrical Engineering 106; Geology 102A-102B, 103, 121, 122A-122B; Mathematics 110A-110B; Physics 105A-105B, 110A-110B.

#### GEOLOGY

##### LOWER DIVISION COURSES

##### 1A. General Geology: Dynamical and Structural. (3) I.

Mr. HINDS, Mr. VERHOOGEN

Three lectures and one demonstration and discussion section weekly.

Prerequisite: elementary chemistry.

Not open to students who have taken Geology 2.

A survey of the nature and structure of the materials composing the earth and of the processes that shape the earth's surface.

##### 1B. General Geology: Historical. (3) II.

Mr. HINDS

Three lectures and one demonstration and discussion section weekly.

Prerequisite: Geology 1A.

Origin and geological history of the earth and the evolution of its animal and plant inhabitants.

##### 2. Elementary Physiography. (3) II.

Mr. HINDS

Three lectures and one section meeting weekly.

Not open to students who have taken or are taking Geology 1A.

The earth's surface features and the geologic laws governing their origin and development. Principles underlying the evolution of topography under different climatic conditions.

##### UPPER DIVISION COURSES

##### 102A-102B. Field Geology. (2-2) Yr.

Mr. HULIN, Mr. GILBERT, Mr. TALIAFERRO,

Mr. TURNER, Mr. WILLIAMS

One lecture a week and field trips Saturday, all day.

Prerequisite: Geology 103, which may be taken concurrently.

Training in the methods of field observation and mapping and in the interpretation of results.

102A. Inquiry into the geology of the Berkeley hills. At least eight days in the field.

102B. Inquiry into the geology of other areas adjacent to the Bay of San Francisco and in the Sierra Nevada. At least ten days in the field.

Reports will be prepared on the results of field work.

Concurrently with the field work, the class meets for lectures, exercises on topographic and geologic maps, and for discussion of methods.

103. Introduction to Petrology. (3-4) I.

Mr. GILBERT, Mr. HULIN, Mr. TURNER, Mr. VERHOOGEN

Two lectures and one or two three-hour laboratory periods weekly.

Students in metallurgy, mining, and petroleum engineering will be required to take one afternoon of laboratory work for 3 units of credit. Geology majors and students in the economic geology curriculum of the College of Engineering will take two afternoons of laboratory work for 4 units of credit.

Prerequisite: Geology 1A, Mineralogy 4A.

Characteristics, origin, mode of occurrence and nomenclature of rocks, and description of the more common types. Laboratory practice in determination of textures, mineral components, and systematic position of rocks by observation of hand specimens.

104A-104B. Microscopic Petrography Laboratory. (3-3) Yr. Mr. WILLIAMS

Lecture and two three-hour laboratory periods weekly.

Prerequisite: Mineralogy 4A, and for Geology 104B, Geology 103.

The optical properties of crystals, followed by determination of minerals and then of rocks by means of the microscope. Approximately one-third of the year is devoted to each of these three topics.

106. Economic Geology, Metalliferous Deposits. (3) I. Mr. HULIN

Three lectures weekly and occasional conference hours.

Prerequisite: Geology 103, which may be taken concurrently.

107. Historical Geology of North America. (2) II. Mr. HINDS

Two lectures a week and occasional conference hours.

Prerequisite: Geology 1B, 102A, and 103.

108. Economic Geology, Nonmetalliferous Deposits. (2) II. Mr. TALIAFERRO

Special emphasis is placed on petroleum.

Prerequisite: Geology 1A and Mineralogy 4A.

109. Microscopy of the Metallic Ores. (3) II. Mr. HULIN

One lecture and two three-hour laboratory periods weekly.

Prerequisite: Geology 106.

Introduction to the study of polished surfaces of the metallic ores. Methods of preparation; properties and identification; ore textures; alteration products and associated gangue minerals.

110A-110B. Advanced Sedimentary Petrography. (2-2) Yr.

I: Mr. Gilbert; II: Mr. Turner. Mr. GILBERT, Mr. TURNER

Two three-hour laboratory periods weekly.

Prerequisite: Geology 104A.

110A. Mechanical and mineralogical analysis of sediments and sedimentary rocks. Determination of refractive indices and orientation of mineral grains.

110B. Study of sedimentary rocks in thin section; identification of mineral grains.

- 112A-112B. Undergraduate Thesis Course. (2-2) Yr. Beginning each semester.

The STAFF

Introduction to independent research; investigation of a problem individually chosen, with a formal report on the results. If the subject chosen is properly approved, the completion of this course fulfills the thesis requirement for the degree of Bachelor of Science in the College of Engineering. Admission to the course, hours, and subject matter must be individually arranged with the instructor under whom the student chooses to work.

114. Methods in Mining Geology. (3) II.

Mr. HULIN

Three lectures weekly and an occasional conference hour. One or more field excursions.

Prerequisite: Geology 106.

A consideration of the more practical aspects of geology as applied to mining; methods of underground mapping; interpretation of ore structures, wall-rock alteration, and secondary enrichment; leached outcrop technique.

116. Tectonic Geology. (2) II.

Mr. TALIAFERRO

Prerequisite: Geology 1A, 102A-102B.

Deformation of the earth's crust; mountain growth; folding and faulting and their economic aspects; graphic solution of fault problems.

117. Geomorphology. (3) I.

Mr. HINDS

Two lectures a week and one additional conference hour.

Students who have not completed Geology 102A-102B or who are not taking it concurrently will be admitted only by special permission of the instructor.

Nature, evolution, and classification of land forms; use of physiographic methods in elucidating the later geologic history of various regions and in interpreting conditions of the geologic past.

118. Advanced Summer Field Course. (4-6) MR. TALIAFERRO, MR. GILBERT

Prerequisite: Geology 102A-102B.

The chief aim of the course is to develop in the student: (1) facility and accuracy in detailed geological mapping; (2) ability to observe independently and to interpret various types of rocks, structures, physiographic features, and other geological phenomena; and (3) the capacity to execute independently a geological survey of a region, determine its history, and prepare a suitable report. Satisfactory completion of this course satisfies the undergraduate thesis requirements for students whose major is geology.

With the approval of the instructor, this work may be taken for credit during two or more summers, under the designation Geology 118; however, not more than 6 units of credit so gained will be accepted as part of the undergraduate major.

120. Elementary Seismology. (2) I.

Mr. BYERLY

Prerequisite: Physics 2A-2B, Geology 1A.

Nature, causes and effects of earthquakes; great earthquakes of the past; types of seismic waves and the evidence they offer as to the structure of the earth.

121. Practical Seismometry. (4) II.

Mr. BYERLY

Three lectures and one three-hour laboratory period weekly.

Prerequisite: Physics 2A-2B, Mathematics 4A-4B.

Paths of seismic waves and their relation to the structure of the earth, with emphasis on problems of seismic prospecting; elementary theory of the seismograph; laboratory analysis of seismograms and interpretation of travel-time curves in terms of structure.

- 122A-122B. Principles of Geophysics. (2-2) Yr. Mr. VERHOOGEN  
 Prerequisite: Geology 1A, Mathematics 4A-4B, and Physics 2A-2B or equivalent.  
 122A. General geophysics.  
 122B. Applications to geologic problems.
199. Special Study for Advanced Undergraduates. (1-4) I and II.  
 The STAFF (Mr. WILLIAMS in charge)  
 For properly qualified senior students who wish to undertake selected readings or research under the guidance of a member of the department.

GRADUATE COURSES

Concerning conditions for admission to graduate courses, see page 156.

204. The Theory of Waves in an Elastic Medium. (2) I. Mr. BYERLY  
 The theory of stress and strain, of equilibrium and wave motion in elastic solids, with special application to some of the more important problems of geodynamics, including earthquake waves.
- 206A. Seminar in Geology of Metalliferous Deposits. (2) I. Mr. HULIN  
 Prerequisite: Geology 106.
- 207A. Seminar in Volcanology. (2) I. Mr. WILLIAMS  
 The origin and nature of volcanic processes; principal types of activity as exemplified by modern volcanoes; characters and classification of lavas and pyroclastic rocks.
- 207B. Seminar in Geophysics. (2) II. Mr. VERHOOGEN  
 Fundamental problems of earth-structure, thermal history and magmatic intrusion.
- 209A\*-209B. Geology of California. (2-2) Yr. Mr. TALIAFERRO  
 Prerequisite: Geology 102A-102B, 103, and a course in historical geology, such as course 1B or 107.  
 Critical study of literature, with discussion of evidence and scientific method; the main reported facts and theories of the history of sedimentation, volcanism, the major earth movements, and geographical changes in California and bordering areas covered in reports, discussions, and occasional lectures.
213. Seminar in Geomorphology. (2) I. Mr. HINDS  
 Prerequisite: Geology 117 or its equivalent.  
 The topics to be considered will vary from year to year.
- 214A-214B. Advanced Petrographic Laboratory. (2-5; 2-5) Yr. Mr. TURNER  
 Laboratory periods and occasional conferences, by arrangement.  
 Prerequisite: Geology 104A-104B. Recommended: Mineralogy 105.  
 Metamorphic and igneous rocks in alternate years. 1947-1948, Metamorphic rocks.
- 215A-215B. Seminar in Sedimentation. (2-2) Yr. Mr. TURNER  
 Prerequisite: Geology 104A-104B.

\* Not to be given, fall semester, 1947.



216. Seminar in Structural Geology. (2) II. Mr. TALIAFERRO  
Prerequisite: Geology 102A-102B, 103, 116, and a course in historical geology.  
Folding and faulting, growth of mountains: a study of special topics in structural geology. Reports and discussions, with occasional lectures.
217. Advanced Seismometry. (2) II. Mr. BYERLY  
The general mathematical theory of the seismograph; discussion of the problems of modern seismometry and of recent results.
- 218A-218B. Seminar in Seismology. (2-2) Yr. Mr. BYERLY  
Critical study of original literature relating to seismological problems. The content will vary from year to year.
220. Research. (1-5) I and II.  
The STAFF (Mr. TALIAFERRO, Mr. WILLIAMS in charge)

## MINERALOGY

## LOWER DIVISION COURSES

- 4A. Elementary Mineralogy. (3) I. Mr. PABST  
One lecture and two three-hour laboratory periods weekly.  
Prerequisite: Chemistry 1A-1B and Physics 1A-1B or 2A-2B.  
Lectures on the physical properties of minerals and crystal morphology.  
Practice in determination of minerals by simple physical tests.
- 4B. Elementary Mineralogy. (2) II. Mr. PABST  
Two three-hour laboratory periods weekly.  
Prerequisite: Mineralogy 4A.  
Practice in determination of minerals by physical properties and simple chemical tests.

## UPPER DIVISION COURSES

103. Descriptive Mineralogy. (3) II. Mr. PABST  
Prerequisite: Mineralogy 4A.  
Lectures on the principal groups of minerals, emphasizing isomorphous series, chemical variation, and structure; problems in determination of mineral formulas from analyses.
- \*105. Paragenesis of Minerals. (3) I. Mr. PABST  
Prerequisite: Mineralogy 103.  
Lectures on some of the principles of the formation, association, and transformation of minerals. To be given in alternate years.
107. Crystallography. (3) I. Mr. PABST  
Prerequisite: Mathematics 3A-3B and the consent of the instructor.  
Lectures on the principles of crystallography and crystal structure, with brief reference to some of the methods of crystal structure analysis and the relation of the properties of crystals to their structure and classification.

## GRADUATE COURSES

Concerning conditions for admission to graduate courses, see page 156.

Research. (See Geology 220.)

282. Problems in Goniometry. (1-2) I and II. Mr. PABST  
Prerequisite: permission of the instructor.  
Practice in the measurement and projection of crystals.

\* Not to be given, 1947-1948.

## GERMAN

- <sup>2</sup> CLAIR HAYDEN BELL, Ph.D., Professor of German.  
 EDWARD V. BREWER, M.A., Professor of German (Chairman of the Department).
- ARTHUR G. BRODEUR, Ph.D., Professor of Germanic Philology and English.  
 LAWRENCE M. PRICE, Ph.D., Professor of German.  
 ARCHER TAYLOR, Ph.D., Professor of German.  
 CLARENCE PASCHALL, M.A., Professor of German, Emeritus.  
 ERWIN G. GUDDE, Ph.D., Associate Professor of German.
- <sup>1</sup> EDMUND KURT HELLER, Ph.D., Associate Professor of German.
- <sup>2</sup> C. GRANT LOOMIS, Ph.D., Associate Professor of German.
- <sup>1</sup> FRANZ SCHNEIDER, Ph.D., Associate Professor of German.  
 HANS WOLFF, J.D., Ph.D., Associate Professor of German.  
 MADISON S. BEELER, Ph.D., Assistant Professor of German.  
 ALICE P. TABOR, Ph.D., Assistant Professor of German.  
 MARIANNE BONWIT, Ph.D., Instructor in German.  
 O. PAUL STRAUBINGER, Ph.D., Instructor in German.  
 EDITH J. LEWY, Associate in German.  
 HANNA M. LÖHNBERG, Ph.D., Associate in German.  
 JOHANNA E. MARTENSEN, A.B., Associate in German.

- 
- <sup>1</sup> HERMANN J. WEIGAND, Ph.D., Professor of German in Yale University, Visiting Professor of German.

*Letters and Science List.*—All undergraduate courses in German are included in the Letters and Science List of Courses. For regulations governing this list, see page 82.

*Departmental Major Adviser:* MR. BELL.

*Preparation for the Major.*—German 1, 2, 3, 4, or their equivalents, completed satisfactorily.

*The Major.*—Requirement: 24 units in upper division courses, including one full year's course in composition and at least 6 units made up from the senior courses 114, 118A, 118B, and 135. Six of the 24 units may be related work in other departments. Attention is also directed to the courses listed under "Foreign Literature in English Translation," page 305. Students looking forward to the secondary credential should include courses 118A-118B, 131A-131B, 135, and 140.

*Honors.*—To be recommended for honors at graduation, students must have completed with distinction the courses outlined for the major, including courses 118A, 118B.

*Higher Degrees.*—See the ANNOUNCEMENT OF THE GRADUATE DIVISION, NORTHERN SECTION.

<sup>1</sup> In residence fall semester only, 1947-1948.

<sup>2</sup> In residence spring semester only, 1947-1948.

## LOWER DIVISION COURSES

1. Elementary German. Beginners' Course. (4) I and II.  
Mr. BEELER in charge
2. Elementary German (continuation of 1). (4) I and II.  
Mr. BEELER in charge  
Prerequisite: course 1, or two years of high school German.
3. Intermediate German. (4) I and II. Miss BONWIT in charge  
Prerequisite: course 2, or three years of high school German.
- 3c. German Conversation. (1) I and II. Mr. SCHNEIDER in charge  
Open to students who are taking course 3 concurrently.
4. Intermediate German. (4) I and II. Miss BONWIT in charge  
Prerequisite: course 3, or four years of high school German.
- 4c. German Conversation. (1) I and II. Mr. SCHNEIDER in charge  
Open to students who are taking course 4 concurrently.
- 3s. Scientific German. (3) I and II. Mr. STRAUBINGER in charge  
Prerequisite: course 2, or equivalent. Open only to students in the colleges of Chemistry and Engineering, premedical and pre dental students, and students in the College of Letters and Science who are majoring or preparing for a major in one of the scientific departments.
- 4s. Scientific German. (3) I and II. Mr. STRAUBINGER  
Prerequisite: course 3s or 3 or equivalent.  
4s may be repeated without duplication of credit.
- 4m. Medical German. (3) I and II. MR. HELLER  
(Formerly numbered 3M.)  
Prerequisite: course 3 or 3s or equivalent.
- 9A-9B-9C-9D. Great Writers in German Literature. (No knowledge of German required.) (1-1) Yr. The STAFF (Mr. BELL in charge)
- 9A. Mediaeval Period. II, Mr. Bell.
- 9B. Classical Period, Eighteenth Century. I, Miss Bonwit.
- \*9C. Nineteenth Century. I, Mr. Schneider.
- \*9D. Twentieth Century. II, Mr. Loomis.
- Any part of this course is open to students in all departments of the University, major students in German excepted.

## UPPER DIVISION COURSES

Prerequisite: 16 units of lower division courses.

- \*100. Introduction to Modern German Literature. (3) I. MR. BELL
104. Dramas of the Nineteenth Century. (3) II. MR. WOLFF
106. Schiller's Dramas. (3) I. MR. BREWER
- \*107. Schiller's Poetry, Aesthetic and Historical Writings. (3) II. MR. BREWER
- \*108. Introduction to Goethe. (3) I. MR. PRICE  
*Goetz von Berlichingen, Urfaust, Werther.*

\* Not to be given, 1947-1948.

109. Goethe's Verse Dramas; *Tasso, Iphigenie, Faust*, Part I. (3) II.  
Mr. PRICE
- \*110. The German Ballad and Lyric Poetry except Goethe. (1) I.  
Mr. SCHNEIDER
- \*111. Goethe's Poems. (1) II.  
Mr. SCHNEIDER
- \*112A. Survey of German Culture and Institutions. (2) I. Mr. GUDDE  
Open to all upper division students who have a reading knowledge of German, and recommended for prospective teachers.
- \*114. German Literature of the Nineteenth Century. (3) II. Mr. SCHNEIDER  
Prerequisite: 6 units from any of the above-listed upper division courses.
- 118A. History of German Literature in the Middle Ages. (3) I. Mr. HELLER  
Prerequisite: same as for course 114.
- 118B. History of German Literature from the Reformation to the Romantic Movement. (3) II. Mr. PRICE  
Prerequisite: same as for course 114. Course 118A is not prerequisite to 118B.
120. The Nineteenth-Century Novelle, beginning with Romanticism, with special stress on Stifter, Keller, Meyer, and Storm. (3) I. Mr. WEIGAND
122. The German Lyric from Goethe to Rilke. (2) I. Mr. WEIGAND  
Prerequisite: six units from any of the upper division courses listed above.
125. Introduction to Folklore. (3) II. Mr. TAYLOR  
Prerequisite: senior standing (for major students in anthropology, junior standing) and the ability to read one foreign language.  
A survey of the materials of popular tradition, the folk song, the folk tale, the proverb, the riddle, and other forms. The methods and results of investigation in this field will be presented.
- 130A-130B. Advanced Grammar and Composition. (3-3) Yr. Mr. BREWER
- 131A-131B. Advanced Grammar and Composition. (2-2) Yr. Miss BONWIT  
Prerequisite: grade C or above in course 130A-130B.
135. Middle High German. (3) II. Mr. BELL  
Prerequisite: same as for course 114. This course should be taken together with or after (but not before) course 118A.  
Outlines of grammar; selections from the *Nibelungenlied* and the epics of chivalry.
140. The Pronunciation of German. (2) I. Mr. BEELER  
Designed for prospective teachers and those planning to take philological courses.
199. Special Study for Advanced Undergraduates. (1-3) I and II.  
The STAFF (Mr. BELL in charge)  
Topics selected with the approval of the Department and studied under the direction of one of the instructors.

\* Not to be given, 1947-1948.

## GRADUATE COURSES

Concerning conditions for admission to graduate courses, see page 156.

Prerequisite: for the literary courses, course 118A or 118B; for those in philology, ordinarily courses 131A-131B, 135, and 140. For advanced study in German literature a reading knowledge of French and a general acquaintance with German history are practically indispensable. For philological work some knowledge of Latin is necessary and Greek is highly desirable.

- \*200. Bibliography of German Literary History. (2) I. Mr. TAYLOR  
An introduction to the bibliographical tools used by the student in the fields of German linguistics, the history of German literature, and folklore.
- \*201. Germanic Heroic Poetry. (3) II. Mr. BRODEUR  
(Formerly given as English 207.)
- \*203. Studies in Middle High German Literature. (2) II. Mr. BELL  
Prerequisite: course 135.
- \*205. German Literature During the Renaissance and Reformation. (3) II. Mr. TAYLOR
206. German Literature During the Seventeenth Century. (2) II. Mr. LOOMIS
214. Lessing and His Time. (3) I. Mr. PRICE  
Special topic for 1947-1948: Lessing and the European Drama of his time.
- \*218. Herder: A study of His Ideas on History and Aesthetics. (2) I. Mr. WOLFF
- \*222. Goethe's *Faust*. (3) I. Mr. PRICE
- \*225A. Studies in the Novel from Grimmelshausen to Gottfried Keller. (2) I. Mr. GUDDE
- \*226. The German Drama in the Nineteenth Century. (2) I. Miss TABOR
228. German Romanticism: A study of both early and late Romanticism from 1795 to about 1815. (3) II. Mr. BREWER
- \*229. Kleist, Büchner, Grabbe. (2) II. Mr. WOLFF
- \*234. Recent German Drama to the Close of the Expressionistic Movement. (2) II. Mr. BELL
240. German Naturalism, with Special Reference to Hauptmann. (2) I. Mr. WEIGAND
- \*242A. Studies in "Das junge Deutschland." (2) I. Mr. SCHNEIDER  
Heine and the influences from France.
- \*242B. Studies in "Das junge Deutschland." (2) II. Mr. SCHNEIDER  
Gutzkow, Wienbarg, Laube, Mundt, and others.  
Course 242A is not prerequisite to 242B.
245. The Tale. (2) I. Mr. TAYLOR
250. Special Study for Graduate Students. (1-4) I and II. The STAFF (Mr. WOLFF in charge)

\* Not to be given, 1947-1948.

*Germanic Linguistics*

For the courses in English Philology see the Department of English, pages 299-304.

- |  |            |
|--|------------|
| 260. Introduction to Germanic Linguistics. (3) I.  | Mr. BEELE  |
| Principles of change in sound, form, and meaning in the Germanic languages; the relationship of the Germanic languages to one another; the reconstruction of Proto-Germanic; Proto-Germanic and Indo-European. |            |
| 262. History of the German Language. (2) II.   | Mr. BEELE  |
| *265. Gothic. (3) I.   | Mr. BEELE  |
| *270. Old Saxon. (3) I.  | Mr. HELLER |
| *275. Old High German. (3) II.   | Mr. HELLER |
| 280. Old Norse. (3) II.  | Mr. BEELE  |

---

**GREEK**

For courses in the Greek language and literature see under Department of Classics, pages 233-236.

\* Not to be given, 1947-1948.

## HISTORY

GEORGE H. GUTTRIDGE, M.A. (Cantab.), Professor of English History.

GEORGE P. HAMMOND, Ph.D., Professor of History.

LAWRENCE A. HARPER, J.D., Ph.D., Professor of American History.

JOHN D. HICKS, Ph.D., A. F. and May T. Morrison Professor of History (Chairman of the Department).

ERNST H. KANTOROWICZ, Ph.D., Professor of History.

ROBERT J. KERNER, Ph.D., LL.D., Litt.D., Sather Professor of History.

<sup>1</sup> FRANKLIN C. PALM, Ph.D., Professor of Modern European History.

\* RAYMOND J. SONTAG, Ph.D., Sidney Hellman Ehrman Professor of European History.

<sup>1</sup> JOHN J. VAN NOSTRAND, Ph.D., LL.D., Professor of Ancient History.

HERBERT E. BOLTON, Ph.D., Litt.D., L.H.D., LL.D., Sather Professor of History, Emeritus.

FREDERIC L. PAXSON, Ph.D., Litt.D., LL.D., Margaret Byrne Professor of United States History, Emeritus.

WOODBRIDGE BINGHAM, Ph.D., Associate Professor of Far Eastern History.

JAMES F. KING, Ph.D., Associate Professor of History.

LAWRENCE KINNAIRD, Ph.D., Associate Professor of History.

PAUL B. SCHAEFFER, Ph.D., Associate Professor of European History.

ENGEL SLUITER, Ph.D., Associate Professor of History.

WALTON E. BEAN, Ph.D., Assistant Professor of History.

DELMER M. BROWN, Ph.D., Assistant Professor of History.

WILLIAM N. DAVIS, Ph.D., Assistant Professor of History.

GORDON GRIFFITHS, Ph.D., Assistant Professor of History.

GEORGE V. LANTZEFF, Ph.D., Assistant Professor of History.

GEORGE M. McCUNE, Ph.D., Assistant Professor of History.

KENNETH M. STAMPP, Ph.D., Assistant Professor of History.

*Introductory Courses.*—Courses 4A-4B and 8A-8B are open to all students, but 4A should be taken preferably before 8A by freshmen; courses 17A-17B and 19A-19B are open to all students above the freshman year; the A part of any of the introductory courses should ordinarily precede the B part.

*Foreign Language in the Lower Division.*—All students who intend to take upper division courses in history are advised to acquire a reading knowledge of at least one of the following languages before they reach their junior year: French, German, Italian, Latin, Spanish.

*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 82.

*Departmental Major Advisers:* Mr. GUTTRIDGE, Chairman; Mr. BINGHAM, Mr. KING, Mr. SCHAEFFER.

<sup>1</sup> In residence fall semester only, 1947-1948.

\* Absent on leave, 1947-1948.

*Preparation for the Major.*—Required: History 4A-4B; and 8A-8B, 17A-17B, or 19A-19B (according to the intended field of concentration); and either Economics 1A or Geography 1.

*The Major.*—Students majoring in history must complete 24 upper division units in history, including:

- (a) History 101 (required in the junior year).
- (b) A year course of broad scope in two of the fields, European, Western Hemisphere, Far Eastern history.
- (c) Some specialized work in the senior year, to be selected in consultation with the adviser.
- (d) A year's work in the history of the United States, in either the lower or upper division.

The department will certify to the completion of a major program for graduation only on the basis of at least a C average in the upper division courses taken in the department. Students who cannot maintain such an average may be required at any time to withdraw from the major in history.

*Honor Students in the Upper Division.*—Students who complete a major in history with distinction are eligible for recommendation for honors upon passing the comprehensive examination. Attention is directed to course 198 and to page 84.

*Teacher-Training Curricula.*—The curriculum for the Certificate of Completion (with a teaching major in social studies) differs from that of the undergraduate major in history both in the list of prescribed courses and in the requirement of at least 1.75 grade points per unit. For further information concerning the teacher-training curriculum, see the ANNOUNCEMENT OF THE SCHOOL OF EDUCATION, and consult the Graduate Adviser.

*Higher Degrees.*—Students planning to work toward the degrees of M.A. and Ph.D. should consult the ANNOUNCEMENT OF THE GRADUATE DIVISION and the ANNOUNCEMENT OF THE GRADUATE DIVISION IN THE SOCIAL SCIENCES, and confer with the Graduate Adviser.

#### LOWER DIVISION COURSES

NOTE.—In courses 4A-4B, 8A-8B, 17A-17B, and 19A-19B, weekly sections are organized to give supplementary instruction in historical geography, map work, bibliography, and methods of historical study.

4A-4B. History of Western Europe. (3-3) Yr. Beginning each semester.

Mr. KERNER, Mr. PALM, Mr. SCHAEFFER, Mr. GRIFFITHS  
Course 4A is prerequisite to 4B for freshmen.

8A-8B. History of the Americas. (3-3) Yr. Beginning each semester.

Mr. KING, Mr. SLUITER

17A-17B. History of the United States. (3-3) Yr. Beginning each semester.

Mr. BEAN, Mr. DAVIS, Mr. HARPER, Mr. KINNAIRD, Mr. STAMP  
Prerequisite: sophomore standing.

This course satisfies the American History and Institutions requirement.

19A-19B. History and Civilizations of Asia. (3-3) Yr.

Mr. BINGHAM

Prerequisite: sophomore standing.



## UPPER DIVISION COURSES

101. Introduction to Historical Method and Bibliography. (3) I and II.  
Two lectures a week and conference hours. Mr. GRIFFITHS  
Prescribed in the junior year for, and restricted to, students majoring  
in history. Two papers and a bibliography are prepared by each student;  
and the use of the library is emphasized. Enrollment is limited.
- 111A-\*111B. Ancient History. (3-3) Yr. Mr. VAN NOSTRAND  
111A. Greek history to the Roman conquest.  
111B. Roman history to the fourth century A.D.
- \*113. History of Ancient Mediterranean Colonization. (3) II.  
Mr. VAN NOSTRAND
115. Byzantium: the Eastern Empire to 867. (3) I. Mr. KANTOROWICZ
- 121A-121B. Medieval History. (3-3) Yr. Mr. SCHAEFFER  
121A. 500 to 1100.  
121B. 1100 to 1500.
122. Medieval Culture. (3) I. Mr. SCHAEFFER
- \*123. Medieval France. (3) II. Mr. SCHAEFFER
- \*125A-125B. Medieval Thought and Institutions. (3-3) Yr.  
125A. Carolingian Europe (700-900). Mr. KANTOROWICZ  
125B. Empire and Papacy (900-1100).
- 130A. The Thirteenth Century. (3) II. Mr. KANTOROWICZ  
(Formerly numbered 125C.)
- \*130B. The Renaissance in Italy. (3) Mr. KANTOROWICZ  
(Formerly numbered 131A.)
- \*131A-131B. History of Europe in the Early Modern Period (1500-1789).  
(3-3) Yr. Mr. GRIFFITHS
- \*134A-134B. Western Europe: Its Cultural History since the French Revolution. (3-3) Yr. Mr. SONTAG
- 135A-135B. History of Russia and Poland to the Crimean War. (3-3) Yr.  
(Formerly numbered 149A-149B.) Mr. LANTZEFF
- 136A-136B. History of Russia and Poland Since the Crimean War. (3-3) Yr.  
(Formerly numbered 150A-150B.) Mr. KERNER  
136A. Internal History of Russia and Poland with emphasis on Soviet  
Russia.  
136B. Russia and the Soviet Union in world politics and world economics.
- 137A-137B. History of Russian Civilization. (2-2) Yr. Mr. LANTZEFF  
(Formerly numbered 153A-153B.)
- 138A-138B. History of Russian Central Asia, Siberia and Alaska. (3-3) Yr. Mr. LANTZEFF  
(Formerly numbered 156A-156B.)

\* Not to be given, 1947-1948.

- \*139A-139B. Central Europe and the Near East. (3-3) Yr. Mr. KERNER  
(Formerly numbered 147A-147B.)
- \*141. History of Modern France. (3) I. Mr. PALM
- 142A-142B. History of Modern Italy. (2-2) Yr. Mr. GRIFFITHS
- \*143A-143B. Modern Germany from the Eighteenth Century. (2-2) Yr.  
143A. Eighteenth and Nineteenth Centuries. Mr. SONTAG  
143B. Twentieth Century.
- \*144A-144B. European Diplomatic History. (3-3) Yr. Mr. SONTAG  
144A. 1848 to 1914.  
144B. 1914 to 1945.
145. The Revolutionary Era in Europe. (3) I. Mr. PALM
- \*146. Europe since 1870. (3) II. Mr. PALM
- \*148. Recent World History. (3) Mr. KEENER  
The historical background since the First World War and the current  
situation in world politics and world economics.
- 151A-151B. History of England, from 1485 to the Present. (3-3) Yr.  
Mr. GUTTRIDGE
- 152A-152B. Constitutional History of England to 1485. (2-2) Yr.  
Mr. KANTOROWICZ  
Prerequisite: course 121A-121B or the permission of the instructor.
154. England and the American Colonies to 1783. (2) I. Mr. GUTTRIDGE  
Prerequisite: course 151A or equivalent.
155. The British Commonwealth and Empire Since 1783. (2) II.  
Prerequisite: 151B or equivalent. Mr. GUTTRIDGE
- \*157. Eighteenth-Century England. (2) II. Mr. GUTTRIDGE  
Reading and discussion; restricted to students with previous knowledge  
of English history.
- 160A-\*160B. History of Spain and Portugal. (3-3) Yr. Mr. VAN NOSTRAND
- 161A-161B. Hispanic-American History. (3-3) Yr. Mr. SLUITER  
161A. The Colonies.  
161B. Since Independence.
- 162A-162B. The Caribbean and Northern South America. (2-2) Yr.  
Mr. KING
- \*163. History of Brazil. (3) I. Mr. SLUITER
- 166A-166B. History of Mexico. (2-2) Yr. Mr. HAMMOND  
166A. Colonial Period.  
166B. National Period.
167. History of the Foreign Relations of the United States. (3) II. \_\_\_\_\_
- 172A-172B. Constitutional History of the United States. (2-2) Yr.  
Mr. HARPER  
Prerequisite: course 17A-17B, or the consent of instructor.

---

\* Not to be given, 1947-1948.

- 172C-172D. Constitutional History of the United States. (1-1) Yr. Mr. HARPER  
 A discussion group for students enrolled in 172A-172B, who wish to do additional work in the same field.
- 173A-173B. The Era of Sectional Conflict. (3-3) Yr. Mr. STAMPP  
 173A. The Old South.  
 173B. Civil War and Reconstruction.
- 174A-174B. Recent History of the United States. (3-3) Yr. Mr. HICKS  
 174A. 1890 to 1917.  
 174B. 1917 to 1945.
- 176A-176B. Social History of the United States. (3-3) Yr. Mr. HICKS  
 176A. The Frontier Period.  
 176B. The Urban Period.
- 177A-177B. History of the United States, 1787-1845. (3-3) Yr. Mr. BEAN  
 177A. The Constitution and the Early Union to 1815.  
 177B. The Jacksonian Era.  
 Prerequisite: course 17A-17B. Course 177A is not prerequisite to 177B.
- \*181A-181B. The History of North America. (3-3) Yr. Mr. KINNAIRD
- \*183. Economic Exploitation of Colonial America. (3) II. Mr. SLUITER
- \*187A-187B. The Frontier of the United States, 1763-1893. (2-2) Yr. Mr. HICKS  
 Prerequisite: course 17A-17B.
- 189A-189B. History of the Southwest and the Pacific Coast. (2-2) Yr. Mr. KINNAIRD  
 189A. Spanish and Mexican Period.  
 189B. American Period.
- \*190. History of the Pacific Area, 1513-1840. (3) II. Mr. SLUITER
- \*191A-191B. History of the Far East. (3-3) Yr. Mr. BINGHAM
- 192A-192B. Far Eastern Diplomatic History. (3-3) Yr. Mr. MCCUNE  
 192A. Transition from the Chinese Imperial system to modern period of western diplomacy.  
 192B. Russo-Japanese War to the present.
- \*193A-193B. The Middle Periods of Chinese History, 600-1600. (2-2) Yr. Mr. BINGHAM
- 194A-194B. History of Modern China, 1600-1942. (2-2) Yr. Mr. BINGHAM
- 195A-195B. History of Japan. (3-3) Yr. Mr. BROWN
- 196A-196B. Rise of Modern Institutions in Japan. (2-2) Yr. Mr. BROWN  
 The transition from medieval to modern times, with emphasis on conditions related to the rise of such modern phenomena as banks, large cities, centralized government and nationalism.
- 197A-197B. Korean History. (2-2) Yr. Mr. MCCUNE  
 The cultural, social, and political development of the Korean people, with special attention to the international and domestic problems of the new nation.

\* Not to be given, 1947-1948.

198. Individual Conferences and Assigned Reading. (3) I and II.  
Mr. SCHAEFFER (for the Committee on Comprehensive Examinations)  
Intended for honor students, whose major is history, in their final semester before graduation.
199. Special Study for Advanced Students. (1-4) I and II.  
The STAFF (MR. HICKS in charge)  
Open to seniors and graduate students only.  
Prerequisite: for students whose major is history, at least a B average in all history courses undertaken; for others, at least a B average in all courses undertaken.

## GRADUATE COURSES

Concerning conditions for admission to graduate courses, see page 156.

202. Historical Method and Bibliography. (2) I. Mr. VAN NOSTRAND  
Designed especially for candidates for higher degrees in history. Stress is laid on practical exercises.
- \*211A-211B. Seminar in Ancient History. (2-2) Yr. Mr. VAN NOSTRAND
- 221A-221B. Seminar in Medieval History. (2-2) Yr. Mr. SCHAEFFER  
Studies in the intellectual history of the twelfth century.
- 225A-225B. Seminar in History of the Early Middle Ages. (2-2) Yr.  
Mr. KANTOROWICZ
- 241A-\*241B. Seminar in Modern European History. (2-2) Yr. Mr. PALM
- \*243A-243B. Seminar in Modern European History. (2-2) Yr. Mr. SONTAG
- 249A-249B. Seminar in Modern European History. (2-2) Yr. Mr. KERNER
- 251A-251B. Seminar in English History. (2-2) Yr. Mr. GUTTRIDGE
- 260A-\*260B. Seminar in the History of Spain. (2-2) Yr. Mr. VAN NOSTRAND  
Prerequisite: course 160A-160B; a reading knowledge of Spanish, and French or German.
- 261A-261B. Seminar in Hispanic-American History. (2-2) Yr. Mr. KING
- 271A-271B. Seminar in United States History. (2-2) Yr. \_\_\_\_\_
- 272A-272B. Seminar in United States History. (2-2) Yr. Mr. HARPER
- 273A-273B. Seminar in United States History. (2-2) Yr. Mr. STAMPP
- 274A-274B. Seminar in United States History. (2-2) Yr. Mr. HICKS
- 277A-277B. Seminar in United States History. (2-2) Yr. Mr. BEAN
- 281A-281B. Seminar in American History. (2-2) Yr. Mr. KINNAIRD
- 283A-283B. Seminar in Hispanic-American History. (2-2) Yr. Mr. SLUITER
- 291A-291B. Seminar in the History of the Far East. (2-2) Yr. Mr. BINGHAM
- 292A-292B. Seminar in the Modern History of the Far East. (2-2) Yr.  
Mr. McCUNE
- 295A-295B. Seminar in Japanese History. (2-2) Yr. Mr. BROWN
298. Directed Research. (2-4) I and II. The STAFF (MR. HICKS in charge)

\* Not to be given, 1947-1948.

## HOME ECONOMICS

AGNES FAY MORGAN, Ph.D., Professor of Home Economics (Chairman of the Department).

RUTH OKEY, Ph.D., Professor of Home Economics.

JESSIE V. COLES, Ph.D., Associate Professor of Home Economics.

HELEN L. GILLUM, Ph.D., Associate Professor of Home Economics.

CATHERINE LANDRETH, Ph.D., Associate Professor of Home Economics.

BESSIE B. COOK, Ph.D., Assistant Professor of Home Economics.

BARBARA M. KENNEDY, Ph.D., Assistant Professor of Home Economics.

JEAN WARREN, Ph.D., Assistant Professor of Home Economics, Davis.

LURA M. MORSE, Ph.D., Instructor in Food and Nutrition, Davis.

ALBERTA DODSON, M.A., Associate in Home Economics, Davis.

RUBY LORENE DRYDEN, M.A., Associate in Home Economics, Davis.

AGNES C. MCCLELLAND, M.A., Associate in Home Economics.

M. VIRGINIA JONES, M.S., Lecturer in Textiles.

MAURICE SANDS, Lecturer in Home Furnishing.

HELEN TOWNE, M.S., Lecturer in Home Economics, Davis.

*Letters and Science List.*—Courses 1A-1B, 7, 10, 14, 101A-101B, 102A-102B, 103, 106, 120A-120B, 132, 134, 142, 160, and 190 are included in the Letters and Science List of Courses. For regulations governing this list, see page 82.

*Curriculum in Home Economics.*—The requirements for this curriculum offered in the College of Agriculture are stated on pages 86-94.

## LOWER DIVISION COURSES

- 1A-1B. Experimental Food Study. (3-3) Yr. Miss KENNEDY  
Lecture and laboratory.  
Prerequisite: Chemistry 1A, 8. Recommended: Bacteriology 1 or 2.  
Production and composition of food and principles involved in food preparation and preservation.
5. Elementary Clothing Study. (3) I. Miss McCLELLAND  
Lecture and laboratory.  
Prerequisite: Decorative Art 16A-16B.  
Practical and cultural problems in modern garment design and construction.
7. Introduction to Textiles. (3) II. Miss JONES  
Lectures and laboratory.  
Prerequisite: Chemistry 1A and 8.  
Study of plant, animal, and synthetic fibers used in textiles and of the finished textile material.
10. Nutrition. (2) I and II. Mrs. COOK  
A nontechnical presentation of the modern knowledge of foods and nutrition. (Not accepted as part of the general major in home economics.)
14. Consumer Problems. (2) II. Miss COLES  
A nontechnical discussion of consumers' problems. (Not accepted as part of the general major in home economics.)

## UPPER DIVISION COURSES

*Food Economics and Technology*

100. Food Economics. (3) I. Miss COLES, ———  
Lectures and field or laboratory work.  
Prerequisite or concurrent, courses 1A-1B, 141.  
Field observation of manufacturing and distribution to observe practices related to problems of consumers including those buying foods in large quantities. Laboratory study of qualities of food in relation to use and price.
- 101A. Food Analysis. (3) I. Miss KENNEDY  
Lecture and laboratory.  
Prerequisite: courses 1A-1B and Chemistry 1B and 8; or Chemistry 1B and 8 with grade of A or B.  
The principles of quantitative analysis applied to food materials; chemical analysis of typical carbohydrate, fat, and protein foods.
- 101B. Advanced Food Analysis. (3) II. Miss KENNEDY  
Lecture and laboratory.  
Prerequisite: course 101A or Chemistry 5 with a grade of A or B.  
Official analytical methods and legal standards used in the chemical analysis of sugars, grain products, dairy products, fats and oils, meats, etc. Examination of foods for deterioration and adulteration.
105. Food Composition and Experimental Cooking. (3) I. Miss KENNEDY  
Lectures and laboratory.  
Prerequisite: Chemistry 1A and 8, and a college course in food preparation. Recommended, Bacteriology 1 or 2.  
An introduction to the chemistry and technology of food composition and production and the principles of food preparation. Designed to meet the needs of transfer students who may substitute it for course 1A-1B.
- \*125. Recent Advances in Food Technology. (2) II. Miss KENNEDY  
Prerequisite: course 101A.  
A proseminar on late research in the chemistry of food composition, preparation and control.
- \*126. Introduction to Research in Food Preparation and Control. (2) II. Miss KENNEDY  
Two laboratory periods a week to be arranged. To be taken concurrently with course 125.

*Nutrition and Dietetics*

- 102A-102B. Food and Dietetics. (3-3) Yr. Miss OKEY  
Lectures and laboratory.  
Prerequisite: Chemistry 1A and 8, Physiology 1A, and course 1A-1B.  
The food requirements of the normal individual and the special needs imposed by growth, pregnancy, lactation, and disease; the planning and computation of diets.

---

\* Not to be given, 1947-1948.

103. Elementary Nutrition. (3) I. Mrs. COOK  
 Prerequisite: Chemistry 1A or high school chemistry and Physiology 1A.  
 A brief study of the essential nutrients and their functions in nutrition; how to determine and satisfy the food needs of the normal individual.  
 (Not accepted as part of the major in the general curriculum in home economics.)
106. Laboratory Methods in Metabolism. (3) II. Miss OKEY  
 Lecture and laboratory.  
 Prerequisite: course 101A or Chemistry 5, and Biochemistry 103 taken previously or concurrently.  
 Study of qualitative and quantitative reactions and procedures used in the analysis of biological materials of importance in nutrition.
- 120A-120B. Human Nutrition and Dietetics. (4-5) Yr. Mrs. MORGAN  
 Lectures and laboratory. For course 120B there is an additional laboratory period.  
 Prerequisite: course 101A and Biochemistry 103, or courses 101A and 106.  
 The fundamentals of nutrition established through typical experiments in calorimetry, digestion, nitrogen and mineral balances, vitamin tests; and the applications of these principles to practical feeding problems.
130. The Nutrition of Development. (2 or 3) II. Mrs. MORGAN  
 Lectures, laboratory, and field work.  
 Prerequisite: course 120A or Biochemistry 103. The lectures may be taken separately with a credit value of 2 units.  
 The chemistry and physiology of intrauterine development, lactation, and growth; normal and subnormal nutrition in infancy and childhood; practice in the solution of feeding problems.
196. Dietary Problems. (3) II. Mrs. COOK  
 Lecture and laboratory.  
 Prerequisite or concurrently taken: course 120A-120B.  
 Problems in the planning and computation of dietaries for normal and pathological conditions.

*Institution Economics*

110. Institution Food Study. (4) II. Miss GILLUM  
 Lectures, field or laboratory work, and three additional hours to be arranged.  
 Prerequisite: courses 1A-1B, 100, and 141.  
 The principles and problems involved in the preparation and service of food in institutions.
111. Institution Organization and Management. (3) I. Miss GILLUM  
 Lectures and field or laboratory work.  
 Prerequisite: course 110 or permission of instructor. Recommended: Business Administration 6A, 151 or Psychology 3 or 185.  
 The principles and problems involved in the organization and management of institution households such as residence halls, hospitals, hotels.
- 198A-198B. Proseminar in Hospital Dietetics. (2-2) Yr. Miss GILLUM  
 Open only to selected graduate students; given on the San Francisco campus.

497. Hospital Problems. (2) I and II. Miss GILLUM  
Supervised practice in administrative problems of the hospital dietetic service carried on during residence in Berkeley and open only to selected graduate students.
498. Hospital Dietetics. (6) I and II. Miss GILLUM  
Conferences and supervised practice in the dietetics department of the University of California Hospital and clinics.  
Open only to selected graduate students.

*Family Economics*

140. Home Management. (3) II. Miss COLES  
Lectures and laboratory.  
Prerequisite: Civil Engineering 125.  
Use of time, energy, and equipment in the home from the point of view of the satisfaction of members of the family.
- 140L. Home-Management Laboratory. (3) I and II. Miss COLES  
Prerequisite: Home Economics 140. (This may be taken concurrently.)  
Laboratory includes home projects or living for six to eight weeks in the home-management house under supervision of the instructor. A two-hour weekly conference period is to be arranged.
141. Consumers and the Market. (3) I. Miss COLES  
Prerequisite or concurrent: Economics 1A-1B.  
A study of the functions and structure of the market from the standpoint of consumers; evaluation of the guides available for consumers in buying; agencies aiding and protecting consumers.
142. Social Problems of Families. (3) II. Miss COLES  
Prerequisite: Economics 1A-1B, and either Economics 40 or Psychology 5.  
Present-day problems of families as they are related to economic and social conditions.
144. Family Finance. (3) I. Miss COLES  
Prerequisite: Economics 1A-1B, and either Economics 40 or Psychology 5.  
Management of personal and family finances—money income, household production, planning expenditures, credit, savings, investments, financing home ownership.

*Child Development*

132. Child Psychology. (3) II. Miss LANDRETH  
Prerequisite: Psychology 1A and 5. Not open to students who are taking or have taken Psychology 112, which is accepted as equivalent to 132 in the Home Economics major.  
A study of the factors concerned in the motor, sensory, language, mental, emotional, and social development of young children.
133. Laboratory in Child Development. (1) II. Miss LANDRETH  
One lecture weekly and three hours to be arranged one day a week.  
Prerequisite: course 132.  
Laboratory supplement to course 132 conducted at the nursery school.



134. Child Care. (3) I. Miss LANDRETH  
 Prerequisite: Physiology 1A, and (for non-major students) courses 10 or 103 should precede or be taken concurrently.  
 A consideration of the physical development of children from prenatal through adolescent life and the factors affecting health during this period.
135. Techniques with Young Children. (3) I and II. Miss LANDRETH  
 Lectures twice a week, and laboratory in the nursery school two mornings or two afternoons a week.  
 Prerequisite: courses 132 and 133, or Psychology 112 and 172.
- \*435. Nursery School Administration. (3) II. Miss LANDRETH  
 Lectures twice a week, supervised practice in nursery schools, and related field work, six hours a week. Open only to graduate and senior students completing the major in child development.

*Clothing and Textiles*

160. Textiles. (3) I. Miss JONES  
 Lectures and laboratory.  
 Prerequisite: course 7.  
 Technical analyses and evaluations of textile fibers and fabrics.
162. Clothing Economics. (3) I. Miss JONES  
 Lectures and laboratory.  
 Prerequisite: course 7 and Economics 1A-1B.  
 A study of the problems involved in the selection, purchase and care of textiles and clothing, of consumer protection in this field and of the ready-to-wear and cleaning industries.
163. Dress Design and Fashion Analysis. (3) II. Miss McCLELLAND  
 Prerequisite: course 5.  
 The design, draping, and construction of garments and costumes based on the principles of design and color theory; past and current fashion trends and fashion merchandising methods.
167. Clothing Design and Construction. (3) II. Miss McCLELLAND  
 Prerequisite: courses 5 and 7.  
 Lecture and laboratory.  
 Theory and practice of costume design and construction.

*Home Furnishing*

190. Home Furnishing. (3) II. Mr. SANDS  
 Prerequisite: Decorative Art 16A-16B, 130A-130B (one of the latter may be taken concurrently).  
 A nonprofessional course designed to develop discrimination in values. A consideration of materials and their use involved in the furnishing of the home, and an analysis of current trends and materials available.

## SPECIAL STUDY COURSE

199. Special Study for Advanced Undergraduates. (1-5) I and II.  
 The STAFF (Mrs. MORGAN in charge)

---

\* Not to be given, 1947-1948.

## GRADUATE COURSES

Concerning conditions for admission to graduate courses, see page 156.

214. Research in Food and Nutrition. (2-6) I and II.  
The STAFF (Mrs. MORGAN in charge)
216. Seminar in Foods. (2) I. Miss OKEY
- \*219. Seminar in Nutrition. (2) II. Mrs. MORGAN
238. Research in Home Economics. (2-6) I and II.  
The STAFF (Mrs. MORGAN in charge)
242. Seminar in Family Economics. (2) II. Miss COLES

## (GIVEN AT DAVIS)

## HOME ECONOMICS

- 1A-1B. Experimental Food Study. (3-3) Yr. Miss MORSE
5. Elementary Clothing Study. (3) I. Miss DRYDEN
7. Introduction to Textiles. (3) II. Miss DRYDEN
10. Nutrition. (2) I. Miss MORSE
14. Consumer Problems. (2) II. Miss WARREN

*Food Economics and Technology*

100. Food Economics. (3) II. Miss MORSE

*Nutrition and Dietetics*

- 102A-102B. Food and Dietetics. (3-3) Yr. Miss MORSE

*Child Development*

132. Child Psychology. (3) II. Miss TOWNE
133. Laboratory in Child Development. (1) II. Miss TOWNE
134. Child Care. (3) I. Miss TOWNE

*Family Economics*

140. Home Management. (3) I. Miss WARREN
- 140L. Home Management Laboratory. (2) I. Miss WARREN
- \*141. Consumers and the Market. (3) I. Miss WARREN
142. Social Problems of Families. (3) I. Miss WARREN
144. Family Finance. (3) II. Miss WARREN

\* Not to be given, 1947-1948.

*Home Economics**Clothing and Textiles*162. Clothing Economics. (3) I.

Miss DRYDEN

167. Clothing Design and Construction. (3) II.

Miss DRYDEN

*Housing and House Furnishing*

150. The House. (2) II.

Miss DODSON

190. Home Furnishing. (2) II.

Miss DODSON

## SPECIAL STUDY COURSE

199. Special Study for Advanced Undergraduates. (1-5) I and II.

The STAFF (Miss WARREN in charge)

## DECORATIVE ART

16A-16B. Theory of Design and Color. (2-2) Yr.

Miss DODSON

130A. Interior Design. (2) I.

Miss DODSON

Mrs. H. H. H. H.  
Herrman  
Herrman

## ITALIAN

RUDOLPH ALTROCCHI, Ph.D., Professor of Italian.

MICHELE DE FILIPPIS, Ph.D., Professor of Italian (Chairman of the Department).

HERBERT H. VAUGHAN, Ph.D., Professor of Italian.

*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 82.

*Department Major Adviser:* Mr. DE FILIPPIS.

*Preparation for the Major.*—Required: 16 units of lower division courses or four years of high school Italian, or other equivalent to be tested by examination. Recommended, a reading knowledge of Latin.

*The Major.*—24 units of upper division courses of which at least 18 must be in Italian; 6 units may be in French, Spanish, Portuguese, or Classics.

The department recommends as a supplementary choice among the free electives: (a) history of the country or countries most intimately connected with the major, (b) related courses in other literatures, (c) the history of philosophy, (d) German, (e) Latin, (f) Greek.

## LOWER DIVISION COURSES

1. Elementary Italian. (4) I and II. Mr. DE FILIPPIS and Assistants
2. Elementary Italian (continuation of 1). (4) I and II.  
Mr. DE FILIPPIS and Assistants  
Prerequisite: two years of high school Italian, or course 1.
3. Intermediate Italian, Review Grammar, Composition and Reading. (4) I and II. Mr. DE FILIPPIS and Assistant  
Prerequisite: three years of high school Italian, or course 2.
4. Intermediate Italian (continuation of 3). (4) I and II. Mr. ALTROCCHI  
Prerequisite: course 3.

## UPPER DIVISION COURSES

Sixteen units of lower division courses in Italian are required for admission to any upper division course. Only those students who pronounce correctly and read fluently will be admitted to upper division courses. Students who transfer from other institutions may be tested by examination.

100. Survey of Modern Drama from Goldoni to the Present. (3) II.  
Mr. VAUGHAN
- 101A-101B. Advanced Grammar, Composition, and Conversation. (3-3) Yr.  
Mr. VAUGHAN
- 103A-103B. Survey of Italian Literature. (3-3) Yr. Mr. DE FILIPPIS  
A study of standard authors in prose and verse; lectures in Italian and reports on assigned themes.
- 104A-104B. Italian Literature of the Nineteenth Century. (3-3) Yr.  
Mr. ALTROCCHI  
Reading of texts, with a special study of literary technique. Lectures in Italian.

109A-109B. Dante's *Divina Commedia*. (3-3) Yr. Mr. ALTROCCHI  
Prerequisite: 6 units of upper division work in Italian or the equivalent.

\*150A-150B. Dante's *Divine Comedy* in English Translation. (2-2) Yr.  
Mr. ALTROCCHI

Designed for upper division students wishing the cultural background provided by such a masterpiece as Dante's, and for graduate students whose major field is not in Romance languages. Enrollment limited to students who have already completed some upper division work or who present other evidence of adequate preparation. No knowledge of Italian required. Will not be accepted toward the major in Italian. Course 150A is prerequisite to 150B.

\*151A-151B. The Renaissance. (2-2) Yr. Mr. DE FILIPPIS  
Emphasis on Italian literature and its ramifications in Europe. Lectures (in English) and reports on assigned subjects. No knowledge of Italian required.

199. Special Study for Advanced Undergraduates. (1-3) I and II.  
Mr. ALTROCCHI, Mr. VAUGHAN, Mr. DE FILIPPIS  
Reading course with a short thesis.

#### GRADUATE COURSES

Concerning conditions for admission to graduate courses, see page 156.

\*201A-201B. Italian Philology and Dialects. (2-2) Yr. Mr. VAUGHAN

206A-206B. Problems in Italian Grammar. (2-2) Yr. Mr. VAUGHAN  
A study of difficult points in grammar and syntax. Research and reports.

\*207A-207B. Problems in Italian Literature. Seminar. (2-2) Yr.  
Mr. ALTROCCHI  
The period (Trecento or Quattrocento, etc.) or the special genre to be studied will vary; the purpose of the course is training in methods of literary research.

229. Special Study for Graduates. (1-4) I and II.  
Mr. ALTROCCHI, Mr. VAUGHAN, Mr. DE FILIPPIS

\* Not to be given, 1947-1948.

## JOURNALISM

ROBERT W. DESMOND, Ph.D., Professor of Journalism (Chairman of the Department).

PHILIP F. GRIFFIN, M.A., Assistant Professor of Journalism.

\*JOHN V. LUND, A.B., Assistant Professor of Journalism.

NEAL O. HINES, M.S.J., Instructor in Journalism.

<sup>1</sup> LLOYD ERIC REEVE, Lecturer in Journalism.

*Letters and Science List.*—Courses 20A–20B, 140, 141, and 190 are included in the Letters and Science List of Courses. For regulations governing this list, see page 82.

*Departmental Major Advisers:* Mr. DESMOND, Chairman; Mr. GRIFFIN, Mr. HINES.

*Preparation for the Major.*—Required: History 4A–4B, Political Science 1, 2, Economics 1A–1B, English 1A–1B or Public Speaking 1A–1B, Course 20A–20B. Recommended: the following courses may be helpful in fulfilling the requirements for the Associate in Arts degree, although none are specifically required for the major: Philosophy 6A–6B or 10A–10B; English 30, 44A–44B, 46A–46B; Geography 1; Physics 10A–10B; Zoology 10; Anthropology 1.

*The Major.*—The major consists of 35 or 36 units of upper division work in journalism, English, and social sciences, taken in accordance with a plan approved by the major adviser. In special cases an emphasis in the natural sciences will be approved.

Required: two concentrations of 9 units, or one concentration of 18 units in a field or fields to be selected in consultation with the major adviser. Also required: course 130A–130B, 140, 141 (totaling 12 units), plus 6 units to be selected from the following: courses 150, 170A, 170B, 190, 198, 199; Business Administration 123, 125.

NOTE.—Prospective majors are to submit, in writing, a proposed plan for study for the major, meeting the above requirements. The plan is to be submitted before or at the time the student consults with his major adviser to arrange a program.

Admission to the major is contingent upon the student achieving at least a B grade in course 20B. Continuance in the major is contingent upon the student achieving at least a C grade in any course taken in the major or required for the major. Failure to meet this requirement may result in a student being required to withdraw from the major at any time.

## LOWER DIVISION COURSE

20A–20B. News Writing and Reporting. (3–3) Yr.

Mr. GRIFFIN

Two lectures a week and one two-hour laboratory section.

Prerequisite: English 1A–1B or Public Speaking 1A–1B and sophomore standing, or permission of instructor. Course 20A is prerequisite to 20B.

A study of the nature of news and the methods by which it is obtained, organized, and written.

\* Absent on leave, 1947–1948.

<sup>1</sup> In residence fall semester only, 1947–1948.

## UPPER DIVISION COURSES

- 130A-130B. News Editing. (3-3) Yr. Mr. GRIFFIN  
 One lecture and two two-hour laboratory sections.  
 Prerequisite: course 20A-20B with at least a grade of B in 20B. Students who have not completed 20A-20B will be admitted to 130A only upon achieving at least a B grade in a qualifying examination to be given the Monday preceding beginning of instruction. Course 130A is prerequisite to 130B.  
 Techniques of copyreading and headline writing, theories of news selection and makeup, examination of newspaper editorial practices.
140. History of Journalism. (3) I. Mr. DESMOND  
 Open to all upper division students, without prerequisite.  
 Study of the development of journalism, particularly in the United States, with an introduction to the great papers and personalities.
141. The Press and Society. (3) II. Mr. DESMOND  
 Open to all upper division students, without prerequisite.  
 An examination of the press as an important institution in the nation and in the world.
150. Contemporary Editorial Problems. (3) II. Mr. DESMOND  
 Prerequisite: courses 20A-20B, 130A-130B, or permission of instructor.  
 An examination of current problems, with practice in bibliographical and research methods, and in writing in editorial and interpretative forms.
- 170A-170B. Principles of Publishing. (3-3) Yr. Mr. HINES  
 Two lectures a week and one two-hour laboratory section.  
 Prerequisite: courses 20A-20B, 130A-130B, or permission of instructor.  
 170A is not prerequisite to 170B.  
 170A. Analysis of the economy, organization and operation of daily and weekly newspapers.  
 170B. Analysis of advertising principles of the daily and weekly newspaper, with attention to typography, layout, copy writing, and production.
190. The Press and World Affairs. (3) I. Mr. DESMOND  
 Open to all upper division students, without prerequisite.  
 Comparative world journalism, with an examination of sources of news from various capitals, and consideration of influences that affect information reaching the public about public affairs.
198. Directed Group Studies for Upper Division Students. (3) I and II.  
Mr. HINES, Mr. REEVE  
 Two sections. Students may take both sections and receive credit in both.  
 Prerequisite: senior standing and permission of instructor.  
 Sec. 1. Reporting of Public Affairs. (3) I and II. Mr. HINES  
 Lectures, discussions and special assignments relating to the reporting of news of municipal, county, and state government and of other public affairs.  
 Sec. 2. Writing of Special Articles. (3) I. Mr. REEVE  
 Lectures, discussions, and individual conferences.  
 Class limited to twenty, with preference given to majors in journalism.  
 Instruction in preparation and marketing of articles for magazines, specialized publications, syndicates, and newspaper feature sections.

199. Special Study for Advanced Students. (1-4) I and II.

The STAFF (Mr. DESMOND in charge)

Open to seniors and graduate students only.

Prerequisite: for students whose major is journalism, at least a B average in all journalism courses undertaken, or permission of instructor; for others, at least a B average in all courses undertaken, and permission of instructor.



## JURISPRUDENCE

- BARBARA NACHTRIEB ARMSTRONG, J.D., Ph.D., Professor of Law.  
 HENRY W. BALLANTINE, A.B., LL.B., LL.D., Professor of Law.  
 EDWIN D. DICKINSON, Ph.D., J.D., Emanuel S. Heller Professor of Law  
 (Chairman of the Department).  
 WILLIAM WARREN FERRIER, JR., A.B., J.D., Professor of Law.  
 RICHARD W. JENNINGS, A.B., A.M., LL.B., Professor of Law.  
 HARRY WILLMER JONES, A.B., LL.B., LL.M., Professor of Law.  
 ALEXANDER M. KIDD, A.B., LL.B., Elizabeth Josselyn Boalt Professor of Law.  
 JAMES PATTERSON MCBAIN, LL.B., LL.D., A. F. and May T. Morrison Pro-  
 fessor of Municipal Law.  
 MAX RADIN, LL.B., Ph.D., John H. Boalt Professor of Law.  
 STANLEY S. SURREY, B.S., LL.B., Professor of Law.  
 TALBOT SMITH, J.D., Professor of Law.  
 DUDLEY O. MCGOVNEY, M.A., LL.B., Professor of Law, Emeritus.

- EDWARD L. BARRETT, JR., B.S., LL.B., Lecturer in Law.  
 FRANK C. NEWMAN, A.B., LL.B., Lecturer in Law.  
 VERNON M. SMITH, A.B., LL.B., Librarian of the Law Library and Lecturer  
 in Law.

## CURRICULUM OF THE SCHOOL OF JURISPRUDENCE

For admission requirements, including special provisions for veteran appli-  
 cants, and for the requirements for the degree of Master of Laws (LL.M.) and  
 of Doctor of the Science of Law (J.S.D.) consult the ANNOUNCEMENT OF THE  
 SCHOOL OF JURISPRUDENCE.

Nonresidents of California enrolled as students in the School of Jurispru-  
 dence pay a fee of \$185 each semester, which includes the incidental fee charged  
 to all students.†

## PROFESSIONAL CURRICULUM

## First Year

200A-200B. Contracts. (3-3) Yr.	Mr. TALBOT SMITH
202. Crimes. (3) II.	Mr. KIDD
204. Institutions and Methods. (4) I.	Mr. JONES
206A-206B. Procedure: First Course. (2-3) Yr.	Mr. MCBAIN
208. Property: First Course. (3) I.	Mr. FERRIER
210. Remedies in Equity. (3) II.	Mr. NEWMAN
212A-212B. Torts. (2-2) Yr.	Mr. BALLANTINE

† Nonresident students who were in attendance throughout the Spring Term of 1944  
 will pay a fee of \$97.50, including the incidental fee, each semester, as long as they  
 continue in attendance upon subsequent semesters without interruption.

## Second Year

220. Administrative Law: First Course. (2) II.	Mr. NEWMAN
*222. Commercial Associations. (2) I.	Mr. TALBOT SMITH
224A-224B. Commercial Paper and Security. (3-2) Yr.	Mr. KIDD
226A-226B. Constitutional Law. (2-2) Yr.	Mr. JONES
228A-228B. Corporations. (2-2) Yr.	Mr. BALLANTINE
†229. Equity. (2) I.	Mr. NEWMAN
230. Marital Property. (2) I.	Mrs. ARMSTRONG
232. Procedure: Second Course. (2) I.	Mr. BARRETT
234. Property: Second Course. (3) II.	Mr. FERRIER
236. Trusts. (2) II.	Mr. JENNINGS
238. Writing. (No unit credit.) I and II.	Mr. V. M. SMITH

## Third Year

§240. Administrative Law: Second Course. (2) I.	Mr. SURREY
§242. Admiralty. (2) I.	Mr. DICKINSON
244. Bankruptcy. (2) I.	Mr. RADIN
§245. Comparative Law. (2) I.	Mr. RADIN
246. Conflict of Laws. (3) II.	Mr. DICKINSON
§247. Corporation Finance. (2) I.	Mr. JENNINGS
§*248. Criminal Procedure. (2) I.	Mr. KIDD
250A-250B. Evidence. (2-2) Yr.	Mr. MCBAIN
§*253. Family Law. (2) II.	Mrs. ARMSTRONG
§254. Federal Jurisdiction. (2) II.	Mr. BARRETT
256. Future Interests. (2) II.	Mr. FERRIER
§257. Insurance. (2) I.	Mr. TALBOT SMITH
§258. International Law. (2) II.	Mr. DICKINSON
§260. Jurisprudence. (2) II.	Mr. RADIN
262. Labor Law: First Course. (2) I.	Mrs. ARMSTRONG
§264. Labor Law: Second Course. (2) II.	Mr. SURREY

\* Not to be given, 1947-1948.

† To be given 1947-1948 only.

§ Seminar course of restricted enrollment.

§266. Legislation. (2) II.	Mr. JONES
§268. Municipal Corporations. (2) I.	Mr. JENNINGS
§270. Public Utilities. (2) I.	Mr. NEWMAN
§272. Receiverships and Reorganization. (2) II.	Mr. RADIN
274. Restitution. (2) II.	Mr. TALBOT SMITH
§276. Restraint of Trade and Unfair Competition. (2) II.	Mr. JENNINGS
278. Security Transactions. (2) I.	Mr. KIDD
§*280. Suretyship. (2) I.	_____
282. Taxation: First Course. (3) I.	Mr. SURREY
§284. Taxation: Second Course. (2) II.	Mr. SURREY
286. Wills and Administration. (2) I.	Mr. FERRIER

#### Graduate Curriculum

287A-287B. Seminar in Administrative Law and Procedure. (2-2) Yr.	Mr. NEWMAN, Mr. SURREY
288A-288B. Seminar in Business Organizations. (2-2) Yr.	Mr. BALLANTINE, Mr. JENNINGS
289A-289B. Seminar in Commercial Transactions. (2-2) Yr.	Mr. KIDD, Mr. TALBOT SMITH
290A-290B. Seminar in Constitutional Law. (2-2) Yr.	Mr. BARRETT, Mr. JONES
291A-291B. Seminar in Criminal Law and Procedure. (2-2) Yr.	Mr. KIDD
292A-292B. Seminar in International and Maritime Law. (2-2) Yr.	Mr. DICKINSON
293A-293B. Seminar in Labor Law and Procedure. (2-2) Yr.	Mrs. ARMSTRONG, Mr. NEWMAN
294A-294B. Seminar in Legal History and Jurisprudence. (2-2) Yr.	Mr. RADIN
295A-295B. Seminar in Legislation and Legislative Procedure. (2-2) Yr.	Mr. JONES, Mr. V. M. SMITH
296A-296B. Seminar in Practice and Procedure. (2-2) Yr.	Mr. BARRETT, Mr. MCBAIN
297A-297B. Seminar in Property and Trust Administration. (2-2) Yr.	Mr. FERRIER, Mr. JENNINGS
298A-298B. Seminar in Public Finance and Taxation. (2-2) Yr.	Mr. SURREY
299A-299B. Seminar in Roman and Comparative Law. (2-2) Yr.	Mr. RADIN

#### LATIN

For courses in the Latin language and literature, see under Department of Classics, pages 233-236.

§ Seminar course of restricted enrollment.

\* Not to be given, 1947-1948

## LIBRARIANSHIP

J. PERIAM DANTON, Ph.D., Professor of Librarianship (Chairman of the Department).

DONALD CONEY, M.A., Professor of Librarianship.

EDITH M. COULTER, M.A., B.L.S., Professor of Librarianship.

CARLETON B. JOECKEL, Ph.D., Professor of Librarianship.

SYDNEY B. MITCHELL, M.A., Professor of Librarianship, Emeritus.

DELLA J. SISLER, M.A., B.L.S., Associate Professor of Librarianship, Emeritus.

LEROY C. MERRITT, Ph.D., Associate Professor of Librarianship.

ANNE ETHELYN MARKLEY, M.A., Assistant Professor of Librarianship.

JOHN B. TOMPKINS, Ph.D., Instructor in Librarianship.

JESSIE E. BOYD, M.A., Cert. in Libr., Lecturer in Librarianship and Supervisor of School Library Practice (spring semester).

DOUGLAS W. BRYANT, M.A., Lecturer in Librarianship.

JOHN M. CORY, Cert. in Libr., Lecturer in Librarianship.

LEONE GARVEY, M.A., Lecturer in Librarianship (spring semester).

The School of Librarianship is organized to offer a two-year curriculum. On completion of the first year with an average grade of at least C, the Bachelor of Library Science (B.L.S.) degree is awarded. The degree of Master of Library Science is granted to students who complete with an average grade of at least B the second-year curriculum. Candidates for this degree are subject to all general university regulations governing it (see ANNOUNCEMENT OF THE GRADUATE DIVISION, NORTHERN SECTION).

Applicants for admission to either curriculum should send to the Dean of the School transcripts of their academic records in order that their qualifications for admission to the School may be determined. Full graduate standing in the University of California, which is determined by the Dean of the Graduate Division, is required for admission. (For regulations concerning such status see ANNOUNCEMENT OF THE GRADUATE DIVISION, NORTHERN SECTION.)

#### Program for the Degree of Bachelor of Library Science

To secure adequate opportunity for those who enroll in the School, only a limited number will be accepted for the first-year curriculum. No one should come to Berkeley without previously having made application to the School and having received notice of acceptance. Early application is desirable. Selection is based primarily on scholarship. New first-year students will not be admitted at the opening of the spring semester.

The work is organized as a professional curriculum and particular subjects may not, as a rule, be taken separately. The courses are planned to occupy a student's entire time and only the exceptional or previously experienced should expect to do any outside work.

*Preliminary Preparation.*—A good general education is the best basis for librarianship. The Dean of the School will be glad to give advice in reference to undergraduate courses. Two modern languages (not less than 8 college semester units of each) are required for admission. German and French are particularly recommended. Ability to use the typewriter with accuracy and

a fair degree of speed is expected of all students. Experience in library work is highly desirable but is not required for admission.

Applications from those who obtain less than 1.5 grade points per unit in their last two years of college or university work cannot be considered.

Applications from those over thirty-five years of age will be considered only when the applicants hold responsible library positions from which they can obtain leaves of absence. Exceptions to this rule may be considered only under unusual circumstances, such as applicants having a doctor's degree, and then only for those under forty years of age.

*State Credential for School Librarians.*—The California State Department of Education accepts the completion of the first year's work in satisfaction of its technical requirements for the special secondary credential in librarianship, but candidates for it must also do directed practice work in school libraries during the second semester. To meet additional requirements of the State Department of Education for this credential, candidates should take the following courses before enrollment in the School, or after the completion of the first year's work: secondary education, history of education, educational psychology, and junior high school education or elementary education (totaling at least 9 units).

#### PROFESSIONAL COURSES

In 1947-1948, courses in Librarianship will be offered only in the fall and spring semesters. Students may begin the first-year curriculum only at the opening of the fall semester and complete it in the spring semester. The second-year curriculum may be commenced in either the fall or spring semesters, and electives may be taken in summer sessions or in any semester.

#### *First-Year Curriculum*

The 24-unit program of each student must include the following basic courses: 201, 202, 203, 204; the remaining units to be elected from any courses in the first-year curriculum and one course from upper division or graduate courses in an appropriate subject approved by the Dean of the School of Librarianship. Students who fail to make at least a C average in the first semester will not be permitted to enroll in the second semester.

#### 201. Classification and Cataloging. (3) I.

Miss MARKLEY

Introduction to library classification with application of Dewey decimal system and brief comparison with Library of Congress system; functions of the catalog; principles of catalog entry based on American Library Association catalog rules; methods of descriptive cataloging based on modification of Library of Congress rules; introduction to subject cataloging based on Sears, and Library of Congress lists of subject headings.

#### 202. Bibliography and Reference Materials. (3) I.

Miss COULTER

Basic reference materials including national and subject bibliography. Lectures, discussions, and reports on assigned problems.

#### 203. Introduction to Librarianship. (3) I.

Mr. JOECKEL

Orientation of the new student in the profession of librarianship. Introductory survey of the evolution of modern libraries and basic information about the principal fields of library service, with emphasis on major trends and problems. Readings and written reports.

204. Communication: Institutions, Means, Users. (3) I.

Mr. MERRITT, Mr. TOMPKINS

Conspectus of the development of communication from the growth of language through the pictograph, the codex, the book, radio, motion picture, microfilm and all other media for the recording and transmission of knowledge in the modern world. Development of institutions which service these media, with special emphasis on the growth and place of libraries in the whole structure.

205. Book Buying and Book Selection. (2) II. Mr. MERRITT, Mr. TOMPKINS

Theories, principles and practice of selecting books and other library materials. Techniques of acquisition by public, school, and academic libraries.

206. School Library Administration. (2) II.

Miss BOYD

This course is intended to give a general knowledge of elementary and secondary school libraries. Emphasis is placed on the function, administration, organization, services, materials, and the planning and equipment of school libraries in relation to the modern school. The course is presented in the form of lectures, committee and individual reports, readings, class discussions and field trips. Experiences gained in practice work are utilized.

207. Municipal and County Library Administration. (2) II. Mr. JOECKEL

Government, organization, and administration of municipal, county, and regional public libraries. Library service programs in relation to varying community patterns. Lectures, readings, reports, field trips.

208. College Library Administration. (2) II.

Mr. DANTON

A general introduction to the organization and administration of college and university libraries and their place in the institutions of which they are a part. Problems and practices with respect to the library's government, functions, staff, collections, finances, and building are considered by means of written assignments, readings, and class discussion.

209. Library Work with Children. (2) II.

Miss GARVEY

Lectures and discussion.

A 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; storytelling; organization and administration of a children's room in a public library.

210. Special Libraries. (2) II.

Mr. MERRITT

Administration of special libraries in large public libraries, academic libraries, public institutions, commercial institutions, newspapers, and associations. Theory of abstracting, indexing, classifying, and cataloging special library materials.

211. Book Arts. (2) II.

Mr. TOMPKINS

The development of the printed book.

212. Reference and Government Publications. (4) II.

Miss COULTER

A continuation of 202. Sources of information in subject fields. Emphasis is placed on types of information in foreign, national, state and municipal documents. Problems in informational service.

213. Cataloging for Public, School and Special Libraries. (2) II.

Miss MARKLEY

Simple descriptive cataloging; simplified and special subject heading lists and classification systems; indexing, abstracting, and filing; administration of cataloging routines; laboratory practice.

214. Cataloging for University and Research Libraries. (4) II.

Miss MARKLEY

Cataloging and classification of library materials requiring special description and analysis; practice in the use of Library of Congress classification and subject headings; arrangement of the catalog; administration of the cataloging department, laboratory practice.

215. Reading and Reading Interests. (2) II.

Mr. MERRITT

Reading interests, habits, and needs of different types and groups of readers. The nature of reading; problems of reading; selection of reading by children, college students, and public library patrons.

#### Program for the Degree of Master of Library Science

Candidates for the master's degree must be accepted in full graduate status in the University of California and must have completed with a grade of at least B the first-year curriculum in a graduate—Type I or II—library school, accredited by the American Library Association and approved by the University of California. Professional library experience before undertaking advanced work is recommended.

Candidates for the master's degree must take 24 units of upper division and graduate courses. Twelve of these must be selected from the second-year curriculum of the School of Librarianship. The remaining 12 units may be selected from this same curriculum or from second semester first-year courses not previously taken, or from upper division or graduate courses in subjects related to the particular interest of the student. In every case the program is subject to the approval of the Dean. Comprehensive final examinations are required of every candidate. An average grade of at least B must be maintained during the period in which the work for the master's degree is taken.

Any course in the second-year curriculum is open to any graduate student who satisfies the instructor of his ability and preparation to undertake the work, even though he is not a candidate for a master's degree in this school and cannot qualify for it.

218. Advanced Cataloging. (2) II.

Miss MARKLEY

Modern trends and problems in cataloging with emphasis on coöperative cataloging, cataloging policies, and the handling of unusual types of material; discussion and reports.

219. Advanced Classification. (2) I.

Miss MARKLEY

History and theory of classification; comparative study of library classification systems leading, in the latter half of the semester, to intensive study and use of the Library of Congress system; study of the theory of subject headings; individual problem or paper.

- 220A-220B. Bibliography. (2-2) Yr.

Miss COULTER

Prerequisite: course 202 and 212 or equivalent.

Methods and materials of bibliographical investigation. Location and description of books and manuscripts in special collections in America. Problems and reports.

221. Book Collecting for University Libraries. (2) I. Mr. DANTON  
 Prerequisite: courses 205, 208.  
 This course deals with problems connected with the acquisition, development, and maintenance of the book, periodical, and other collections of university libraries. Required of all master's degree candidates who intend to specialize in the college and university library field.
225. History of Libraries. (2) II. Miss COULTER  
 Ancient, medieval and modern libraries. Reports and papers.
226. History of Printing. (2) II. Mr. BEYANT, Mr. CORY  
 Prerequisite: course 211 or equivalent.  
 Intensive study in selected phases of the history of printing; seminar discussion and individual projects of a bibliographical, historical, or book production nature.
228. Problems in Reading. (2) I. Mr. MERRITT  
 Prerequisite: course 215.  
 Studies in adult reading. Analysis of reading in terms of characteristics and interests of reader, distribution and content of publications, and effects of reading.
230. Library Administration. (2) I. Mr. MERRITT  
 The basic advanced course in the principles and practice of library administration. Analysis of the organization and management of modern libraries of various types.
232. University Library Administration. (2) II. Mr. CONEY  
 Prerequisite: course 208.  
 Study of current issues in personnel, finance, service and the organization of materials and work. Individual projects, work periods, consultation, reports, and class discussion. Required of all master's degree candidates who intend to specialize in the college and university library field.
233. School Library Administration. (2) I. Miss COULTER  
 Subject: Junior College Libraries.  
 Problems and practices of secondary school libraries, with emphasis on the collections and instructional program of the junior college library.
234. Problems in Public Library Administration. (2) II. Mr. JOECKEL  
 Detailed application of the principles of public administration to the management and operation of public libraries. Case study approach through critical analysis of the functions and problems of selected libraries. Assignments adapted to special interests of students. Required of all master's degree candidates who intend to specialize in the public library field.
238. Library in the Community. (2) I. Mr. TOMPKINS  
 Analysis of the community for the librarian. Social backgrounds, economic and educational levels, and community groups, as they affect library use. Methods of integrating the library with the community.
240. Content Analysis. (2) II. Mr. TOMPKINS  
 Problems in methods of determining maturity level, social and moral attitudes, and other educational and propagandistic assumptions in books, magazines, and other library materials.



251. Methods of Research in Librarianship. (2) I. Mr. MERRITT  
History and function of research in contemporary society. Values and meaning of research techniques of bibliographical, historical and sociological research, and their implications for the definition and investigation of library problems. Required of all candidates for the master's degree.
299. Special Study. (2-4) I and II. The STAFF (Mr. JOECKEL in charge)  
Second-year students may elect special studies in any semester.

**MATHEMATICS**

- BENJAMIN A. BERNSTEIN, Ph.D., Professor of Mathematics.
- \* THOMAS BUCK, Ph.D., Professor of Mathematics.
- GRIFFITH C. EVANS, Ph.D., Professor of Mathematics (Chairman of the Department).
- DERRICK H. LEHMER, Ph.D., Professor of Mathematics.
- \* HANS LEWY, Ph.D., Professor of Mathematics.
- CHARLES B. MORREY, JR., Ph.D., Professor of Mathematics.
- JERZY NEYMAN, Ph.D., Professor of Mathematics and Director of the Statistical Laboratory.
- ALFRED TARSKI, Ph.D., Professor of Mathematics.
- MELLEN W. HASKELL, Ph.D., Professor of Mathematics, Emeritus.
- JOHN H. McDONALD, Ph.D., Professor of Mathematics, Emeritus.
- CHARLES A. NOBLE, Ph.D., Professor of Mathematics, Emeritus.
- FRANK IRWIN, Ph.D., Associate Professor of Mathematics, Emeritus.
- \* ALFRED L. FOSTER, Ph.D., Associate Professor of Mathematics.
- JOHN L. KELLEY, Ph.D., Associate Professor of Mathematics.
- SOPHIA LEVY McDONALD, Ph.D., Associate Professor of Mathematics.
- ANTHONY P. MORSE, Ph.D., Associate Professor of Mathematics.
- RAPHAEL M. ROBINSON, Ph.D., Associate Professor of Mathematics.
- <sup>1</sup> PAULINE SPERRY, Ph.D., Associate Professor of Mathematics.
- FRANTISEK WOLF, Ph.D., Associate Professor of Mathematics.
- \* ELMER C. GOLDSWORTHY, Ph.D., Assistant Professor of Mathematics.
- ERICH L. LEHMANN, Ph.D., Assistant Professor of Mathematics.
- EDMUND PINNEY, Ph.D., Assistant Professor of Mathematics.
- RAYMOND H. SCIOBERETTI, Ph.D., Assistant Professor of Mathematics.
- ABRAHAM SEIDENBERG, Ph.D., Assistant Professor of Mathematics.
- LEE H. SWINFORD, Ph.D., Assistant Professor of Mathematics.
- ARTHUR R. WILLIAMS, Ph.D., Assistant Professor of Mathematics.
- HENRY L. ALDER, Ph.D., Instructor in Mathematics.
- EDWARD W. BARANKIN, Ph.D., Instructor in Mathematics.
- STEPHEN P. DILIBERTO, Ph.D., Instructor in Mathematics.
- ROBERT C. JAMES, Ph.D., Instructor in Mathematics.
- 
- EVELYN FITZ, M.A., Lecturer in Mathematics.
- JOSEPH L. HODGES, JR., A.B., Associate in Mathematics.
- GEORGE M. KUZNETS, Ph.D., Associate Professor of Agricultural Economics.
- ROY B. LEIPNIK, B.S., Associate in Mathematics.
- FRANK J. MASSEY, JR., Ph.D., Associate in Mathematics.
- M. LEWIS NELSON, Ph.D., Lecturer in Mathematics.
- CHARLES M. STEIN, Ph.D., Lecturer in Mathematics.
- VIRGINIA W. WAKERLING, Ph.D., Lecturer in Mathematics.

\* Absent on leave, 1947-1948.

<sup>1</sup> In residence fall semester only, 1947-1948.

<sup>2</sup> In residence spring semester only, 1947-1948.

*Letters and Science List.*—All undergraduate courses in mathematics except course 107 are included in the Letters and Science List of Courses. For regulations governing this list, see page 82.

*Departmental Major Adviser:* Miss SPERRY, Mr. NEYMAN (*Statistics*)

*Preparation for the Major.—Adviser:* Mr. PINNEY.

Before taking the upper division courses for the major, the student should have a basis of knowledge equivalent to courses C, G, 9, 8, 3A-3B, 4A-4B. It is desirable, therefore, that he should have completed in high school two years of algebra, plane and solid geometry, and trigonometry, in order to anticipate as much of this work as possible. The student who plans to take extensive work in statistics may substitute course 12 for course 9.

*The Major.*—In the 24 units of upper division work required for the major in mathematics, the student is supposed to acquire competence in algebra, analysis, and geometry. The courses designed for this purpose are 111A-111B, 112A-112B, 119A-119B, in each of which at least 3 units should be taken.

Subject to this requirement of competence, and with the approval of the adviser, the student is at liberty to take theoretical courses in physics, astronomy, or other sciences as part of his major in mathematics as well as other upper division courses in mathematics. Course 201A-201B forms a desirable part of the program for senior students with facility for mathematics. Courses listed under Statistics may of course be used as part of the mathematics major. Special attention is directed also to the course in Analytic Mechanics, Physics 105A-105B.

The attention of the student is directed to the possibility of making group majors with other departments. Such majors will be welcomed not only with the departments of the physical sciences, but also with some of the social sciences and philosophy.

*The Major in Mathematical Statistics.*—This major is based on courses in Statistics and Probability 12, 113, 120A-120B, 132, and the prerequisites listed under those courses.

Students who plan to pursue graduate work in the theory of statistics should consult with Mr. Neyman as early in their careers as possible.

*Colleges of Engineering and Chemistry.*—The minimum requirements for admission to the freshman course (3A-3B, or 3) are two years of high school algebra or Mathematics D, plane geometry, and plane trigonometry. Prospective engineering students are urged, however, to add a half-year of solid geometry to this minimum preparation.

*School of Business Administration.*—Mathematics 2, Mathematics of Finance and Business, is a prerequisite for students in the School of Business Administration. As an alternative, however, Mathematics 11A-11B, analytic geometry and calculus, or Mathematics 3A-3B, plane analytic geometry and calculus, may be substituted, if students wish to continue with advanced mathematics.

#### LOWER DIVISION COURSES

C. Trigonometry. (3) I and II.

Miss SPERRY and the Staff

Prerequisite: plane geometry; one and one-half years of high school algebra, or course D.

Course C includes plane trigonometry and spherical right triangles.

G. Solid Geometry. (2) I and II.

Mr. SWINFORD and the Staff

(Formerly numbered E.)

- D. Intermediate Algebra. (3) I and II. Mr. LEHMER and the Staff  
 (Formerly numbered 1.)  
 Prerequisite: one year of high school algebra. One and one-half years of high school algebra is advised. Not open to students who have received credit for two years of high school algebra, or course 3A or 8.
1. College Algebra. (3) I and II. Mr. MORSE and the Staff  
 (Formerly numbered G.)  
 Review and practice in general ideas and applications of algebra and trigonometry. Methods of proof and scientific procedure as exemplified in these subjects.  
 Open only to students who have had the prerequisites for course 3A but who fail in the qualifying examination in that course.
2. Mathematics of Finance and Business. (3) I and II. Mr. ROBINSON and the Staff  
 Prerequisite: two years of high school algebra or course D. Prescribed in the School of Business Administration. Not open to students who have completed or are taking Mechanical Engineering 120.
- 3A. Analytic Geometry and Calculus, First Course. (3) I and II. Mr. EVANS and the Staff  
 Prerequisite: two years of high school algebra or course D; plane geometry, plane trigonometry. Students who do not meet these prerequisites may demonstrate their fitness by passing an examination in these topics.  
 NOTE.—A qualifying examination in algebra will be given early in the week of registration. See announcements of qualifying examinations on bulletin boards. Students who fail this test will be required to pass course 1 before taking course 3A.  
 Elements of differential calculus and analytic geometry.
- 3B. Analytic Geometry and Calculus, Second Course. (3) I and II. Mr. MORREY and the Staff  
 Prerequisite: course 3A or course 11A–11B. Continuation of 3A. Analytic geometry, differential and integral calculus.  
 NOTE.—Special sections are arranged for students who have taken a semester course of analytic geometry without calculus.
3. Analytic Geometry and Calculus, First and Second Courses. (6) I and II. Mr. BARANKIN and the Staff  
 Prerequisite: same as for 3A except that superior preparation is required.
- 4A. Analytic Geometry and Calculus, Third Course. (3) I and II. Mr. WOLF and the Staff  
 Prerequisite: course 3B. Continuation of 3B. Thorough technique of differential and integral calculus.
- 4B. Analytic Geometry and Calculus, Fourth Course. (3) I and II. Mr. PINNEY and the Staff  
 Prerequisite: course 4A. Continuation of 4A. Geometry and analysis of functions of several variables, partial derivatives, multiple integrals.
4. Analytic Geometry and Calculus, Third and Fourth Courses. (6) II. \_\_\_\_\_  
 Prerequisite: same as for 4A.

8. Theory of Algebraic Equations. (3) I and II. Mr. LEHMER  
Prerequisite: two years of algebra in the high school (or course D) and course 3A.  
Determinants, equations of third and fourth degrees, theory of equations.
9. Introduction to Projective Geometry. (3) I. Mr. SEIDENBERG  
(Formerly number 6.)  
Prerequisite: course G or high school solid geometry, and course 8 or its equivalent.  
Projective theory of one-dimensional forms, point and line conics. Mainly by the synthetic method.
10. Spherical Trigonometry. (2) I and II. Mr. DILIBERTO, Mr. SCIOBERETTI  
Prerequisite: one and one-half years of high school algebra, or course D and plane trigonometry. Not open to students who have credit in Astronomy 8.
- 11A-11B. Analytic Geometry and Calculus. (3-3) Yr. Mr. SWINFORD  
Prerequisite: one and one-half years of high school algebra, or course D; plane geometry; plane trigonometry. The elements of analytic geometry and of differential and integral calculus. Completion of this year course will satisfy the prerequisite requirement for course 3B.
12. Elements of Probability and Statistics. (3) II. (See under Statistics)
- 14A-14B. Calculus and Advanced Calculus. (5-5) Yr.  
Mr. ALDER, Mr. DILIBERTO, Mrs. McDONALD, Mr. SCIOBERETTI, Mr. SWINFORD, Mrs. WAKERLING  
Prerequisite: course 3B.  
Covers approximately the subject matter of courses 4A-4B, 110A-110B.

## UPPER DIVISION COURSES

- 101A-101B. Elementary Mathematics for Advanced Students. (3-3) Yr.  
Mr. TARSKI, Mrs. McDONALD  
101A: Mr. Tarski. 101B: Mrs. McDonald.  
Prerequisite: courses 4A-4B, 8, 9 (formerly 6). Course 101A is not prerequisite to 101B.  
Selected topics in algebra and geometry with particular emphasis on historical development.  
Designed for students who are preparing to teach mathematics in secondary schools.
107. Mathematics in Secondary Schools. (2) I. Mrs. McDONALD  
Enhancing content through applications; coordination; survey of materials; analysis of present-day tendencies. For seniors and graduate students. This course will be accepted in partial satisfaction of the requirement in education for the Certificate of Completion of the teacher-training curriculum.
- 110A-110B. Advanced Engineering Mathematics. (2-2) Yr. Beginning each semester.  
Mr. ALDER, Mr. DILIBERTO, Mr. JAMES, Mrs. McDONALD, Mr. MORREY, Mr. SWINFORD, Mrs. WAKERLING, Mr. WILLIAMS  
Prerequisite: course 4A-4B. Primarily for students in engineering.  
Conjugate functions, hyperbolic functions, Fourier series, differential equations.

110. Advanced Engineering Mathematics. Double Course. (4) II. The STAFF  
Prerequisite: same as for 110A-110B.
- 111A. Algebra. (3) I and II. Mr. MORSE, Mr. TARSKI  
Prerequisite: courses 4A-4B, 8.  
Linear dependence, matrices, invariants, quadratic forms.
- 111B. Algebra. (3) I and II. Mr. SEIDENBERG  
Prerequisite: courses 4A-4B, 8. Course 111B may precede 111A if this  
order is unavoidable.  
Groups, theory of equations, introduction to Galois theory.
- 112A. Projective Geometry. (3) II. \_\_\_\_\_  
Prerequisite: courses 4A-4B, 9 (formerly 6), 111A.  
Projective coordinates. Loci of the second order. Higher plane curves.
- 112B. Metric Differential Geometry. (3) I and II. Miss SPERRY  
Prerequisite: course 4A-4B. Course 112A is not prerequisite to 112B.  
Vector analysis. Study of curves and surfaces in three dimensions.
113. Probability and Statistics. Second Course. (3) I. (See under Statistics.)
- 115A-115B. The Theory of Numbers. (3-3) Yr. Mr. LEHMER  
Prerequisite: course 8. Course 115A is not prerequisite to 115B.  
Divisibility, congruences, number systems.
116. Exterior Ballistics. (3) II. Mr. SWINFORD  
Prerequisite: course 4A-4B.  
The classical theory of the motion of a particle subject to the forces of  
gravity and the resistance of the air, together with some recent develop-  
ments.
117. Analysis of Mathematical Problems. (2) I and II. Mr. SCIOBERETI  
Prerequisite: upper division standing in mathematics; intended pri-  
marily for honor students.  
Methods of attack on mathematical problems, without respect to par-  
ticular field.
118. Analysis of Mathematical Problems. (2) I and II. Mr. MORSE  
Prerequisite: senior standing in mathematics.  
Continuation of course 117, intended primarily for honor students.
- 119A-119B. Differential Equations. (3-3) Yr.  
Mr. MORSE, Mr. ROBINSON, Mr. SCIOBERETI, Mr. SWINFORD, Mr. WOLF  
Prerequisite: 4A-4B, with honor grades; or 14A-14B; or 4A-4B and  
110A-110B; or permission of the instructor.  
NOTE.—119A and 119B will both be offered each semester.  
Differential equations and analysis. Numerical solutions of differential  
equations, general properties and special types of differential equations;  
Bessel functions and Legendre polynomials.
- 120A-120B. Theory of Probability and Statistics. (3-3) Yr. (See under  
Statistics.)
121. Mathematical Introduction to Economics. (3) I. Mr. LEIPNIK  
Prerequisite: course 4A-4B.  
Monopoly, competition, theory of dimension, taxation, utility, economic  
dynamics.

- 127A-127B. Foundations of Mathematics. (3-3) Yr. Mr. BERNSTEIN  
 Course 127A is not prerequisite to 127B.  
 Mathematical development of logic, and the logic of algebra and geometry.
- 150A-150B. Theory of Functions, First Course. (3-3) Yr. Mr. MORREY  
 Prerequisite: course 4B.  
 Thorough critical development of analysis: limit theorems, Jacobians, measure, generalizations of integral, complex and real variables.  
 Designed primarily for students who will work for higher degrees in mathematics and statistics. It may be followed by course 185 or course 201B.
- \*185. Special Topics in Real and Complex Variables. (3) II. ———  
 Prerequisite: course 150A-150B.  
 Lebesgue-Stieltjes integral, analytic functions, orthogonal expansions.
199. Special Study for Advanced Undergraduates. (1-5) I and II.  
 Miss SPERRY in charge  
 Investigation of special problems under the direction of members of the department. In particular, this course offers an opportunity to students with facility for mathematics to anticipate some of the advanced courses by individual study.

## TEACHERS' COURSE

- \*307. Coördination of Teaching of Mathematics. (2) I and II.  
 Group discussion. Mrs. McDONALD

## GRADUATE COURSES

Concerning conditions for admission to graduate courses, see page 156.

- 201A-201B. Function Theory. (3-3) Yr. Mr. EVANS  
 Prerequisite: courses 111A, 119A-119B.  
 Point sets in Euclidean space, measure, generalizations of integral including Lebesgue and Lebesgue-Stieltjes integrals; classical theorems on the complex variables; application of real variable theory to complex variable.  
 Students with facility for mathematics may well take this course in the senior, undergraduate year.
- 205A-205B. Theory of Functions of a Complex Variable. (3-3) Yr.  
 Prerequisite: course 201A-201B. Mr. ROBINSON  
 The theory of analytic functions and topics such as meromorphic functions, entire functions, modular functions, and Abelian integrals, analytic theory of differential equations, inequalities, etc., at the pleasure of the instructor.
- 210A-210B. Theory of Functions of a Real Variable. (3-3) Yr. Mr. WOLF  
 Prerequisite: course 201A-201B.  
 Measure theory, metric spaces, topics such as functional analysis, calculus of variations, partial differential equations, potential theory, transfinite processes, expansions, according to the pleasure of the instructor.

\* Not to be given, 1947-1948.

- 220A-220B. Differential Equations. (3-3) Yr. Mr. PINNEY  
 General theories, topics in ordinary and partial differential equations, boundary value problems. This course presupposes some knowledge of complex and real variable theory.
- 230A-230B. Algebraic Geometry. (3-3) Yr. Mr. SEIDENBERG  
 Theory of algebraic functions. Algebraic varieties; in particular, algebraic curves. Bezout's theorem. Branches of a curve. Linear series. Theorem of Riemann-Roch. Emphasis will be on algebraic methods.
- 240A-240B. Differential Geometry. (3-3) Yr. Miss SPERRY  
 Differential geometry with tensor analysis. Intrinsic geometry of surfaces. Parallel displacement of Levi Civita. Riemannian geometry of  $n$ -dimensions. Non-Riemannian geometry of Weyl and others.
- 250A-250B. Algebra. (3-3) Yr. Mr. TARSKI  
 Algebra of sets and relations; groups, rings, fields; applications of general algebraic notions (isomorphism, homomorphism, subalgebras, direct products).
- 265A-265B. Advanced Probability. (3-3) Yr. (See under Statistics.)
270. Technical Hydrodynamics. (3) II.  
 Theoretical analyses of motion of frictionless and viscous fluids, flow of compressible fluids at sub- and super-sonic velocities.
290. Seminars. (2-6) I and II. The STAFF (Mr. EVANS in charge)  
 Topics in foundations of mathematics, theory of numbers, numerical calculation, analysis, geometry, algebra, probability and theory of statistics, and in their applications, by means of lectures, and informal conferences with members of the staff; work based largely on original memoirs. During 1947-1948 there will be, in particular, lecture seminars on the following subjects, in charge of the persons indicated:  
 (1) Foundations of mathematics, I, II, Mr. Bernstein; (2) Topology, I, and II, Mr. James; (3) Functional analysis, I, II, Mr. Morrey, Mr. Swinford, Mr. Wolf; (4) Topics in applied mathematics, I, II, Mr. Pinney; (5) Theory of covering and differentiation, I, II, Mr. Morse.
295. Individual Research Leading to Higher Degree. (2-6) I and II.  
 The STAFF (Mr. EVANS in charge)
- Mathematical Colloquium. No credit. I and II. The STAFF  
 Meetings for the presentation of original work by members of the staff and graduate students.

Statistics

LOWER DIVISION COURSE

12. Elements of Probability and Statistics. (3) II. Mr. LEHMANN  
 (Formerly numbered 12A.)  
 Prerequisite: course D.  
 Designed for students who may wish to specialize in statistics as well as those who wish to acquire basic concepts for purposes of general education. Relative frequency as an object for mathematical study. Discrete probability. Testing statistical hypotheses. Illustrations from genetics, bacteriology, industrial sampling and public health.



## UPPER DIVISION COURSES

## \*113. Second Course in Probability and Statistics. (3) I.

Prerequisite: courses 3A-3B, 12 (formerly numbered 12B).

Continuation of course 12. Continuous probability laws. Expectation, variance, correlation, regression. Simple examples of least squares estimates. Basic ideas of confidence intervals. Applications.

## 120A-120B. Theory of Probability and Statistics. (3-3) Yr. Mr. LEHMANN

Prerequisite: course 4A-4B (with honor grades) or 4A-4B and 12A-12B; 150A-150B (may be taken concurrently). After 1947-1948, the prerequisite will include courses 12 and 113.

Continuation of course 113. Theorem of Laplace and the mathematical law of large numbers. Order statistics. Lambda criterion and maximum likelihood estimates. Markoff theorem. Analysis of variance. Applications.

## 130A-130B. Statistical Inference. (3-3) Yr. Mr. LEHMANN, Mr. NEYMAN

Prerequisite: course 3A-3B or 11A-11B.

The basic concepts and principal tools of probability theory, hypothesis testing, and estimation, presented for students of natural and social sciences and engineering. While the conceptual and applicational aspects are treated carefully, the more difficult mathematical theorems are stated without proof.

NOTE.—Students having credit for course 120A-120B cannot take course 130A-130B for credit.

## 130C-130D. Laboratory Course in Statistical Inference. (1-1) Yr.

May be taken in conjunction with course 130A-130B. Mr. NEYMAN

## 132. Descriptive Statistics. (3) II.

Prerequisite: course 120A; or courses 4A-4B, 130A.

Lectures and laboratory.

Collective and individual characters. Mathematical statistics as theory of collective characters. Means. Measures of dispersion. Frequency curves. Moments. Sheppard's corrections. Pearson curves. Curves of Charlier. Methods of fitting. Stochastic explanation of various distributions. Multivariate distributions. Static regressions and correlations. Applications.

Miss FIX

## GRADUATE COURSES

NOTE.—Courses 261, 263, 264, and 266 are intended to introduce the student to practical work in various fields of application. In addition to the four hours of supervised practical work connected with these courses the students attending them will be able to use the laboratory at other times as well.

Students who are doing research problems in experimental sciences may register in courses 261, 263, 264, and 266 without the specified prerequisite, with the permission of the instructor.

The laboratory will be open to graduate students for research.

## 260A-260B. Advanced Topics in Probability and Statistics. (3-3) Yr.

Mr. NEYMAN

Prerequisite: courses 111A, 120A-120B, and 185, or 201A-201B.

Lectures and laboratory.

Continuation of course 120. Early principles of statistical tests. Linear hypothesis. Analysis of variance and covariance. General theory of testing hypotheses. Sufficient systems of statistics. Single estimates. Application of Bayes' theorem. Confidence intervals. Idea of statistical inference of A. Wald.

\* Not to be given, 1947-1948.

- 260C-260D. Laboratory Course in Advanced Topics in Probability and Statistics. (2-2) Yr. Miss FIX  
 May be taken in conjunction with course 260A-260B.
261. Statistical Problems in Experimentation. (3) I. Mr. NEYMAN  
 Prerequisite: course 120A-120B or 130A-130B.  
 Lectures and laboratory.  
 Statistical hypotheses and tests; power function as a basis of a choice between alternative tests; mathematical models of experimental problems; theorems of Liapounoff and Kozakiewicz; linear hypotheses; chi-square tests and their power; random and systematic designs; complex experiments.
263. Statistical Studies of Risks. (3) I. Mr. LEHMANN  
 Prerequisite: course 120A-120B or 130A-130B.  
 Lectures and laboratory.  
 Life and sickness tables. Standard error of a table. Law of Gompertz-Makeham. Standardization of rates of risk. Epidemiological and medical statistics. Theory of growth. Simple random processes explaining various population phenomena. Problems of social and commercial insurance.
264. Statistical Problems of Mass Production and Control of Quality. (3) II. Mr. STEIN  
 Prerequisite: course 120A or 130A.  
 Lectures and laboratory.  
 Variability in manufactured products. Controlled accuracy of analyses and controlled variability of manufactured products. Sampling designed to protect interests of manufacturer and of consumer. Estimation of percentage defective. Identification of causes of defects.
- 265A-265B. Advanced Probability. (3-3) Yr. Mr. STEIN  
 Prerequisite: course 185 or 201A-201B.  
 NOTE.—Students familiar with the contents of course 120 are likely to appreciate more the various points discussed in course 265A.  
 Probability laws and their general properties. Mean values. Characteristic functions. Convergence "in probability." Normal distribution and central limit theorem. Liapounoff's theorem. Markoff chains and random processes. Applications to physics and biology. Theorems of S. Bernstein and Kozakiewicz.
266. Sampling Surveys. (3) II. Mr. KUZNETS  
 Prerequisite: Mathematics 120A or 130A; or Economics 40.  
 Mathematical theory of sampling. Best linear unbiased estimates and their variances. Sampling methods: unrestrictedly random, stratified and double sampling methods of Friedman-Wilcox.
267. Advanced Theory of the  $\chi^2$  Test. (3) II. Mr. BARANKIN  
 Prerequisite: course 260A.  
 Generalized theorem of Laplace. Tests equivalent in the limit.  
 Various aspects of the  $\chi^2$  Test. Best asymptotically normal estimates.
- 269A-269B. Recent Developments in the Theory of Statistics. (3-3) Yr. Mr. STEIN  
 Prerequisite: courses 111A-120A-120B, and 201A-201B or 185. Course 269A is not prerequisite to 269B.  
 Multivariate analysis. Nonparametric tests and problems of estimation. Sequential procedures.
- 290s. Statistical Seminar. (2-6) I and II. Mr. NEYMAN in charge
- 295s. Individual Research Leading to Higher Degree. (2-6) I and II. Mr. NEYMAN

**MEDICO-MILITARY SCIENCE AND TACTICS****A Division of the Medical School**

**FELIX S. BAMBACE**, Colonel, Medical Corps, Commandant ASU 6817 and Associate Clinical Professor of Medico-Military Science and Tactics.

*Letters and Science List.*—Course 121A–121B is included in the Letters and Science List of Courses. For regulations governing this list, see page 82.

The work of this division consists of a four-year progressive course divided into periods of two years each. An elementary course for first- and second-year medical students, and an Advanced Course for third- and fourth-year medical students. The first year is taught at Berkeley; the second, third, and fourth years at the Medical School in San Francisco. All courses are elective.

121A–121B. Elementary Medico-Military Science and Tactics (first year).

(1–1) Yr.

Mr. BAMBACE

Lectures and demonstrations.

**MILITARY SCIENCE AND TACTICS**

- WILLIAM L. RITTER, Colonel, Infantry; Professor of Military Science and Tactics (Chairman of the Department).
- OLIVER G. KINNEY, Lieutenant-Colonel, Infantry; Associate Professor of Military Science and Tactics.
- MATTHEW C. MAUTZ, Lieutenant-Colonel, Signal Corps; Associate Professor of Military Science and Tactics.
- CARL B. BARNES, Major, Infantry; Associate Professor of Military Science and Tactics.
- DON O. CURRIER, Major, Corps of Military Police; Associate Professor of Military Science and Tactics.
- NEIL E. SALING, Major, Infantry; Associate Professor of Military Science and Tactics.
- RUSSELL R. SIMPSON, Major, Infantry; Associate Professor of Military Science and Tactics.
- GERALD J. TISON, Major, Coast Artillery Corps; Associate Professor of Military Science and Tactics.
- JOHN P. YOUENS, Major, Transportation Corps; Associate Professor of Military Science and Tactics.
- CHARLES A. BUCK, Captain, Coast Artillery Corps; Assistant Professor of Military Science and Tactics.
- NORMAN L. HOLLAND, Captain, Ordnance Department; Assistant Professor of Military Science and Tactics.
- EDGAR B. WARNER, JR., Captain, Corps of Engineers; Assistant Professor of Military Science and Tactics.
- DAVID T. BUTTS, First Lieutenant, Infantry; Instructor in Military Science and Tactics at Davis.

*Letters and Science List.*—Not more than 8 units of lower division courses in military science may be included in the Letters and Science List of Courses. For regulations governing this list, see page 82.

**RESERVE OFFICERS' TRAINING CORPS**

The courses in the training of Infantry, Coast Artillery Corps, Signal Corps, Ordnance, Corps of Engineers, Quartermaster Corps, Transportation Corps, and Corps of Military Police are those prescribed by the War Department for corresponding units of the senior division of the Reserve Officers' Training Corps. The United States government furnishes arms, equipment, uniforms, and textbooks for the use of students belonging to such units.

The mission of the Senior Division ROTC is to produce junior officers who have the qualities and attributes essential to their progressive and continued development as officers in a component of the Army of the United States.

Students who complete the advanced course, and who participate in such summer camps as the Secretary of War may prescribe, are eligible upon graduation for appointment and commission by the President in the Officers' Reserve Corps.

Students who complete the advanced course are also eligible to be commissioned by the Governor of the State of California in the University Cadets.

These courses are open only to physically qualified male students who are citizens of the United States.

## LOWER DIVISION COURSES

The lower division or elementary courses are prescribed for all first-year and second-year undergraduate male students who are citizens of the United States, able-bodied and under twenty-three years of age at the time of initial enrollment in the elementary course. A first-year or second-year student claiming exemption because of noncitizenship, physical disability, age or military service, will present to the Registrar a petition on the prescribed form, for such exemption. Pending action on his petition the student will enroll in the courses prescribed for his year and enter upon the work of such courses.

- 10A. Elementary (First Year). (2) I. The STAFF  
 Three hours of classwork and one hour of leadership, drill, and exercise of command a week.  
 Required of all physically fit male students unless specific exemption is granted.  
 World military situation; military organization; leadership, drill and exercise of command; individual weapons and marksmanship; National Defense Act and ROTC.
- 10B. Elementary (First Year). (2) II. The STAFF  
 Three hours of classwork and one hour of leadership, drill, and exercise of command a week.  
 Prerequisite: course 10A. Required of all physically fit male students unless specific exemption is granted.  
 World military situation; hygiene and first aid; leadership, drill, and exercise of command; maps and aerial photographs.
- 11A. Elementary (Second Year). (2) I. The STAFF  
 Three hours of classwork and one hour of leadership, drill, and exercise of command a week.  
 Prerequisite: courses 10A and 10B or their equivalents.  
 Required of all physically fit male students unless specific exemption is granted.  
 World military situation; leadership, drill, and exercise of command; maps and aerial photographs; military administration; military law and boards.
- 11B. Elementary (Second Year). (2) II. The STAFF  
 Three hours of classwork and one hour of leadership, drill, and exercise of command a week.  
 Prerequisite: course 11A. Required of all physically fit male students unless specific exemption is granted.  
 World military situation; leadership, drill, and exercise of command; physical development methods; evolution of warfare.

## UPPER DIVISION COURSES

Infantry, Coast Artillery Corps, Ordnance, Signal Corps, Corps of Engineers, Quartermaster Corps, Transportation Corps, and Corps of Military Police Units.

For admission to the upper division or advanced courses, students must be under twenty-seven years of age at the time of initial enrollment; they must be selected by the Professor of Military Science and Tactics and the head of the institution; and must execute a written agreement with the Government to complete the course, including attendance at summer camp.

During the two-year period of the advanced courses, students will be paid commutation of subsistence in an amount prescribed by the Secretary of War.

Advanced-course students will normally attend a prescribed summer camp between their junior and senior years. During camp, students will receive subsistence and quarters in kind, and will be paid at the rate prescribed for soldiers in the grade of private.

Acceptance by the students of the monetary allowances listed above will make the completion of the advanced course a prerequisite to graduating from the University.

- 105B. Interim Advanced Infantry (Second Year). (3) I. The STAFF  
Four hours of classwork and one hour of leadership, drill, and exercise of command a week.  
Prerequisite: course 105A.  
Drill, ceremonies, and inspections; adjustment of fire; administration; combat intelligence; combat orders; communication; fire control instruments; leadership; methods of instruction; military law; motor maintenance; reconnaissance and security; tank and antitank weapons; tank support.
- 106A. Advanced Infantry (First Year). (3) I. The STAFF  
Four hours of classwork and one hour of leadership, drill, and exercise of command a week.  
For selected students who have successfully completed the elementary course or its equivalent.  
Military leadership; psychology and personnel management; occupied territories; military law and boards; organization; communication; gunnery; technique of fire and fire control; motors and transportation; troop movement.
- 106B. Advanced Infantry (First Year). (3) II. The STAFF  
Four hours of classwork and one hour of leadership, drill, and exercise of command a week.  
Prerequisite: course 106A.  
Leadership, drill and exercise of command; occupied territories; military problems of the United States; tactics; military team; gunnery; technique of fire, and fire control.
- 107A. Advanced Infantry (Second Year). (3) I. The STAFF  
Four hours of classwork and one hour of leadership, drill, and exercise of command a week.  
Prerequisite: course 106A-106B.  
Leadership, drill, and exercise of command; military teaching methods; psychological warfare; military mobilization and demobilization; new developments; communications; gunnery; technique of fire and fire control; supply and maintenance.
- 107B. Advanced Infantry (Second Year). (3) II. The STAFF  
Four hours of classwork and one hour of leadership, drill, and exercise of command a week.  
Prerequisite: course 107A.  
Geographical foundation of national power; combined and joint operations; command and staff; troop movements; tactics.

- 125B. Interim Advanced Corps of Engineers (Second Year). (3) I. The STAFF  
 Four hours of classwork and one hour of leadership, drill, and exercise of command a week.  
 Prerequisite: course 125A.  
 Exercise of leadership; engineer construction and utilities; engineer reconnaissance; map and aerial photograph reading; mines and obstacles; water supply; methods of military instruction; military law.
- 126A. Advanced Corps of Engineers (First Year). (3) I. The STAFF  
 Four hours of classwork and one hour of leadership, drill, and exercise of command a week.  
 For selected students who have successfully completed the elementary course or its equivalent.  
 Military leadership; psychology and personnel management; occupied territories; military law and boards; organization of engineer units; the place of engineers in the military team; bridge design and classification; organization of the ground and field fortifications; engineer reconnaissance; explosives and demolitions.
- 126B. Advanced Corps of Engineers (First Year). (3) II. The STAFF  
 Four hours of classwork and one hour of leadership, drill, and exercise of command a week.  
 Prerequisite: course 126A.  
 Leadership, drill, and exercise of command; occupied territories; military problems of the United States; camouflage; military roads; military sketching; job management; engineer combat principles.
- 127A. Advanced Corps of Engineers (Second Year). (3) I. The STAFF  
 Four hours of classwork and one hour of leadership, drill, and exercise of command a week.  
 Prerequisite: course 126A-126B.  
 Leadership, drill and exercises of command; military teaching methods; psychological warfare; military mobilization and demobilization; air-borne and amphibious operations; engineer supply; engineer estimates and orders; engineer combat principles; engineer reconnaissance.
- 127B. Advanced Corps of Engineers (Second Year). (3) II. The STAFF  
 Four hours of classwork and one hour of leadership, drill, and exercise of command a week.  
 Prerequisite: course 127A.  
 Geographical foundation of national power; combined and joint operations; command and staff; river crossing operations; construction utilities; water supply; engineer signal communications.
- 135B. Interim Advanced Signal Corps (Second Year). (3) I. The STAFF  
 Four hours of classwork and one hour of leadership, drill, and exercise of command a week.  
 Prerequisite: course 135A.  
 Exercise of leadership; methods of military instruction; organization of the infantry division and its signal and communication components; radio communication materiel; applied signal communication (Division); signal supply and repair; higher echelon signal communication and equipment; military law.

- 136A. Advanced Signal Corps (First Year). (3) I. The STAFF  
Four hours of classwork and one hour of leadership, drill, and exercise of command a week.  
For selected students who have successfully completed the elementary course or its equivalent.  
Military leadership; psychology and personnel management; occupied territories; military law and boards; signal communication for all arms and services; organizations and missions of the signal corps; organization of the infantry division and its signal and communication components; message center and signal center procedure.
- 136B. Advanced Signal Corps (First Year). (3) II. The STAFF  
Four hours of classwork and one hour of leadership, drill, and exercise of command a week.  
Prerequisite: course 136A.  
Leadership, drill and exercise of command; occupied territories; military problems of the United States; field wire communication fundamentals; field radio communication fundamentals; communication security; place of the Signal Corps in the military team; Signal Corps photography.
- 137A. Advanced Signal Corps (Second Year). (3) I. The STAFF  
Four hours of classwork and one hour of leadership, drill, and exercise of command a week.  
Prerequisite: course 136A-136B.  
Leadership, drill and exercise of command; military teaching methods; psychological warfare; military mobilization and demobilization; wire communication materiel; radio communication materiel.
- 137B. Advanced Signal Corps (Second Year). (3) II. The STAFF  
Four hours of classwork and one hour of leadership, drill, and exercise of command a week.  
Prerequisite: course 137A.  
Geographical foundation of national power; combined and joint operations, command and staff, applied signal communication (Division); signal supply and repair; higher echelon signal communication and equipment.
- 145B. Interim Advanced Coast Artillery (AA) (Second Year). (3) I. The STAFF  
Four hours of classwork and one hour of leadership, drill, and exercise of command a week.  
Prerequisite: course 145A.  
Administration, drill, ceremonies, and inspection; gunnery; fire control and position finding for AAA guns; fire control and position finding for AAA automatic weapons; leadership; methods of instruction; military law; motor officer's duties; tactical employment of antiaircraft artillery.
- 146A. Advanced Coast Artillery (AA) (First Year). (3) I. The STAFF  
Four hours of classwork and one hour of leadership, drill, and exercise of command a week.  
For selected students who have successfully completed the elementary course or its equivalent.  
Military leadership; psychology and personnel management; occupied territories; military law and boards; organization; motors and transportation; troop movements; communications; characteristics of materiel (AW); basic gunnery and fire control (AW).



- 146B. Advanced Coast Artillery (AA) (First Year). (3) II. The STAFF  
 Four hours of classwork and one hour of leadership, drill, and exercise of command a week.  
 Prerequisite: course 146A.  
 Leadership, drill, and exercise of command; occupied territories; military problems of the United States; characteristics of materiel; basic gunnery and fire control (guns); antiaircraft artillery tactics; the military team
- 147A. Advanced Coast Artillery (AA) (Second Year). (3) I. The STAFF  
 Four hours of classwork and one hour of leadership, drill, and exercise of command a week.  
 Prerequisite: course 146A-146B.  
 Leadership, drill and exercise of command; military teaching methods; psychological warfare; military mobilization and demobilization; characteristics of materiel; gunnery; fire control and orientation; troop movements; new developments.
- 147B. Advanced Coast Artillery (AA) (Second Year). (3) II. The STAFF  
 Four hours of classwork and one hour of leadership, drill, and exercise of command a week.  
 Prerequisite: course 147A.  
 Geographical foundation of national power; combined and joint operations; command and staff; supply and maintenance; antiaircraft artillery tactics.
- 155B. Interim Advanced Ordnance (Second Year). (3) I. The STAFF  
 Four hours of classwork and one hour of leadership, drill, and exercise of command a week.  
 Prerequisite: course 155A.  
 Artillery materiel; automotive materiel; exercise of leadership; fire control materiel; methods of military instruction; military law.
- 156A. Advanced Ordnance (First Year). (3) I. The STAFF  
 Four hours of classwork and one hour of leadership, drill, and exercise of command a week.  
 For selected students who have successfully completed the elementary course or its equivalent.  
 Military leadership; psychology and personnel management; occupied territories; military law and boards; organization of department; place of ordnance in the military team; maintenance and supply procedures; small arms materiel.
- 156B. Advanced Ordnance (First Year). (3) II. The STAFF  
 Four hours of classwork and one hour of leadership, drill, and exercise of command a week.  
 Prerequisite: course 156A.  
 Leadership, drill and exercise of command; occupied territories; military problems of the United States; artillery materiel; ammunition; automotive materiel; fire control materiel.
- 157A. Advanced Ordnance (Second Year). (3) I. The STAFF  
 Four hours of classwork and one hour of leadership, drill, and exercise of command a week.  
 Prerequisite: course 156A-156B.  
 Leadership, drill, exercise of command; military teaching methods; psychological warfare; military mobilization; maintenance and supply procedure; artillery materiel; ammunition; automotive and fire control materiel.

- 157B. Advanced Ordnance (Second Year). (3) II. The STAFF  
Four hours of classwork and one hour of leadership, drill, and exercise of command a week.  
Prerequisite: course 156A.  
Geographical foundation of national power; combined and joint operations; command and staff; small arms materiel; materiel speciality.
- 166A. Advanced Quartermaster Corps (First Year). (3) I. The STAFF  
Four hours of classwork and one hour of leadership, drill, and exercise of command a week.  
For selected students who have successfully completed the elementary course or its equivalent.  
Military leadership; psychology, and personnel management; occupied territories; military law and boards; administration of civilian personnel; classification of supplies; use of stock catalogs and bases of allowances; organization and function of the Quartermaster Corps; organization for supply in the army; property accountability and responsibility; the military team.
- 166B. Advanced Quartermaster Corps (First Year). (3) II. The STAFF  
Four hours of classwork and one hour of leadership, drill, and exercise of command a week.  
Prerequisite: course 166A.  
Leadership, drill, and exercise of command, military problems of the United States, occupied territories, Depot Supply I, Station Supply I, unit and organization supply.
- 167A. Advanced Quartermaster Corps (Second Year). (3) I. The STAFF  
Four hours of classwork and one hour of leadership, drill, and exercise of command a week.  
Prerequisite: courses 166A and 166B.  
Military teaching methods; psychological warfare; leadership, drill and exercise of command; military mobilization and demobilization; fiscal procedures; procurement procedures; Station Supply II, quartermaster inspection service.
- 167B. Advanced Quartermaster Corps (Second Year). (3) II. The STAFF  
Four hours of classwork and one hour of leadership, drill, and exercise of command a week.  
Prerequisite: course 167A.  
Command and staff; geographical foundation of national power; combined and joint operations; Depot Supply II; storage; warehousing and materials handling.
- 176A. Advanced Transportation Corps (First Year). (3) I. The STAFF  
Four hours of classwork and one hour of leadership, drill, and exercise of command a week.  
For selected students who have successfully completed the elementary course or its equivalent.  
Military leadership; psychology, and personnel management; occupied territories; military law and boards; organization and function of the transportation corps; transportation services; transportation control; military passenger movements; military motor transport; stevedore operations.

- 176B. Advanced Transportation Corps (First Year). (3) II. The STAFF  
Four hours of classwork and one hour of leadership, drill, and exercise of command a week.  
Prerequisite: course 176A.  
Leadership, drill, exercise of command; military problems of the United States; occupied territories; military freight movements; ports; zone of interior; amphibian trucks, harbor craft; transportation services; theater of operations; place of transportation corps in military team.
- 177A. Advanced Transportation Corps (Second Year). (3) I. The STAFF  
Four hours of classwork and one hour of leadership, drill, and exercise of command a week.  
Prerequisite: course 176A-176B.  
Military teaching methods; psychological warfare; leadership, drill and exercise of command; military mobilization and demobilization; transportation law; shop operations; movement control; theater of operations.
- 177B. Advanced Transportation Corps (Second Year). (3) II. The STAFF  
Four hours of classwork and one hour of leadership, drill, and exercise of command a week.  
Prerequisite: course 177A.  
Command and staff; geographical foundation of national power; combined and joint operations; ports; zone of interior, theater of operations; transportation services, theater of operations.
- 186A. Advanced Corps of Military Police (First Year). (3) I. The STAFF  
Four hours of classwork and one hour of leadership, drill, and exercise of command a week.  
For selected students who have successfully completed the elementary course or its equivalent.  
Military leadership; psychology, and personnel management; occupied territories; military law and boards; military police functions; train and town patrolling; police science; the military team.
- 186B. Advanced Corps of Military Police (First Year). (3) II. The STAFF  
Four hours of classwork and one hour of leadership, drill, and exercise of command a week.  
Prerequisite: course 186A.  
Leadership, drill, and exercise of command; military problems of the United States; occupied territories; communications; traffic control; mapping and sketching; prisoners of war.
- 187A. Advanced Corps of Military Police (Second Year). (3) I. The STAFF  
Four hours of classwork and one hour of leadership, drill, and exercise of command a week.  
Prerequisite: course 186A-186B.  
Military teaching methods; psychological warfare; leadership, drill and exercise of command; military mobilization and demobilization; traffic control; military law; train and town patrol.
- 187B. Advanced Corps of Military Police (Second Year). (3) II. The STAFF  
Four hours of classwork and one hour of leadership, drill, and exercise of command a week.  
Prerequisite: course 187A.  
Command and staff; geographical foundation of national power; combined and joint operations; general and special investigative techniques; orientation in military government; domestic disturbances; theater problems of military police.

## MUSIC

- MANFRED F. BUKOFZER, Ph.D., Professor of Music.  
 ALBERT I. ELKUS, M.L., Professor of Music (Chairman of the Department).  
 ERNEST BLOCH, Professor of Music (Summer Sessions only).  
 ROGER SESSIONS, A.B., Mus. B., Professor of Music.  
 EDWARD G. STRICKLEN, Professor of Music.  
 CHARLES C. CUSHING, M.A., Associate Professor of Music.  
 EDWARD B. LAWTON, JR., A.B., Associate Professor of Music.  
 \* DAVID D. BOYDEN, M.A., Assistant Professor of Music.  
 WILLIAM D. DENNY, M.A., Assistant Professor of Music.  
 WINIFRED B. HOWE, M.A., Assistant Professor of Music.  
 \* ANDREW W. IMBRIE, M.A., Instructor in Music.  
 FRANKLIN CARTER, Associate in Music.  
 MARY GROOM JONES, Associate in Music.  
 WILLIAM E. KNUTH, M.A., Ed.D., Associate in Music.  
 ERNEST KUBITSCHKEK, Associate in Music.  
 HERMAN C. TRUTNER, III, Associate in Music.
- 
- PETER F. ABRAHAM, A.B., Lecturer in Music.  
 MADI BACON, M.A., Lecturer in Music.  
 LEON KIRCHNER, A.B., Lecturer in Music.  
 MARJORIE GEAR PETRAY, A.B., Lecturer in Music.

*Letters and Science List.*—All undergraduate courses are included in the Letters and Science List of Courses; a total of not more than 8 units from courses 25, 55 (formerly 15), 125 and 155 will be accepted as Letters and Science credit. For regulations governing this list, see page 82.

*Departmental Major Advisers:* Mr. CUSHING, Mr. DENNY.

*Preparation for the Major.*—Required: Music A, B, C, 1, 2, 4A-4B, 30A-30B. Students who plan to specialize in music should confer with Miss Howe or Mr. Lawton at the beginning of the freshman year, in order to insure the fulfillment of the departmental prerequisites for the lower division. Specialization presupposes ability in piano playing. (Note that the University offers instruction in piano only in University Extension.)

Undergraduate students transferring from other colleges should consult with the departmental major adviser before enrolling in any music course.

*The Major.*—The courses applicable to the major are arranged in three groups. The *Theory* courses provide an introduction to the materials of musical composition through analysis of representative musical works and practical exercises in the technic. The *History and Literature* courses provide a study of musical literature and the chief periods of its development. The *Performance* courses provide an opportunity to gain familiarity with musical literature through performance.

The 24 units required for the major are to be distributed among upper division courses according to the following plan:

\* In residence spring semester only, 1947-1948.

\* Absent on leave, 1947-1948.

I. *Theory*.—At least two of the following courses: 101, 102, 104, 105A, 105B, 107A, 107B, 108.

II. *History and Literature*.—At least two of the following courses: 116, 117, 118, 119, either 120A or 120B.

III. *Performance*.—At least two of the following courses: 125, 135, 155, 165, 175. Each of these courses may be repeated once without duplication of credit.

IV. Course 100A–100B.

Students are advised to acquire facility in reading French, German, or Italian. In addition, the department recommends as supplementary choices among free electives: Philosophy 136A–136B and other related courses in the fields of anthropology, architecture, art, English, history, philosophy, public speaking, foreign literature.

Students who fail to maintain an average of one grade point for each unit of work undertaken in the upper division in the Department of Music will, upon approval of the Executive Committee of the College of Letters and Science, be excluded from the major in music.

*Honors Students in the Upper Division*.—Students in the honors group who have completed the major in music with distinction may receive honors at graduation.

*Teacher-training*.—Adviser: Mr. CUSHING. See also the ANNOUNCEMENT OF THE SCHOOL OF EDUCATION. The teaching major differs from that of the undergraduate major in music both in the prescribed courses and in the requirement of an average of 1.5 grade points per unit in music courses. Attention is directed to courses 300A–300B, 328, 329A, 329B, and 329C; teaching-training students are urged to undertake this work before attaining graduate status.

*Higher Degrees*.—Adviser: Mr. BUKOFZER. See also the ANNOUNCEMENT OF THE GRADUATE DIVISION and the special announcements issued by the department concerning the M.A. and Ph.D. degrees.

#### LOWER DIVISION COURSES

##### *Theory*

- A. Musicianship. (2) I. Miss HOWE in charge  
Elements of music, with ear training and sight singing.
- B. Musicianship. (2) II. Miss HOWE in charge  
A continuation of course A, which is prerequisite.
- C. Musicianship. (2) II. Mr. DENNY  
A continuation of course B, which is prerequisite.
1. Elementary Counterpoint. (3) I. Mr. ABRAHAM, Mr. KIROHNER, Miss HOWE  
Prerequisite: course A, completed or taken concurrently.  
Sixteenth-century polyphony: theory and practice. Preparatory exercises and motet writing.
2. Elementary Harmony. (3) II. Mr. BOYDEN, Mr. KIRCHNER  
Prerequisites: course 1; course B, completed or taken concurrently.
- 4A–4B. Intermediate Harmony. (3–3) Yr. Mr. DENNY, Miss HOWE  
Prerequisite: course 2.

##### *History and Literature*

- 27A–27B. Introduction to Musical Literature. (3–3) Yr. Mr. ELKUS  
Two lectures and one section meeting weekly.  
Course 27A is not prerequisite to 27B.  
Lectures, illustrations, and readings designed to furnish a general ap-

preciation of music. Weekly section meetings for listening, discussions, and written work. Intended primarily for students whose major is not music.

30A-30B. History and Literature of Music. (3-3) Yr.

30A: Mr. Lawton; 30B: Mr. Boyden. Mr. BOYDEN, Mr. LAWTON

Three lectures and one section meeting weekly.

Prerequisite: courses 1 and 2, completed or taken concurrently, or the consent of the instructor.

A study of the development of music from antiquity to the present; lectures, listening, technical analysis, and written reports.

*Performance*

Tryouts for enrollment in any performance course will be required during the period of registration. Further information may be obtained from the department of music.

All courses in this group may be repeated once without duplication of credit.

25. University Concert Band. (2) II.

Mr. CUSHING

Two hour-and-a-half rehearsals and one weekly section hour.

Open to any student in the University whose technical proficiency meets the requirements of concert performance. Course 25 may be repeated once without duplication of credit.

NOTE.—See course 125.

35. University Chorus. (2) I and II.

Mr. LAWTON

Two hour-and-a-half rehearsals and one weekly section hour.

NOTE.—See course 135.

55. Piano Ensemble. (1) I and II.

Mrs. PETRAY

Two class hours weekly.

Study and interpretation of four- and eight-hand piano literature.

Open to any student in the University of sufficient technical proficiency.

NOTE.—See course 155.

65. Chamber Music Ensemble. (1) I and II.

Mr. BOYDEN, Mr. CUSHING

I: Mr. Cushing; II: Mr. Boyden.

Two class hours weekly.

Open to any student of sufficient technical ability to take part in ensemble combinations for strings, wind instruments, piano.

NOTE.—See course 165.

75. University Symphony Orchestra. (2) I and II.

Mr. DENNY

Two two-hour rehearsals weekly.

Open to any student in the University whose technical proficiency meets the requirements of concert performance.

NOTE.—See course 175.

UPPER DIVISION COURSES

*Theory*

NOTE.—Students should take courses 100A and 100B in the junior year.

100A. Score-reading. (2) I.

Miss HOWE in charge

Prerequisite: course 4A-4B.

- 100B. Keyboard Harmony. (2) II. Miss HOWE in charge  
Prerequisite: course 4A-4B.  
The reading of figured bass; sequences, modulations, etc., in the harmonic vocabulary of the eighteenth and nineteenth centuries.
101. Advanced Counterpoint. (3) I. Mr. STRICKLEN  
Prerequisite: course I.
102. Advanced Harmony. (3) II. Mr. STRICKLEN  
Prerequisite: course 4A-4B.
104. Polyphonic Composition. (2) II. Mr. STRICKLEN  
Prerequisite: course 4A-4B.  
Polyphonic instrumental composition, exclusive of the fugue, in the style of J. S. Bach.
- 105A-105B. Principles of Composition. (3-3) Yr. Mr. CUSHING  
Prerequisite: courses 101 and 102.
- 107A-107B. Studies in Musical Analysis. (3-3) Yr. Mr. CUSHING, Mr. SESSIONS  
Prerequisite: course 4A-4B.  
107A: Mr. Cushing.  
107B: Mr. Sessions.
108. Instrumentation. (3) I. Mr. DENNY  
Prerequisite: course 4A-4B; 100A completed or taken concurrently.  
A study of the instruments of the orchestra, leading to practice in scoring for instrumental combinations, including the orchestra.  
Teacher-training students are advised to take this course in their junior year.

### Performance

Tryouts for enrollment in any performance course will be required during the period of registration. Further information may be obtained from the department of music.

All courses in this group may be repeated once without duplication of credit.

125. Advanced University Concert Band. (2) II. Mr. CUSHING  
Two hour-and-a-half rehearsals and one weekly section hour.  
Prerequisite: completion of 4 units in course 25.
135. Advanced University Chorus. (2) I and II. Mr. LAWTON  
Two hour-and-a-half rehearsals and one weekly section hour.  
Prerequisite: completion of 4 units in course 35.
155. Advanced Piano Ensemble. (1) I and II. Mrs. PETRAY  
Two class hours weekly.
165. Advanced Chamber Music Ensemble. (1) I and II. Mr. BOYDEN, Mr. CUSHING  
I: Mr. Cushing; II: Mr. Boyden.  
Two class hours weekly.
175. Advanced University Symphony Orchestra. (2) I and II. Mr. DENNY  
Two two-hour rehearsals weekly.  
Prerequisite: completion of 4 units in course 75.

*History and Literature*

Courses in this group will be given in rotation: baroque, classic, romantic, modern. Prerequisite: course 30A-30B and the permission of the instructor.

*Baroque Period*

- \*116A. Survey of Musical Literature, 1600-1750. (3) II. Mr. BOYDEN  
A survey of musical literature from Monteverdi to Handel and J. S. Bach.
- \*116C. The Fugues of the Well-Tempered Clavichord. (3) Mr. BLOCH
- \*116D. The Cantatas of J. S. Bach and the Oratorios of G. F. Handel. (3) Mr. BOYDEN
- \*116E. The Performance of Music, 1600-1750. (3) I. Mr. BOYDEN  
This course will deal with the problems of performing the music of the period 1600-1750, according to contemporary documents (Monteverdi to C. P. E. Bach). Among the chief problems are: "realizing" the figured bass, ornamentation, deviations from the printed note, the proper instruments, expression, tempo, and dynamics.

*Classic Period*

- 117A. Survey of the Period, 1750-1827. (3) I. Mr. BUKOFZER  
The music of the early classic schools and of Haydn, Mozart, and Beethoven.
- \*117B. The Operas of Mozart. (3) II. Mr. BUKOFZER
- 117C. The String Quartets of Beethoven. (3) II. Mr. ELKUS

*Romantic Period*

- \*118A. Survey of the Period from Weber and Schubert to the Beginning of Impressionism. (3) II. Mr. DENNY
- 118B. The Operas of Verdi. (3) II. Mr. BUKOFZER

*Modern Period*

- \*119A. Modern French Music. (3) I. Mr. CUSHING  
Critical and analytical studies of selected works of French composers from 1870 to the present, with special reference to Fauré, Debussy, and Ravel.
- \*119B. Selected Modern Works. (3) I. Mr. CUSHING  
A critical and analytical study of Mussorgsky's *Boris Godunov*, Debussy's *Pelléas et Mélisande*, Ravel's *L'Heure Espagnole*, Bloch's *Schelomo*, Strawinsky's *Symphonie des Psaumes*, and Hindemith's *Mathis der Maler*.
- 119D. Survey of the Period from 1920 to the Present. (3) I. Mr. SESSIONS

\* Not to be given, 1947-1948.



*Forms and Mediums*

## Choral Literature.

In special cases any student of at least junior standing may take course 120A or 120B with the permission of the instructor.

- 120A. Josquin des Prez to Handel. (3) I. Mr. LAWTON  
 120B. Bach to the Present Day. (3) II. Mr. LAWTON

*Special Study Course*

198. Group Special Study for Advanced Undergraduates. (2) I and II.  
 The STAFF (Mr. LAWTON in charge)  
 199. Special Study for Advanced Undergraduates. (1-3) I and II.  
 The STAFF (Mr. DENNY in charge)

## GRADUATE COURSES

Permission of the instructor must be obtained before enrollment in any graduate course. For further conditions concerning admission to graduate courses, see page 156.

- \*201. Seminar: Studies in Orchestration. (2) II. Mr. CUSHING  
 202. Seminar: The Nature of Harmony and Melody. (3) I. Mr. ELKUS  
 203. Seminars in Composition. (2-6) I and II. Mr. ELKUS, Mr. SESSIONS  
 205. Seminar in Choral Scoring. (2) II. Mr. LAWTON  
 206A-206B. Seminar: Studies in Musical Form. (3-3) Yr. Mr. BUKOFZER  
 A retrospective survey of the principles of structure in music from the present to the Gregorian period.  
 \*210A-210B. Seminar in Early Music. (3-3) Yr. Mr. LAWTON  
 211. Seminar: Studies in Musical Research. (3) II. Mr. BOYDEN  
 Designed primarily to meet the needs of teachers for advanced work.  
 \*213. Seminar: Music of the Renaissance. (3) II. Mr. BUKOFZER  
 \*214. Seminar: Reading of Musical Theorists. (3) II. Mr. BUKOFZER  
 Reading and interpretation of theorists from the 16th century to the present.  
 \*221. Seminar: Studies in Classic and Romantic Music. (3) II. Mr. ELKUS  
 \*222. Seminar: The Concerto from the Baroque Period to the Present. (3) I.  
 Mr. BUKOFZER  
 \*236. Advanced Studies in the Fugues of the Well-Tempered Clavichord.  
 (2) II. Mr. BLOCH  
 250. Seminar in the Technique of Musicological Research. (2-4) I and II.  
 For prospective doctoral candidates. Mr. BUKOFZER

\* Not to be given, 1947-1948.

298. Special Studies. (2-4) I and II. The STAFF (Mr. BUKOFZER in charge)  
Credit to be arranged; maximum, 4 units a semester.  
The department is ready to assist and advise competent graduate students who may propose plans for either research or creative work which meet with its approval.

## TEACHING METHODS COURSES†

- 300A. Choral Literature for Secondary Schools. (2) I. Miss BACON  
Musical repertory for high school and junior college choruses, problems of leadership, presentation, organization and program planning.
- 300B. Instrumental Literature for Secondary Schools. (2) II. ———  
This course will consider suitable repertory for high school and junior college bands and orchestras, problems of leadership, presentation, organization and program planning.
328. Methods of Teaching Vocal Techniques. (1) I and II. Mrs. JONES  
Prerequisite: course 100B.  
Principles of choral techniques; adapting best features to meet ensemble choral conditions; necessary transposition; care of adolescent voices; voice-testing; tone-production; evaluation of teaching materials.  
Students may enroll for credit a second time in this course.
- 329A. Methods of Teaching Stringed Instruments. (1) I and II. Mr. F. CARTER
- 329B. Methods of Teaching Brass Instruments. (1) I. Mr. KNUTH
- 329C. Methods of Teaching Wood-Wind Instruments. (1) II. Mr. KNUTH  
The instruction offered in courses 329A-329C includes methods of teaching the various instruments used in the modern orchestra and band; their technical limitations and use; tone production; tuning; problems of instruction; teaching materials. A student may enroll for credit a second time in each course. Instrument for practice may be rented from a local music store by special arrangement.

## PROFESSIONAL COURSES

409. Band Instrumentation. (2) II. Mr. CUSHING  
Prerequisite: courses 100A and 108. Not open to juniors.  
A study of the instruments of the band; practice in scoring for selected wind instruments and for concert band.
- 435A-435B. Conducting. (2-2) Yr. Mr. LAWTON, Mr. DENNY  
Prerequisite: courses 100A and 108, completed or taken concurrently.  
Not open to juniors.  
435A. Choral Conducting: Mr. Lawton.  
435B. Instrumental Conducting: Mr. Denny.

The following classes, intended for students of demonstrable aptitude for a specific instrument, aim to develop mastery. Open to any student in the University. Each class is limited to an enrollment of eight; music majors enrolled in orchestra, band, or chamber music will be given preference. A course may be repeated. These courses will be accepted as elective credit in the field of the teaching major or minor.

† See ANNOUNCEMENT OF THE SCHOOL OF EDUCATION.

- \*445B. Oboe. ( $\frac{1}{2}$ ) I and II.  
445D. Bassoon. ( $\frac{1}{2}$ ) I.  
455A. French Horn. ( $\frac{1}{2}$ ) I.  
\*455C. Trombone. ( $\frac{1}{2}$ ) I and II.  
\*475A. Violin and Viola. ( $\frac{1}{2}$ ) I.  
\*475D. Stringed Bass; Tuba. ( $\frac{1}{2}$ ) I and II.

\* Not to be given, 1947-1948.

—————  
Mr. KUBITSCHKEK

Mr. TRUTNER  
—————  
—————  
—————

NAVAL SCIENCE

HARRY W. NEED, Captain, U.S.N.; Professor of Naval Science.

JOHN C. NICHOLS, Commander, U.S.N.; Associate Professor of Naval Science.

THOMAS F. CAVE, JR., Major, U.S.M.C.; Associate Professor of Naval Science.

JOHN D. P. HODAPP, JR., Lieutenant Commander, U.S.N.; Associate Professor of Naval Science.

*Letters and Science List.*—Not more than 8 units of lower division courses in this department may be included in the Letters and Science List of Courses. For regulations governing this list, see page 82.

Courses in this department are normally restricted to students who are regularly enrolled members of the Naval Reserve Officers' Training Corps. Details concerning enrollment in the Naval R.O.T.C. are given on page 40 of this CATALOGUE. Candidates must be able to complete all requirements of the Naval R.O.T.C. curriculum, without serious interference from or with other academic work which is required for the bachelor's degree.

LOWER DIVISION COURSES

- 1A. Introduction to Naval Science. (3) I. Mr. WATSON  
Orientation; basic naval administration; naval justice; naval customs; basic seamanship.
- 1B. Communication and Tactics. (3) II. Mr. WATSON  
Communication systems, procedures, and equipment; naval correspondence; basic tactics and operations; fleet and task force organization; anti-submarine and anti-mine warfare, amphibious warfare; ship handling; daily routines; elementary maneuvering board problems.
- 2A. Ordnance and Fire Control. (3) I. Mr. SWARTH  
Ordnance equipment, weapons, explosives, small arms; fire control apparatus; basic fire control principles and problems.
- 2B. Fire Control and Electronics. (3) II. Mr. SWARTH  
Prerequisite: course 2A.  
Advanced fire control principles and problems; major fire control installations; sound and electronic devices.

UPPER DIVISION COURSES

- 101A. Piloting and Navigation. (3) I. Mr. NICHOLS  
Piloting; celestial navigation; aerial navigation; elementary astronomy; charts and instruments.
- 101B. Advanced Navigation and Tactics. (3) II. Mr. NICHOLS  
Navigational day's work; advanced maneuvering board problems; escort tactics; fleet and task force tactics.
- 102A. Naval Engineering. (3) I. Mr. HODAPP  
Naval boilers and auxiliaries; naval steam turbines.

- 102B. Internal Combustion Engines. Ship Construction and Stability. (3) II.  
Prerequisite: course 102A. Mr. HODAPP  
Naval Diesel engines; aircraft engines; construction of naval vessels;  
compartmentation; damage control methods; stability; fire and gas protection methods.
- Candidates for commissions in the Marine Corps will be required to complete courses 1A, 1B, 2A, 2B, and 101A. In place of courses 101B, 102A, and 102B, they may be allowed to take courses in Marine Corps subjects as follows:
103. Military History, Principles of War and Basic Military Training.  
(3) I and II. Mr. CAVE  
Marine Corps mission and organization; military history; principles of war and basic military training; doctrines of combat; small arms.
104. Tactics and Technique. (3) I and II. Mr. CAVE  
Machine gun platoon and rifle company tactics; mortar section tactics; special operations, combat intelligence; logistics.
105. Amphibious Operations. (3) I and II. Mr. CAVE  
History of amphibious operations, types of landing craft and ships; fire support; ship to shore movement; logistics; landing team administration.

NOTE.—All students enrolled in the Naval Reserve Officers' Training Corps are required to engage in drill or practical exercises two hours weekly.

## NEAR EASTERN LANGUAGES

WALTER J. FISCHEL, Ph.D., Professor of Semitic Languages and Literature.

HENRY L. F. LUTZ, Ph.D., D.D., Professor of Egyptology and Assyriology  
(Chairman of the Department).

WILLIAM POPPER, Ph.D., Professor of Semitic Languages, Emeritus.

*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 82.

*Departmental Major Adviser:* Mr. LUTZ.

*Preparation for the Major.*—Course 13A-13B; 6 units of Hebrew or Greek; a reading knowledge of French and German.

*The Major.*—Required: 16 units in language courses in the department. The remaining 8 units may include not more than 6 of lecture courses in the department and, with departmental approval, from 2 to 8 units in other departments.

## Courses in History and Religion

Elective courses not requiring a knowledge of any Near Eastern language.

13A-13B. Ancient History of the Near East. (3-3) Yr. Mr. LUTZ  
Egypt, Babylonia, Iran, Syria, Phoenicia, Palestine, Asia Minor, and the Aegean Islands from the Paleolithic Age to the Roman Period. Course 13B may be taken without 13A.

25A-25B. History of the Mohammedan Civilization. (2-2) Yr. Mr. FISCHEL  
This course will give a survey of the origin and development of the Mohammedan civilization and will furnish the background for the understanding of the modern Near Eastern world in Asia and Africa.

102A-102B. Religion and Mythology of Egypt, Babylonia, and Assyria.  
(2-3; 2-3) Yr. Mr. LUTZ  
Prerequisite: junior standing and course 13A-13B, or 25A-25B.

110A-110B. Introduction to Hebrew and Arabic Literature. (2-2) Yr.  
Mr. FISCHEL  
110A. Survey of Hebrew literature, covering post-Biblical, medieval, and modern literature in various centers of the Orient and Europe.  
110B. Survey of Arabic literature from pre-Islamic to medieval and modern times.

## Language Courses

The specific courses given in any year, the hours thereof, and the authors read, will depend upon the needs of the students; courses numbered over 200 may be repeated without duplication of work.

Course 21A-21B or a satisfactory equivalent in other languages is prerequisite to all upper division language courses in the department.

21A-21B. Elementary Hebrew. (3-3) Yr. Mr. FISCHEL

121A-121B. Intermediate Hebrew. (2-2) Yr. Mr. FISCHEL  
Rapid reading of selections from the historical books of the Old Testament.

131A-131B. Elementary Arabic. (3-3) Yr. Mr. FISCHEL

†141A-141B. Elementary Syriac. (2-2) Yr.	Mr. FISCHEL
151A-151B. Elementary Assyrian. (3-3) Yr.	Mr. LUTZ
152A-152B. Elementary Sumerian. (2-2) Yr. Prerequisite: course 151A-151B.	Mr. LUTZ
161A-161B. Elementary Egyptian. (3-3) Yr. Prerequisite: course 21A-21B, or 6 units of Greek.	Mr. LUTZ
171A-171B. Elementary Coptic. (2-2) Yr. Prerequisite: course 21A-21B, or 6 units of Greek.	Mr. LUTZ
199. Special Study for Advanced Undergraduates. (1-5) I and II.	Mr. LUTZ, Mr. FISCHEL

## GRADUATE COURSES

Concerning conditions for admission to graduate courses, see page 156.

224A-224B. Advanced Biblical Hebrew. (2-2) Yr. One or more of the prophetic and poetical books, with special attention to literary form.	Mr. FISCHEL
227A-227B. Post-Biblical Hebrew. (1-1) Yr. Unvocalized texts.	Mr. FISCHEL
231A-231B. Advanced Arabic. (3-3) Yr. Selections from (A) Historical works; (B) The Thousand and One Nights.	Mr. FISCHEL
232A-232B. Advanced Arabic. (3-3) Yr. In alternate year: (A) The Koran. (B) Poetry.	Mr. FISCHEL
241A-241B. Advanced Syriac. (2-2) Yr.	Mr. FISCHEL
†251A-251B. Advanced Assyro-Babylonian. (2-2) Yr.	Mr. LUTZ
†252A-252B. Advanced Sumerian. (2-2) Yr.	Mr. LUTZ
†261A-261B. Advanced Egyptian. (2-2) Yr.	Mr. LUTZ
†271A-271B. Advanced Coptic. (2-2) Yr.	Mr. LUTZ
*280A-280B. Seminar. (2-2) Yr.	Mr. LUTZ, Mr. FISCHEL
*290A-290B. Special Study. Credit according to work accomplished.	Mr. LUTZ, Mr. FISCHEL

† To be given if a sufficient number of students enroll.

\* Not to be given, 1947-1948.

## NURSING

- PEARL CASTILE, R.N., M.A., Assistant Professor of Nursing.  
 ALICE E. INGMIRE, R.N., B.S., M.A., Assistant Professor of Nursing.  
 KATHERINE W. KENDALL, R.N., B.S., Assistant Professor of Nursing.  
 \*AMY A. MACOWAN, R.N., M.A., Assistant Professor of Public Health Nursing.  
 MILDRED E. NEWTON, R.N., M.A., Assistant Professor of Nursing.  
 MARGARET A. TRACY, R.N., M.S., Assistant Professor of Nursing (Chairman of the Department).  
 OLGA ANDREUSKI, R.N., B.S., Instructor in Nursing.  
 HANNAH BINHAMMER, R.N., B.S., Instructor in Nursing.  
 ALICE G. BRATTEN, R.N., A.B., M.N., Instructor in Nursing.  
 MARY T. HARMS, R.N., B.S., Instructor in Nursing.  
 ANN HILL, J.D., R.N., B.S., P.H.N., Instructor in Public Health Nursing.  
 RUTH L. LOTSPEICH, R.N., B.S., Instructor in Nursing.  
 DOROTHY K. LOVELAND, R.N., B.S., Instructor in Nursing.  
 MIRIAM F. LAYCOOK, R.N., B.S., Evening Instructor in Nursing.  
 KATHERYN M. SMITH, R.N., B.S., Instructor in Nursing.  
 ELENORA THOMSON, R.N., Lecturer in Public Health Nursing.  
 OLIVE WALKLEY, R.N., A.B., B.N., Lecturer in Psychiatric Nursing.

**Members of Other Departments Giving Instruction  
in the Department of Nursing**

- LOIS H. BROCK (Lois Brock Watson), A.B., M.D., Assistant Clinical Professor of Obstetrical and Gynecological Nursing.  
 PETER COHEN, B.S., M.D., Lecturer in Pediatrics.  
 POETIA BELL HUME, A.B., M.D., Assistant Professor of Psychiatry.  
 VERA M. KEYLIN, M.S., Lecturer in Social Welfare.  
 JOHN B. LAGEN, M.D., Assistant Professor of Medicine and Pharmacology.  
 ALICE POTTER, A.B., M.D., Assistant Clinical Professor of Pediatrics.  
 MILTON ROSENTHAL, M.D., Assistant in Pathology.  
 ALEX C. SHERIFFS, Ph.D., Instructor in Psychology.  
 HENRY L. SILVANI, A.B., M.D., Clinical Instructor in Surgery.  
 ALEXANDER SIMON, M.D., Associate Professor of Psychiatry.  
 WILLIAM W. STILES, B.S., M.D., Lecturer in Public Health.  
 FRANCES A. TORREY, A.B., M.D., Assistant Clinical Professor of Dermatology.

*(Given at Berkeley)*

The following courses are open only to students enrolled in the curricula for graduate nurses.

PROFESSIONAL COURSES

416. Health Teaching. (3) II. \_\_\_\_\_  
 418. The Nurse in Public Health. (3) I and II. Miss THOMSON  
 A study of public health nursing functions and activities.

\* Absent on leave, 1947-1948.



419. The Field of Public Health Nursing. (3) I and II. Miss THOMSON  
Consideration of the essentials of a good public health nursing service.
420. Field Work in Public Health Nursing. (8) I and II. Miss HILL  
Open only to students who are registered nurses and who have completed the requirements for the B.S. degree in the School of Nursing, including all courses required in the first two semesters of the curriculum in public health nursing. Enrollment limited to 25 students each semester.  
Approximately forty hours a week of continuous field service, including individual and group conferences. The field work is arranged in cooperation with the health agencies of the San Francisco Bay region. Applications must be in at least 2 months before field work is to begin.
- †431. Administration in Schools of Nursing. (2) I. Miss TRACY  
Prerequisite: courses 432, 434, Education 110, and the consent of the
432. Principles of Nursing Education. (2) II. Miss TRACY, Miss NEWTON  
Required of all candidates for the Certificate in Nursing Education.
434. Principles of Ward Management and Teaching. (3) I. Miss CASTLE  
Prerequisite: course 432, Education 110, or the consent of the instructor.  
Required of all candidates for the Certificate in Nursing Education.

(Given at San Francisco)

For more detailed description of the following courses see the ANNOUNCEMENT OF THE SCHOOL OF NURSING.

#### PROFESSIONAL COURSES

433. Field Course in Nursing Education. (6) I and II. Miss NEWTON in charge  
Open only to students who have completed the requirements for the B.S. degree in the School of Nursing, including all courses required in the first two semesters of the curriculum in nursing education.  
Approximately forty hours a week of continuous field experience, including individual and group conferences. Head nurse experience offered only in the same semester as basic courses are given for that service.  
Required of all candidates for the Certificate in Nursing Education.
- 416A. Health Teaching. (1) I. Miss DAVIES
417. Social Problems of Nursing Service. (2) I. Miss DAVIES
418. The Nurse in Public Health. (3) I. Miss DAVIES  
Parallels course 418 given at Berkeley.
- 418E. Community Nursing. (2) I and II. Miss DAVIES
421. History of Nursing. (2) I. Miss NEWTON
423. Professional Adjustments. (1) I. Miss LOTSPEICH
425. Pathology. (1) I. Mr. ROSENTHAL

† To be given if a sufficient number of students enroll.

- 427A-427B. Pharmacology and Therapeutics. (2-1) Yr.  
Miss BINHAMMER, Mr. LAGEN
435. Introduction to Nursing Arts. (5) I. Mrs. INGMIRE, Miss ANDRUSKIW
437. Advanced Nursing. (1) II. Mrs. INGMIRE
- 440A. Principles of Medicine. (2) II. Mr. LAGEN, Miss TORREY
- 440E. Medical Nursing. (2) I and II. Miss BINHAMMER
- 440F. Medical Nursing. (2) I and II. Miss BINHAMMER
- 441A. Principles of Psychiatry. (1) I and II. Mrs. HUME, Mr. SIMON
- 441E. Psychiatric Nursing. (2) I and II. Miss WALKLEY
- 442A. Principles of Surgery. (2) II. Mr. SILVANI, Miss BROCK
- 442E. Surgical Nursing. (3) I and II. Miss LOVELAND, Mrs. BRATTEN
- 442F. Surgical Nursing. (2) I and II. Miss LOVELAND, Miss HARMS
- 444A. Principles of Pediatrics. (2) I. ———
- 444E. Pediatric and Communicable Disease Nursing. (2) I and II.  
Miss SMITH
446. Principles of Communicable Diseases. (2) I. Miss POTTER
- 448A. Principles of Obstetrics. (2) I. Miss BROCK
- 448E. Obstetrical Nursing. (2) I and II. Miss KENDALL

## UPPER DIVISION COURSES

## HOME ECONOMICS

103. Elementary Nutrition. (3) I. Miss GILLUM, Mrs. BODENHAMER  
Parallels Home Economics 103 given at Berkeley.
104. Diet Therapy. (3) II. Miss GILLUM, Mrs. BODENHAMER  
Prerequisite: Home Economics 103.

## PSYCHOLOGY

112. Child Psychology. (2) II. Mr. SHERRIFFS  
Parallels Psychology 112 given at Berkeley.

## PUBLIC HEALTH

121. Child Hygiene. (2) I and II. Mr. COHEN  
Parallels Public Health 121 given at Berkeley.
145. Community Control of the Communicable Diseases. (3) II. Mr. STILES  
Parallels Public Health 145 given at Berkeley.

## SOCIAL WELFARE

100. The Field of Social Welfare. (3) I. Mrs. KEYLIN  
Parallels Social Welfare 100 given at Berkeley.

**OCEANOGRAPHY***Marine Sciences*

Courses in oceanography leading to the master's or doctor's degree in oceanography and certain of the marine sciences are offered for a limited number of qualified students at the Scripps Institution of Oceanography at La Jolla, California. Detailed information concerning the courses may be found in the GENERAL CATALOGUE, DEPARTMENTS AT LOS ANGELES. For further information concerning the Institution refer to the Registrar of the University of California, 405 Hilgard Avenue, Los Angeles 24, or write to the Director of the Institution.

## OPTOMETRY

KENNETH B. STODDARD, Ph.D., Associate Professor of Physiological Optics and Optometry (Chairman of the Department).

RALPH S. MINOR, Ph.D., Professor of Physics and Optometry, Emeritus.

GORDON L. WALLS, Sc.D., Associate Professor of Physiological Optics and Optometry.

MEREDITH W. MORGAN, JR., Ph.D., Assistant Professor of Optometry.

SHERBURNE F. COOK, Ph.D., Lecturer in Optometry and Professor of Physiology.

OWEN C. DICKSON, M.D., Lecturer in Ocular Pathology and Clinical Instructor in Ophthalmology, Medical School.

JACK T. HOBSON, B.S., Lecturer in Optometry.

FREDERICK L. MASON, M.A., Lecturer in Optometry.

HENRY B. PETERS, M.A., Lecturer in Optometry.

## UPPER DIVISION COURSES

*Prerequisite.*—Physics 2A-2B, 3A-3B, Chemistry 1A-1B, Physiology 1A, 1C, Psychology 1A, 2, together with all prerequisite courses, and the degree of Associate in Arts or its equivalent are prerequisite to all courses in the Department of Optometry.

## 101. Advanced Geometrical Optics. (3) Yr.

Mr. MASON

The mathematical development of the paraxial laws of optical image formation, employing the methods of Gauss. Application to the optical devices used to evaluate and aid the functions of vision. Classroom computation of marginally corrected lenses, isekonic lenses and contact lenses.

## 102A-102B. Elementary Theoretical Optometry. (3-4) Yr.

Mr. MASON, Mr. HOBSON

One unit of laboratory will be given in the second semester.

A study of the states of refraction of the eye, the correlated visual sensations, effects upon visual functions, optical methods of correction, and instruments used to detect and measure anomalous states of refraction.

## 103A-103B. Advanced Theoretical Optometry. (3-3) Yr.

Mr. MORGAN

Prerequisite: course 102A-102B.

Extension of the principles discussed in course 102A-102B to the functions of the eyes in binocular vision. Stereoscopic vision, normal and anomalous primary positions of the eyes, physical and physiological aspects of the fusion movements, binocular accommodation and convergence, latent and manifest strabismus, ocular paralyses.

## PROFESSIONAL COURSES

## 401A-401B. Practical Optics. (2-2) Yr.

Mr. PETERS

Lecture and laboratory.

Lectures: history of the development of lenses and spectacles; the optical properties of different glasses; the theory of the design of spectacle lenses. Laboratory: lens surfacing; edging; beveling, mounting and neutralization of lenses; frame fitting.

- 404A-404B. Practical Optometry. (3-3) Yr. Mr. HOBSON  
Prerequisite: courses 102A-102B and 401A-401B.  
Lectures and problems dealing with physical eye examinations. A study of instruments and the technique for their use; interpretation of examination data and prescribing of lenses; orthoptic training and its specific value; the professional practice of optometry, including offices, locations, equipment, records, and optometric jurisprudence.
- 406A-406B. Optometry Clinic. (1-1) Yr.  
Mr. HOBSON, Mr. MASON, Mr. MORGAN, Mr. PETERS,  
Mr. STODDARD, and Assistants  
Prerequisite: courses 102A-102B, 401A-401B, Physiology 115.  
Complete physical eye examinations. The adaptation of lenses to the defective eye and study of abnormal conditions.
- 407A-407B. Pathology of the Eye. (2-1) Yr. Mr. DICKSON  
Prerequisite: Anatomy 102, Physiology 115.  
Lectures dealing with the identification of pathological conditions in the eye, and the manifestation of organic disease as indicated by the eye.
412. Special Clinical Procedures. (2) II. Mr. MORGAN  
Prerequisites: courses 401A-401B, 102A-102B, 103A, 404A, 406A.  
Lectures and laboratory assignments in the theory and practice of contact-lens fitting, and orthoptics as applied to strabismus and other anomalies of binocular vision.
499. Special Study for Advanced Undergraduates. (1-4) I and II. The STAFF

## PHYSIOLOGICAL OPTICS

## UPPER DIVISION COURSES

- 105A-105B. Physiological Optics. (3-3) Yr. Mr. STODDARD, Mr. WALLS  
Prerequisite: for course 105A, Physics 108A-108B, Anatomy 102, Physiology 115; for course 105B, permission of instructor.  
Lectures on the neurology, physiology, and psychology of vision.  
105A: The visual pathways, the pupil- and accommodative-mechanisms; the interaction between radiation and ocular tissue; the aberrations of the eye and allied phenomena.  
105B: The psychophysics and physiological psychology of light, form, and color senses, and the elements of visual perception.
- 106A-106B. Physiological Optics. (1-1) Yr. Mr. STODDARD, Mr. WALLS  
Laboratory experiments in physiological optics to accompany courses 105A-105B.
109. Physiological Optics. (2) II. Mr. STODDARD  
Lectures on the physics, physiology, and psychology of vision for students in Electrical Engineering whose option is Illumination Engineering.

## GRADUATE COURSES

Concerning conditions for admission to graduate courses, see page 156.

- 201A-201B. Seminar in Advanced Physiological Optics. (2-2) Yr.  
Beginning each semester. Mr. STODDARD, Mr. MORGAN, Mr. WALLS  
A discussion of selected topics and current research literature in the various fields associated with vision.

\*203. Binocular Vision and Space Perception. (2) I.

Mr. STODDARD, Mr. WALLS

A consideration of the precise nature of binocular vision and monocular and binocular space perception.

\*205. Color Vision. (1) II.

Mr. WALLS

A study of color vision, both normal and abnormal, with a critical analysis of the various theories of color vision.

299A-299B. Research. (2-8; 2-8) Yr.

Mr. STODDARD, Mr. MORGAN, Mr. WALLS

COURSES IN OTHER DEPARTMENTS

General Human Anatomy. (Anatomy 102.)

Anatomy and Physiology of the Eye. (Physiology 115.)

Mammalian Physiology. (Physiology 110A-110B.)

Geometrical and Physical Optics. (Physics 108A-108B.)

\* Not to be given, 1947-1948.

## ORIENTAL LANGUAGES

PETER A. BOODBERG, Ph.D., Professor of Oriental Languages (Chairman of the Department).

FERDINAND D. LESSING, Ph.D., Agassiz Professor of Oriental Languages.

SHIH-HSIANG CHEN, B.Litt., Assistant Professor of Oriental Languages.

MARY HAAS, Ph.D., Assistant Professor of Oriental Languages.

EDWARD H. SCHAFER, Ph.D., Assistant Professor of Oriental Languages.

CHING-YI DOUGHERTY, M.A., Associate in Oriental Languages.

YÜAN-REN CHAO, Ph.D., Visiting Professor in Chinese and Linguistics.

SUSUMU W. NAKAMURA, M.A., Lecturer in Japanese.

*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 82.

*Departmental Major Adviser:* Mr. SCHAFER.

*Preparation for the Major.*—Required: courses 1A-1B or 9A-9B or their equivalent; 13, 17 or 27; English 25, History 19A-19B.

Attention of interested students is called to the possibility of satisfying in part the required preparation for the major in the Far Eastern and Russian Language School, in the University Extension.

*The Major.*—Required: 16 units in upper division language courses in the department; one of the following courses: Classics 193, 194, 195; the remaining 6 units to be selected from lecture courses in the department. Recommended: a reading knowledge of French, German, or Russian.

Students who fail to maintain an average of one grade point for each unit of work undertaken in the upper division in the department will, upon approval of the Executive Committee of the College of Letters and Science, be excluded from the major.

## LOWER DIVISION COURSES

1A-1B. Elementary Modern Chinese. (3-3) Yr. Mr. CHEN in charge  
Not open to students with previous experience in the language.

\*8A. Elementary Malay. (2) I. Mr. BOODBERG

9A-9B. Elementary Modern Japanese. (3-3) Yr. Mr. SCHAFER  
Not open to students with previous experience in the language.

13. Classical Chinese. (2) II. Mr. BOODBERG, Mr. NAKAMURA, Mr. SCHAFER

17. Introduction to the Study of Chinese Characters. (2) I.  
Mr. BOODBERG, Mr. NAKAMURA, Mr. SCHAFER

21A-21B. Chinese Oral and Written Composition. (3-3) Yr. Mrs. DOUGHERTY

27. Elements of Sino-Japanese. (2) I. Mr. BOODBERG, Mr. NAKAMURA

29A-29B. Japanese Oral and Written Composition. (3-3) Yr.  
Mr. NAKAMURA

\* Not to be given, 1947-1948.

LECTURE COURSES

32. Evolution of Japanese Civilization before 1868. (2) I. ———
42. Chinese Civilization in the Asiatic Context. (2) I. Mr. BOODBERG  
 A general survey of the development of Chinese civilization from antiquity to the Mongol conquest with emphasis on China's interrelations with the other cultures and civilizations of Asia.

UPPER DIVISION COURSES

Courses 121, 129, 154, 164, 193 and 199 may be repeated without duplication of work.

- 101A-101B. Intermediate Chinese: Newspaper Style. (3-3) Yr.  
 Mr. CHEN, Mr. SCHAFER
103. Chinese Narrative Prose. (2) I. Mr. SCHAFER
- 109A-109B. Intermediate Japanese. (3-3) Yr. Mr. NAKAMURA
113. Chinese Classics. (2) II. Mr. SCHAFER
117. Logography and the Evolution of the Chinese Language and Script. (2) I. Mr. BOODBERG
- 119A-119B. Third-Year Japanese. (2-2) Yr. Mr. NAKAMURA
- 121A-121B. Advanced Chinese. (3-3) Yr. The STAFF (——— in charge)
- 129A-129B. Introduction to Classical Japanese and to Kambun. (2-2) Yr. The STAFF (——— in charge)
- †154. Mongolian. (2) I and II. Mr. LESSING
- †164. Tibetan. (2) I and II. Mr. LESSING
- 173A-173B. Chinese Philosophical Texts. (2-2) Yr. ———
- 174A-174B. Siamese (Thai). (2-2) Yr. Mrs. HAAS
- 191A-191B. Masterpieces of Chinese Literature and Literary Criticism. (2-2) Yr. Mr. CHEN  
 Recommended to be taken concurrently with course 112A-112B.
193. Language and Culture in East Asia. (2) II. Mr. BOODBERG
- \*198. Special Study for Advanced Undergraduates. (1-3) I and II.  
 Mr. BOODBERG, Mr. LESSING, Mr. CHEN
199. Special Individual Study. (1-5) I and II. Mr. LESSING

LECTURE COURSES

Prerequisite: junior standing. Knowledge of an Oriental language not required.

- 112A-112B. Survey of Chinese Literature and Literary Criticism. (2-2) Yr.  
 Mr. CHEN

† To be given if a sufficient number of students enroll.

\* Not to be given, 1947-1948.



132. History of Japanese Literature. (2) II. \_\_\_\_\_

Prerequisite: course 32.

From the beginning to modern times, emphasizing Chinese, Buddhist and Western influences.

162A-162B. Chinese Thought and Culture from Han to Sui. (2-2) Yr. \_\_\_\_\_

172A-172B. Buddhism as a Cultural Factor in the Far East. (2-2) Yr.

Mr. LESSING

182. Life and Times of Confucius. (2) II.

Mr. BOODBERG

188. Philological Method: Languages and Literature of Eastern Asia. (1) II.

Mr. SCHAFER

#### GRADUATE COURSES

201A-201B. Buddhist Texts. (2-2) Yr.

Mr. LESSING

213A-213B. Seminar in Philological Analysis of Chinese Sources of the Post-Han Period. (2-2) Yr.

Mr. BOODBERG

250A-250B. Research. (1-4; 1-4) Yr.

The STAFF

## PALEONTOLOGY

\*CHARLES L. CAMP, Ph.D., Professor of Paleontology and Director of the Museum of Paleontology.

RALPH W. CHANEY, Ph.D., Professor of Paleontology and Curator of the Paleobotanical Collection in the Museum of Paleontology.

J. WYATT DURHAM, Ph.D., Associate Professor of Paleontology (Acting Chairman of the Department), and Curator of Invertebrate Macrofossils in the Museum of Paleontology.

ROBERT M. KLEINPELL, Ph.D., Associate Professor of Paleontology and Curator of Microfossils in the Museum of Paleontology.

RUBEN A. STIRTON, Ph.D., Associate Professor of Paleontology and Curator of Mammals in the Museum of Paleontology.

SAMUEL P. WELLES, Ph.D., Lecturer in Paleontology and Principal Museum Paleontologist in the Museum of Paleontology.

*Letters and Science List.*—All undergraduate courses in paleontology are included in the Letters and Science List of Courses. For regulations governing this list, see page 82.

*Departmental Major Adviser:* Mr. STIRTON.

*Preparation for the Major.*—Two types of major programs are organized on the basis of relationships to geological sciences and to biological sciences.

Required: courses 1, 2, 3; Botany 1 or Zoölogy 1A-1B; Geology 1A-1B; matriculation chemistry or physics. For the majors emphasizing geology, Mineralogy 4A and 4B are also required.

Recommended: Chemistry 1A-1B; Botany 16 (3) for II (c) (see below); Anthropology 152 for I (b) and II (b); French and German. A reading knowledge of French and German is essential for efficient advanced work and is required of candidates for the Ph.D. degree.

The department will certify to the completion of a major program for graduation only on the basis of at least a C average in the upper division courses taken in the department. Students who cannot maintain such an average may be required at any time to withdraw from the departmental major.

*The Major.*—

#### I. Paleontology and Geological Sciences.

(a) Emphasis on invertebrate paleontology: courses 102A-102B (4), 103 (5), 104 (4), 105 (4), or 109 (4); Geology 102A-102B (4), 103 (3), 116 (2), 107 (2) or 117 (3), and Engineering 1A-1B (3-3). Recommended: Zoölogy 112 (4).

(b) Emphasis on vertebrate paleontology: courses 113 (3), 114 (3), 115 (3); Geology 102A-102B (4), 103 (4); Zoölogy 113 (4) or 106 (4), 114 (3) or Genetics 103 (3).

(c) Emphasis on paleobotany: courses 120 (3), and 121 (3); Botany 110A-110B (6); Geology 102A-102B (4), 103 (4); and at least 4 units chosen from courses 102 (4), 114 (3).

#### II. Paleontology and Biological Sciences.

(a) Emphasis on invertebrate paleontology: courses 102A-102B (4), 103 (5), 104 (4), 105 (4), or 109 (4); Zoölogy 112 (4), 114 (3); and at least 8

\* Absent on leave, 1947-1948.

units chosen from courses 104 (4), 105 (4), 109 (4), 113 (3), 114 (3), 120 (3); Genetics 103 (3), and Zoölogy 110 (4).

(b) Emphasis on vertebrate paleontology: courses 113 (3), 114 (3), 115 (3); Zoölogy 106 (4), 113 (4), 114 (3) or Genetics 103 (3); and at least 4 units chosen from courses 102A-102B (4), 120 (3).

(c) Emphasis on paleobotany: courses 120 (3), 121 (3); Botany 110A-110B (6), 151 (3); Forestry 114 (3); and at least 6 units chosen from courses 102A-102B (4), 103 (4), 114 (3).

*Honor Students in the Upper Division.*—Honors are awarded on the basis of excellent work in the major subject.

#### LOWER DIVISION COURSES

1. General Paleontology. (3) I. Mr. WELLES  
A survey of the history and classification of plants and animals.  
Methods of interpretation of the fossil record. Fossils as evidence of the history of life; evolution of form and structure in plants and animals. Sequence of floras and faunas in the rocks. Lectures, field trips, and laboratory. Enrollment limited to majors in life and earth sciences.
10. General Paleontology. (3) I. Mr. CHANEY  
(Formerly numbered 1.)  
Two lectures and one demonstration section; one or more field excursions half day Saturday. Enrollment limited to the size of classroom available. Not open to students who have credit in course 1.  
General principles of the history of life.  
Will be accepted in partial satisfaction of the Natural Science requirement for the Associate in Arts degree in the College of Letters and Science.
2. Introductory Invertebrate Paleontology. (3) I. Mr. KLEINPELL  
Prerequisite: course 1 or Geology 1B.  
Two lectures and laboratory.  
Principles of invertebrate paleobiology and systematics.
3. Introductory Vertebrate Paleontology. (3) II. Mr. STIRTON  
Prerequisite: course 1, or Zoölogy 1A, or Geology 1B, or Anthropology 1.  
Enrollment limited to 20.  
Two lectures and laboratory. The vertebrate skeleton, vertebrate evolution, principles of paleontology.

#### UPPER DIVISION COURSES

- 102A-102B. Invertebrate Paleontology. (4-4) Yr. Mr. DURHAM  
Prerequisite: course 1 or Geology 1A-1B, or Zoölogy 1A and the permission of the instructor.  
Two lectures and laboratory.  
Systematic morphology and phylogeny of the fossil invertebrates.
103. Invertebrate Paleontology and Stratigraphy of the Late Mesozoic and Tertiary of North America. (5) I. Mr. DURHAM  
Prerequisite: course 102A-102B.  
Three lectures and laboratory.  
Seven all-day field trips.

104. Stratigraphic Paleontology. (4) I. Mr. KLEINPELL  
Prerequisite: Geology 1B, and course 1; or Zoölogy 1A, and course 2 or 102 (concurrently).  
Two lectures and laboratory.  
Principles of biostratigraphy and correlation.
105. Micropaleontology (4) II. Mr. KLEINPELL  
Prerequisite: course 104.
109. Tertiary History of the West Coast of North America. (4) II. Mr. KLEINPELL  
Prerequisite: course 103 or 105.  
Two lectures and laboratory; assigned readings.
- \*113. Advanced Vertebrate Paleontology. (3) I. Mr. CAMP  
Lectures, proseminar, and laboratory. Prerequisite: course 3 or Zoölogy 106.
114. Evolution and Classification of Fossil Mammals. (3) I. Mr. STIRTON  
Lectures, proseminar, and laboratory. Prerequisite: course 3 or Zoölogy 106.
115. History and Ecology of Vertebrate Life of the Cenozoic. (3) II. Mr. STIRTON  
Lectures and laboratory.  
Prerequisite: course 114.
120. Advanced Paleobotany. (3) I. Mr. CHANEY  
Lectures and laboratory. Prerequisite: any lower division course in botany or the permission of the instructor.
121. Tertiary Floras of Western America. (3) II. Mr. CHANEY  
Lectures, proseminar, and laboratory. Prerequisite: course 120.
199. Special Study for Advanced Undergraduates. (1-5) I and II or in field during the summer. The STAFF (Mr. DURHAM in charge)

## GRADUATE COURSES

Concerning conditions for admission to graduate courses, see page 156.

203. Seminar in Micropaleontology. (2) I. Mr. KLEINPELL
204. Seminar in Mammalian Paleontology. (2) I. Mr. STIRTON
- \*205. Seminar in Vertebrate Paleontology. (2) I and II. Mr. CAMP
206. Seminar in Invertebrate Paleontology. (2) I and II. Mr. DURHAM  
Current literature and general problems.
207. Seminar in Paleobotany. (2) I and II. Mr. CHANEY  
Current literature and general problems.
208. Research in Paleontology. I and II. The STAFF (Mr. DURHAM in charge)  
Credit given according to amount of work completed.

\* Not to be given, 1947-1948.

## MUSEUM OF PALEONTOLOGY

The Museum of Paleontology, situated in the Hearst Memorial Mining Building on the Berkeley campus, was organized in 1921, and is supported chiefly by funds donated by Miss Annie M. Alexander. The Museum maintains the largest fossil collections on the Pacific Coast, and makes use of these in teaching and research. The Matthew Library of Paleontology is housed on the premises, and is open to students. A public exhibition gallery is on the second floor of the Hearst Memorial Mining Building. Anyone interested in employing the facilities of the Museum may address the Director.

## PHILOSOPHY

GEORGE P. ADAMS, Ph.D., Mills Professor of Mental and Moral Philosophy and Civil Polity.

WILLIAM R. DENNES, D.Phil., Professor of Philosophy (Chairman of the Department).

\* JACOB LOEWENBERG, Ph.D., Professor of Philosophy.

DONALD S. MACKAY, Ph.D., Professor of Philosophy.

PAUL MARHENKE, Ph.D., Professor of Philosophy.

STEPHEN C. PEPPER, Ph.D., Professor of Philosophy and Aesthetics.

† EDWARD STRONG, Ph.D., Professor of Philosophy.

ABRAHAM EDEL, Ph.D. (Professor of Philosophy in the College of the City of New York), Lecturer in Philosophy.

DONALD KALISH, M.A., Lecturer in Philosophy.

HIRAM J. MCLENDON, M.A., Lecturer in Philosophy.

Fundamental ideas and ideals play an indispensable part in the life and activities of each culture area and epoch. They reflect the manner in which each age organizes its knowledge and the major interests of its civilization. They disclose the problems generated by the impact of traditional habits of life and thought upon the requirements imposed by new conditions and by fresh discoveries of knowledge. They portray the efforts of reflective thought to formulate more adequate concepts and ideals for the organization and interpretation of experience.

Courses offered by the Department of Philosophy provide an opportunity for the student to become acquainted with the leading ideas in terms of which men attempt at the present time to understand the broader fundamental aspects of their world and their civilization.

*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 82.

*Departmental Major Adviser:* Mr. MACKAY.

*Preparation for the Major.*—Courses 10A-10B and 12.

*The Major.*—Upper division courses in philosophy are arranged in three groups, A, B, and C.

Of the 24 units required for the major, 6 must be taken from courses in Group A, 6 from courses in Group B, and 6 from courses in Group C. The student is at liberty to select the remaining 6 units from any courses in the department, and may, with the approval of the Departmental Adviser, take three of these units in another department provided the course selected is regarded as relevant to the major.

## LOWER DIVISION COURSES

(NOTE.—Course 6A is prerequisite to 6B. Three sections in 6A will be given in the second semester and three sections of 6B in the first semester.)

6A-6B. Introduction to Philosophy. (3-3) Yr. Beginning each semester.

Mr. ADAMS, Mr. DENNES, Mr. EDEL, Mr. KALISH, Mr. MACKAY,

Mr. MCLENDON, Mr. PEPPER, Mr. STRONG

Weekly section meetings for discussion and written work.

\* Absent on leave, 1947-1948.

† Sabbatical leave in residence fall semester, 1947-1948.

## SOPHOMORE COURSES

- 10A-10B. History of Philosophy. (3-3) Yr. Mr. DENNES, Mr. MACKAY  
 I. From the Pre-Socratics to Plotinus.  
 II. From the Scholastics to the Utilitarians.
12. Logic. (3) I. Mr. MARHENKE
14. Scientific Method. (3) II. Mr. MARHENKE

## UPPER DIVISION COURSES

*General Prerequisites.*—Students enrolling in any upper division course must have completed 6 units in courses 6A-6B or 10A-10B.

## GROUP A

Courses concerned with a critical analysis and appraisal of specific human interests such as art, literature, morality, religion, science, and society.

104. Ethics. (3) I. Mr. ADAMS  
 Moral Values: An analysis of the Good and the Right.
108. Social Philosophy. (3) II. Mr. DENNES  
 An examination of the fundamental notions involved (a) in the explanation, and (b) in the evaluation, of social structures and processes. Basic problems of human personality and values in relation to their social matrix.
- \*112. Philosophy of Religion. (3) II. Mr. ADAMS  
 The nature and the validity of religious ideas.
128. Political Philosophy. (3) II. Mr. MACKAY  
 Conceptions of the State in relation to the values of freedom and social order.
- 136A-136B. Aesthetics. (3-3) Yr. Mr. PEPPER
- \*136C. Aesthetics. (3) I. Mr. STRONG  
 A study of values in applied and fine arts, and of the place and role of art in human affairs.  
 NOTE.—At the discretion of the instructor in Philosophy 136A, 136B, or 136C, the general prerequisites may be waived for major students in literature or in the fine arts. Philosophy 136C together with either 136A or 136B will be counted as a year course of six units in aesthetics. 136C may be taken in addition to both 136A and 136B without loss of credit.
- \*146. Philosophy in Literature. (3) I. \_\_\_\_\_  
 NOTE.—At the discretion of the instructor the general prerequisites may be waived for major students in literature or in the fine arts.

## GROUP B

Courses dealing with the methods of reflective thinking and the more general features of experience.

- 102A-102B. Recurrent Types of Philosophy. (3-3) Yr. Mr. EDEL
- \*111. Metaphysics. (3) Mr. LOKWENBERG

\* Not to be given, 1947-1948.

113. Logic. (3) II. Mr. MARHENKE  
Prerequisite: course 12 or its equivalent.
114. Theory of Knowledge. (3) II. Mr. KALISH
122. Philosophy of Mind. (3) I. Mr. McLENDON
123. Man and Nature. (3) II. Mr. ADAMS  
A critical survey of ideas concerning the relation between man and nature, within the western tradition.
124. Philosophy of Science. (3) I. Mr. MARHENKE
125. Theory of Value. (2) II. Mr. PEPPER
- 135A-135B. Contemporary Tendencies in Philosophy. (3-3) Yr. Mr. DENNES, Mr. STRONG
- \*147. Theories of History. (3) I. Mr. STRONG

GROUP C

Courses dealing with individual thinkers and epochs in the history of ideas. Philosophy 10A-10B or its equivalent is prerequisite to courses in this group.

- \*103. Philosophy of the Nineteenth Century. (3) Mr. MACKAY
105. Kant. (3) II. Mr. EDEL
- \*115. Medieval and Early-Modern Thought. (3) II. Mr. STRONG
116. Plato. (3) I. Mr. MACKAY
117. Aristotle. (3) II. Mr. KALISH
- \*118. Spinoza. (3) I. Mr. DENNES
119. British Empiricism with Special Reference to Hume. (3) I. Mr. DENNES
- \*121. Hobbes. (3) II. \_\_\_\_\_
- \*126. Social Philosophy of the Hellenistic Age. (3) I. \_\_\_\_\_
129. Leibniz. (3) I. Mr. KALISH
- \*130. Materialism and Naturalism. (3) II. Mr. STRONG  
Historical and critical studies of the chief philosophical materialists from Democritus to Dewey.
145. American Philosophy. (3) II. Mr. MACKAY
199. Special Study for Advanced Undergraduates. (1-4) I and II.  
The STAFF (Mr. DENNES in charge)

GRADUATE COURSES

Concerning conditions for admission to graduate courses, see page 156.

204. Seminar in Ethics. (2) I. Mr. EDEL

\* Not to be given, 1947-1948.



- \*210A-210B. Seminar in Hegel's Phenomenology of Mind. (2-2) Yr. Mr. LOEWENBERG
- 211A-211B. Seminar in Metaphysics. (2-2) Yr. Mr. ADAMS
- 213A-213B. Seminar in Logic. (2-2) Yr. Mr. MARHENKE
- \*214. Seminar in the Theory of Knowledge. (3) II. Mr. MARHENKE
- \*216. Seminar in Plato. (2) Mr. MACKAY
- \*220. Seminar in Pragmatism. (2) II. Mr. MACKAY
- 222A-222B. Seminar on Recent Empiricism. (2-2) Yr. Mr. MCLENDON
225. Seminar: Theory of Value. (2) II. Mr. DENNES
231. Seminar on the Problem of Time. (3) I. Mr. MACKAY
- \*232. Seminar in Philosophical Naturalism. (2) II. Mr. DENNES
236. Aesthetics from the Metaphysical Standpoint. (2) I. Mr. PEPPER
- \*237. Seminar in the Philosophy of Art. (2) Mr. LOEWENBERG
- \*247. Seminar in Philosophy of History. (2) Mr. STRONG
250. Special Studies. (1-6) I and II. The STAFF (Mr. DENNES in charge)  
Enrollment in course 250 is ordinarily restricted to students who have  
been admitted to candidacy for the doctor's degree.

---

\* Not to be given, 1947-1948.

## PHYSICAL EDUCATION

FREDERICK W. COZENS, Ph.D., Professor of Physical Education and Director of Physical Education (Chairman of the Department).

†PAULINE HODGSON, Ph.D., Professor of Physical Education.

\*ANNA ESPENSCHADE, Ph.D., Associate Professor of Physical Education.

SARAH R. DAVIS, A.B., Assistant Professor of Physical Education, Emeritus.

FRANKLIN M. HENRY, Ph.D., Associate Professor of Physical Education.

LOUISE S. COBB, Ph.D., Associate Supervisor of Physical Education.

<sup>1</sup>LUCILE K. CZARNOWSKI, M.S., Associate Supervisor of Physical Education.

MARIE H. GLASS, A.B., Associate Supervisor of Physical Education.

RALFE D. MILLER, M.A., Associate Supervisor of Physical Education.

HEBER A. NEWSOM, M.A., Associate Supervisor of Physical Education.

CHARLES A. PEASE, A.B., Associate Supervisor of Physical Education.

HENRY A. STONE, M.S., Associate Supervisor of Physical Education.

JACK E. HEWITT, Ed.D., Assistant Professor of Physical Education.

ELEANOR E. BARTLETT, A.B., Assistant Supervisor of Physical Education.

FREDERICA BERNHARD, M.S., Assistant Supervisor of Physical Education.

CAROLINE W. COLEMAN, M.A., Assistant Supervisor of Physical Education.

CHARLES J. KEENEY, A.B., Assistant Supervisor of Physical Education.

EDGAR NEMIR, A.B., LL.B., Assistant Supervisor of Physical Education.

ANNA H. BAHME, M.S., Junior Supervisor of Physical Education.

HELEN M. DARROW, M.A., Junior Supervisor of Physical Education.

CLINTON W. EVANS, B.S., Lecturer in Physical Education.

LYNN O. WALDORF, A.B., Lecturer in Physical Education.

*The incidental fee* payable by all students at the time of registration entitles students to the use of gymnasias, swimming pools, showers, towels, lockers, tennis courts, and the athletic fields, also to the use of costumes for certain physical education activities, including swimming.

*Recreational opportunities.*—At Hearst Gymnasium and at the Gymnasium for Men, rooms, courts, swimming pools, sports fields, and equipment for games and sports are available to students of the University who wish an opportunity for exercise and recreation, either with or without instruction. Courses may be elected with or without academic credit. At Hearst Gymnasium the Women's Athletic Association and the Department cooperate in offering opportunities for a wide variety of activities. Further information may be obtained from the Secretary, Room 200, Hearst Gymnasium.

*Fees.*—The fee for ice skating is \$4.50.

*Fines.*—Fines are imposed for each formal transaction necessitated by failure of the student to comply with the regulations of the Department: (a) Failure to return equipment or clothing on or before the date posted for such return at the end of each semester, or at the end of each special session of the University, \$1. (b) Failure to return athletic supplies (balls, bats, etc.) on

† Miss Hodgson will serve as executive officer in the Division for Women.

\* Absent on leave, 1947-1948.

<sup>1</sup> In residence first semester only, 1947-1948.

the date of issue, \$1 for each twenty-four hours until the full purchase price of the article has been reached. (c) Failure to meet the appointment for the physical examination, \$1. (d) Overnight use of dressing locker, \$1. Failure to empty locker within designated time, \$1.

#### LOWER DIVISION COURSES FOR MEN

##### 1. Physical Training, Recreation, and Competitive Sports. ( $\frac{1}{2}$ ) I and II.

Sections meet twice weekly at various hours. M Tu W Th. The STAFF

Men may enroll for credit in class instruction, in intramural or intercollegiate athletics. The following activities are open to those found properly qualified: baseball, softball baseball, basketball, boxing, wrestling, fencing, crew, American football, touch football, rugby football, golf, gymnastics, body building, tumbling, handball, squash, \*figure skating, badminton, hockey, soccer, swimming, diving, tennis, track, \*folk dancing, \*social dancing, trampoline, and weightlifting. Special guidance and facilities are provided for men wishing to correct bodily defects or accomplish specific development.

A physical examination is required of all men entering the University, and a special medical examination is demanded of all athletes prior to training for, or participation in, intramural or intercollegiate competition.

#### LOWER DIVISION COURSES FOR WOMEN

Students will enroll at Hearst Gymnasium during the first week of the semester.

##### 26. Physical Education Activities. ( $\frac{1}{2}$ ) I and II.

The STAFF

Sections meet twice weekly at various hours.

The following activities are offered in elementary, intermediate, and advanced\* grades for women who are in good physical condition.

The classes may be taken either with or without credit.

*Sports:* archery, badminton, basketball, fencing, golf, hockey, \*figure skating, lifesaving, swimming, tennis, field sports, skiing fundamentals.

*Dancing:* \*modern dance, \*folk dancing, and \*social dancing.

*General Exercise:* gymnastics, tumbling and apparatus, rhythmic work, and training in standing and walking correctly. Designed especially for students who wish to maintain physical fitness.

##### 27. Restricted Activities. ( $\frac{1}{2}$ ) I and II.

The STAFF

##### 28. Individual Exercise. ( $\frac{1}{2}$ ) I and II.

The STAFF

Group exercises adapted to individual needs.

#### LOWER DIVISION COURSES FOR MEN AND WOMEN

Students will enroll at Hearst Gymnasium during the first week of the semester.

##### 5A. First Aid. (1) I and II.

The STAFF

(Formerly numbered 33.)

Standard course. Sections meet two hours weekly.

Upon successful completion of the course, the Red Cross Certificate is awarded.

\* See Lower Division Courses for Men and Women.

- \*5B. Advanced First Aid. (No credit.) I and II. The STAFF  
(Formerly numbered 34.)  
Sections meet two hours weekly for eight weeks.  
Upon successful completion of the course, the Red Cross Certificate is awarded.
20. Introduction to Physical Education. (1) I and II. Mr. COZENS  
An interpretation of the field designed to give the prospective major student an understanding of its scope.
26. Physical Education Activities. (½) I and II. The STAFF  
Sections meet twice weekly at various hours.  
Folk dancing, figure skating, modern dance, social dancing.
35. Rhythmic Basis of Dance and Allied Arts. (2) II. Miss CZARNOWSKI  
This course is planned for students interested in dance, music and art.  
Consideration given to nature and function of rhythm, rhythmic analysis and notation, rhythmic form in the temporal and spatial arts.

## UPPER DIVISION COURSE FOR MEN

171. Conditioning of Athletes and Care of Injuries. (2) I. Mr. STONE  
(Formerly numbered 318.)  
Lecture, and a three-hour laboratory period.  
Prerequisite: course 5A, Physiology 1A or Anatomy 102.  
Modern principles and practice in conditioning and care of athletes; individual variation and needs as to sleep, diet, health and activity habits; care of injuries with special emphasis on therapy, taping, and protective equipment.

## UPPER DIVISION COURSES FOR WOMEN

- 160A-160B. Theory of Dance. (3-3) Yr. Miss CZARNOWSKI, ———  
Lectures and laboratory.  
Prerequisite: course 35 and Psychology 1A.
- \*165A. Theory of Group Athletics. (3) I. Miss ESPENSCHADE, Miss HODGSON  
Lectures and laboratory.  
Prerequisite: course 101 is recommended.
- 165B. Theory of Gymnastics. (3) II. Miss COBB  
Lectures and laboratory.  
Recommended: course 101. Course 165A is not prerequisite to 165B.
166. Theory of Individual Athletics. (2) II.  
Mrs. GLASS, Miss COLEMAN, Miss BARTLETT  
(Formerly numbered 171.)  
Prerequisite: a working knowledge of the activities included.

## UPPER DIVISION COURSES FOR MEN AND WOMEN

101. Kinesiology and Body Mechanics. (4) I. Miss BARTLETT  
(Formerly numbered 151.)  
Lectures and laboratory.  
Prerequisite: Physiology 1A, 1C and Anatomy 102.  
The study and application of physical structure and muscular movements in various physical education activities. Description and application of certain anatomical concepts and physical laws to joint and muscular action. An analysis of certain deviations from physical growth norms.

\* Not to be given, 1947-1948.

102. Corrective Physical Education. (3) II. Miss BARTLETT  
 Prerequisite: course 101.  
 Development of programs for those individuals whom the physician has diagnosed as functionally deficient; particular attention to poor circulation, spinal deviations, etc. Analysis of causes underlying these conditions and direction of students into activities suitable to their needs.
105. Physiological Hygiene. (4) II. Mr. HENRY  
 (Formerly numbered 140.)  
 Lectures and laboratory.  
 Prerequisite: high school chemistry, Home Economics 10, Physiology 1A, 1c, Public Health 5A.  
 The physiology of exercise; diet, ventilation, training, fatigue and health in relation to physical activity. Individual differences in cardiovascular, and respiratory function.
110. Psychologic Bases of Physical Activity. (2) I. Mr. HENRY  
 (Formerly numbered 120.)  
 Prerequisite: Psychology 1A.  
 Motor learning, facilitation and inhibition, motivation, set, reaction time, coordination efficiency, fatigue, emotion and personality in relation to physical activity; the psychology of athletic performance.
130. History and Principles of Physical Education. (3) II. Mr. STONE  
 (Formerly numbered 175.)  
 Prerequisite: course 20, Physiology 1A-1C, and Psychology 1A.
131. The Organization and Administration of Physical Education.  
 131M (for Men). (4) I. Mr. COZENS, Mr. STONE  
 131W (for Women). (3) I. Mr. COZENS, Miss HODGSON  
 Prerequisite: course 130.  
 Organization of the instructional, intramural, recreational and competitive programs; criteria for the evaluation and selection of activities offered in each. The supervision and administration of gymnasium facilities and play areas; cost and maintenance of equipment; departmental organization, regulations and policies.
135. Tests and Measurements in Physical Education. (3) I. Mr. COZENS  
 (Formerly numbered 149.)  
 Prerequisite: Education 110 or consent of instructor.  
 The historical background of measurement in physical education; statistical techniques to be used in scoring tests; the construction and uses of tests; interpretation of results; evaluation of measures now available in the field; the administration of a testing program.
140. Community Recreation. (2) II. Mrs. GLASS  
 Prerequisite: upper division standing.  
 The meaning and scope of recreation in the leisure time life of the American people. Purposes and programs of agencies concerned with recreation. Consideration of special types: industrial, commercial, home and neighborhood. Problems of leadership. Critical evaluation of representative surveys.
- NOTE.—Course 140 is not open to students who have taken courses 143A or 143B; and the latter are not open for full credit to students who have taken course 140.

- 143A. Theory and Principles of Recreation. (3) I. Miss COBB  
Prerequisite: upper division standing.  
The meaning and significance of leisure in modern society; essential characteristics and uses of recreation; theories of play; the recreation movement in the United States.
- 143B. The Organization and Administration of Recreation. (3) II. Mr. MILLER  
Prerequisite: course 143A.  
Community interrelationships affecting recreation; the recreation program; areas and facilities and their operation, recreation organization; financial support, records, personnel administration, publicity, and public relations.
- 144A. Field Laboratory Course. (No credit.) Miss COBB, Mrs. GLASS, Mr. NEWSOM, Mr. PEASE  
Prerequisite: completion of the lower division requirements of the group major in recreation.  
A minimum of six weeks' full-time field experience, or its equivalent, in a variety of recreational assignments based on the needs and experience of the student.
- 144B. Field Laboratory Course. (No credit.) Miss COBB, Mrs. GLASS, Mr. NEWSOM, Mr. PEASE  
Prerequisite: course 144A.  
A continuation of course 144A including additional field experience in recreational activities.
199. Special Study for Advanced Undergraduates. (1-5) I and II. The STAFF (Mr. COZENS in charge)  
Prerequisite: senior standing and the permission of the department.  
Only specially qualified students will be admitted.

## METHODS COURSES FOR MEN

- 301A. The Theory and Teaching of Gymnastics and Mass Athletics. (1) I and II. Mr. PEASE  
One lecture and two laboratory hours to be arranged.  
Prerequisite: course 1 in body building.
303. The Theory and Teaching of Track and Field Events. (1) II. Mr. KEENEY  
One lecture and two laboratory hours to be arranged.
304. The Theory and Teaching of Baseball. (1) II. Mr. EVANS  
One lecture and two laboratory hours to be arranged.
305. The Theory and Teaching of Basketball. (1) I. Mr. NEWSOM  
One lecture and two laboratory hours to be arranged.  
Prerequisite: course 1 in basketball.
306. The Theory and Teaching of Court Sports. (1) I. Mr. MILLER  
One lecture and two laboratory hours to be arranged.  
Prerequisite: course 1 in tennis or consent of instructor.
308. The Theory and Teaching of Boxing and Wrestling. (1) I and II. Mr. STONE  
Prerequisite: course 1 in wrestling.

*Physical Education*

310. The Theory and Teaching of Swimming, Diving and Water Polo. (1) I and II. Mr. HEWITT  
One lecture and two laboratory hours to be arranged.  
Prerequisite: course 1 in swimming.
311. The Theory and Teaching of Lifesaving and Water Safety. (1) I and II.  
One lecture and two laboratory hours to be arranged. Mr. HEWITT  
Prerequisite: course 310 or the equivalent.
313. The Theory and Teaching of American Football. (1) II.  
One lecture and two laboratory hours to be arranged. Mr. WALDORF
320. Theory and Practice of Officiating in Football and Basketball. (1) I.  
One lecture and two laboratory hours to be arranged. Mr. NEWSOM
- †322. The Theory and Teaching of Field Sports. (1) II. Mr. NEWSOM  
One lecture and two laboratory hours to be arranged.  
Prerequisite: consent of instructor.

## METHODS COURSE FOR MEN AND WOMEN

343. The Theory and Teaching of Recreational Activities. (1) II.  
Mr. PEASE, Miss DARROW  
Discussion of and participation in the organization and direction of recreational activities including social and group games, rhythms and dances, parties for mixed groups, and games of low organization. Lectures, demonstrations, and reading assignments.

## METHODS COURSE FOR WOMEN

360. The Teaching of Physical Education. (2) II. Miss HODGSON  
(Formerly numbered 300.)  
One conference hour a week, and one period of directed teaching daily for ten weeks.  
Prerequisite: courses 130, 160A, 165A-165B.

## GRADUATE COURSES FOR MEN AND WOMEN

- 260A-260B. Seminar in Physical Education. (2-2) Yr.  
Mr. COZENS, Miss ESPENSCHADE, Miss HODGSON, Mr. HENRY  
(Formerly numbered 250A-250B.)  
NOTE.—Course 260B will also be offered in the fall semester and 260A in the spring semester.  
The meaning, methods, and techniques of research procedure as applied to physical education; a critical review of selected studies, literature, practices and procedures in the field; application of this training to the independent solution of a problem.
- †231. Administration of Physical Education. (2) I. Mr. COZENS  
(Formerly numbered 255.)
290. Research. (1-6) I and II.  
Mr. COZENS, Miss ESPENSCHADE, Mr. HENRY, Miss HODGSON  
(Formerly numbered 256.)

---

† To be given if a sufficient number of students enroll.

## PHYSICS

- LUIS W. ALVAREZ, Ph.D., Professor of Physics.  
 RAYMOND T. BIRGE, Ph.D., Professor of Physics (Chairman of the Department).  
 ROBERT B. BRODE, Ph.D., Professor of Physics.  
 FRANCIS A. JENKINS, Ph.D., Professor of Physics.  
 ERNEST O. LAWRENCE, Ph.D., Sc.D., LL.D., Professor of Physics and Director of the Radiation Laboratory.  
 VICTOR F. LENZEN, Ph.D., Professor of Physics.  
 LEONARD B. LOEB, Ph.D., Professor of Physics.  
 EDWIN M. McMILLAN, Ph.D., Professor of Physics.  
 EMILIO SEGRÈ, Ph.D., Professor of Physics.  
 HARVEY E. WHITE, Ph.D., Professor of Physics.  
 WILLIAM H. WILLIAMS, Graduate, United States Military Academy, Professor of Physics.  
 RALPH S. MINOR, Ph.D., Professor of Physics and Optometry, Emeritus.  
 HIRAM W. EDWARDS, Ph.D., Associate Professor of Physics.  
 WILSON M. POWELL, Ph.D., Associate Professor of Physics.  
 WILLIAM B. FRETTER, Ph.D., Assistant Professor of Physics.  
 AUGUST C. HELMHOLZ, Ph.D., Assistant Professor of Physics.  
 WOLFGANG PANOFSKY, Ph.D., Assistant Professor of Physics.  
 LESTER L. SKOLIL, M.A., Associate in Physics.  
 HERSCHEL SNODGRASS, M.S., Associate in Physics.

- ROBERT SERBER, Ph.D., Professor of Physics, Radiation Laboratory.  
 ROBERT L. THORNTON, Ph.D., Professor of Physics, Radiation Laboratory.

## MEDICAL PHYSICS

- JOSEPH G. HAMILTON, M.D., Associate Professor of Medical Physics, Experimental Medicine, and Radiology.  
 JOHN H. LAWRENCE, M.D., Associate Professor of Medical Physics and Experimental Medicine.  
 JOHN W. GOFMAN, M.D., Ph.D., Assistant Professor of Medical Physics.  
 HARDIN B. JONES, Ph.D., Assistant Professor of Medical Physics and Physiology.  
 CORNELIUS A. TOBIAS, Ph.D., Assistant Professor of Medical Physics.

*Letters and Science List.*—All undergraduate courses in physics (except 129 at Davis) are included in the Letters and Science List of Courses. For regulations see page 82.

*Departmental Major Adviser:* Mr. LOEB, Mr. WHITE.

*Preparation for the Major.*—Required: Physics 4A-4B-4C or the equivalent (under special circumstances courses 2A-2B and 3A-3B may be accepted); Chemistry 1A-1B, Mathematics C, 3A-3B, 4A-4B, or their equivalents. Recommended: Mathematics 8, and a reading knowledge of French and German.



*The Major.*—The major must include courses 105A–105B, 108B, 110A–110B, 115, 121, and Mathematics 110A–110B (Mathematics 119A–119B may be substituted for 110A–110B). The department will certify to the completion of the major program for graduation only on the basis of at least a C average in the upper division courses taken in the department. Students who cannot maintain such an average may be required at any time to withdraw from the major in Physics.

*Engineering Physics.*—The College of Engineering with the coöperation of the Physics Department offers a curriculum in Engineering Physics leading to the degree of Bachelor of Science. (See page 110.)

*Honors.*—No special courses are given for honor students. Such students may do special work in course 199.

#### LOWER DIVISION COURSES

Courses 4A, 4B, 4C are fundamental and are designed to meet the needs of students whose major is physics and of students preparing for applications of physics in the Colleges of Engineering and Chemistry. After completing 4A, the order of taking 4B, 4C is immaterial.

Prerequisite for all lower division courses except course 10A–10B: (1) either high school physics or chemistry or Physics 10, (2) trigonometry (may be taken concurrently). Prerequisite for course 10A–10B: elementary algebra and plane geometry.

2A–2B. General Physics Lectures. (3–3) Yr. Beginning each semester.

Mr. EDWARDS, Mr. POWELL, Mr. SKOLL, Mr. WHITE

Three lectures and one discussion section weekly.

Elective in the College of Letters and Science. Required for premedical students and students in architecture.

Mechanics, properties of matter, heat, sound, light, electricity and magnetism, atomic and nuclear physics.

3A–3B. General Physics Laboratory. (1–1) Yr. Beginning each semester.

Mr. SNODGRASS

Required for premedical students. Recommended for all students who elect course 2A–2B.

Mechanics, properties of matter, heat, sound, light, electricity and magnetism, atomic and nuclear physics. Experimental work planned to accompany the lectures in course 2A–2B.

4A. General Physics. (4) I and II.

Mr. BRODE, Mr. FRETTER, Mr. LENZEN, Mr. SEGRÈ

Three lectures and one three-hour laboratory period.

Open to students in all colleges. Together with course 4B–4C, required for students in the College of Letters and Science whose major subject is physics, and for students in engineering and chemistry

Prerequisite: Mathematics 3A–3B, or its equivalent. Mathematics 3B may be taken concurrently.

Mechanics, properties of matter.

4B. General Physics. (4) I.

Mr. LOEB, Mr. POWELL

Three lectures and one three-hour laboratory period.

Prerequisite: course 4A.

Open to students in all colleges. Required for students in the College of Letters and Science whose major subject is physics, and for students in engineering and chemistry.

Electricity and magnetism.

- 4c. General Physics. (4) II. Mr. ALVAREZ, Mr. JENKINS  
 Three lectures and one three-hour laboratory period.  
 Prerequisite: course 4A.  
 Open to students in all colleges. Required for students in the College of Letters and Science whose major subject is physics, and for students in engineering and chemistry.  
 Heat, wave motion, sound and light.
- 10A-10B. Descriptive Introduction to Physics. (2-2) Yr. Mr. HELMHOLZ  
 A brief presentation of some of the more important phenomena in physics, with experimental illustrations. Open to students with or without high school physics, but not open to those who have had a course in college physics.
24. Supplementary Laboratory Courses in General Physics. (1)  
 LOWER DIVISION STAFF (Mr. LENZEN in charge)  
 These courses are intended primarily for students entering the University with partial credit in general physics and are part of the regular work of courses 4A, 4B, 4C in the semester indicated for each. Students should enroll under one or more of the following numbers:  
 24A. Mechanics and Properties of Matter. (1) I and II.  
 24B. Electricity and Magnetism. (1) I.  
 24C. Heat, Wave Motion, Sound and Light. (1) II.
- 32-34. Supplementary Lecture Courses in General Physics.  
 LOWER DIVISION STAFF (MR. LENZEN in charge)  
 These courses are intended primarily for students entering the University with partial credit in general physics. Courses 32A, 32B cover part of the lecture work in 2A-2B, whereas courses 34A, 34B, 34C cover the lecture work only of 4A, 4B, 4C, respectively. Students should enroll under one or more of the following numbers:  
 32A. Mechanics, Properties of Matter, Sound and Heat. (2) I and II.  
 32B. Light, Electricity and Magnetism. (2) I and II.  
 34A. Mechanics and Properties of Matter. (3) I and II.  
 34B. Electricity and Magnetism. (3) I.  
 34C. Heat, Wave Motion, Sound and Light. (3) II.
- 41A. Properties of Matter. (1) I and II. Mr. LENZEN  
 Equivalent to part of 4A. Students enrolled under 41A will attend the lectures and laboratory of 4A, but will be held only for the portion equivalent to the former 1B, namely, Properties of Matter
- 41B. Heat. (1) II. Mr. JENKINS  
 Equivalent to part of 4C. Students enrolled under 41B will attend the lectures and laboratory of 4C, but will be held only for the portion equivalent to the former 1B, designated Heat.
- 41d. Supplementary Lecture and Laboratory Course in General Physics. (3) II.  
 Mr. JENKINS, Mr. ALVAREZ  
 Students enrolled under 41d will attend the lectures and laboratory of 4C, but will be held only for the portion equivalent to the former 1D, namely, Wave Motion, Sound, and Light.

## UPPER DIVISION COURSES

Courses 4A, 4B, 4C and differential and integral calculus are prerequisite to all upper division courses except to course 108A-108B, Sec. 2.

- 104A-104B. Vector Analysis. (3-3) Yr. Mr. WILLIAMS  
 Elements of vector and tensor analysis and their applications to physics, particularly those branches in which the idea of a field is fundamental. Emphasis on the importance of an invariative formulation of physical laws.
- 105A-105B. Analytic Mechanics. (3-3) Yr. Mr. HELMHOLTZ  
 Fundamental principles of Newtonian mechanics.
- 108A. Geometrical Optics. (3) I. Mr. WHITE  
 Lectures and laboratory.  
 Prerequisite: courses 2A-2B, 3A-3B.  
 Geometrical methods applied to the optics of mirrors, prisms, and lenses.
- 108B. Physical Optics. (3) I and II. Mr. FRETTER, Mr. JENKINS, Mr. WHITE  
 Lectures, I: Sec. 1, Mr. Jenkins; II: Sec. 1, Mr. Fretter; Sec. 2, Mr. Fretter.  
 Two lectures and one three-hour laboratory period.  
 Section 2 open only to students in optometry.  
 Course 108A is not prerequisite to 108B.  
 The phenomena of diffraction, interference and polarization of light, and their applications.
- 110A-110B. Electricity and Magnetism. (3-3) Yr. Mr. BRODE, Mr. POWELL  
 110A. I: Mr. Powell; II: Mr. Brode.  
 110B. I: Mr. Brode; II: Mr. Powell.  
 Elementary and mathematical theory of electrostatics, magnetostatics, magnetism, steady and varying currents, electron theory, and electromagnetic waves.
- 110C. Advanced Electrical Laboratory. (1) I and II.  
 Prerequisite: course 121. Mr. BRODE, Mr. PANOFSKY  
 The use and calibration of precision electrical instruments and electronic devices.
- 110D. Modern Physics Laboratory. (1) I and II. Mr. BRODE, Mr. PANOFSKY  
 Prerequisite: course 121.  
 The experimental foundation for the theory of atomic structure.
112. Heat. (3) I and II. Mr. FRETTER, Mr. LOEB  
 I: Mr. Fretter; II: Mr. Loeb.  
 The thermal properties of matter, with an introduction to the mathematical theory of heat conduction, the kinetic theory of matter, and thermodynamics.
114. Sound. (2) I. Mr. McMILLAN  
 Theory of vibrations and wave motion, with applications to acoustics.
115. Introduction to Quantum Mechanics. (2) I and II.  
 I: Mr. Segrè; II: Mr. McMillan. Mr. SEGRÈ, Mr. McMILLAN  
 Prerequisite: courses 105A, 121.  
 The classical background, basic ideas and methods of quantum mechanics, with applications to atomic physics.

121. Introduction to Atomic Structure. (3) I and II. Mr. LOEB, Mr. SEGRÈ  
I: Mr. Loeb; II: Mr. Segrè.  
An introduction to atomic physics treating cathode and positive rays, the electron, thermionic emission, the photoelectric effect, the structure of the atom, and the interpretation of spectra, and X rays.
122. Discharge Through Gases. (3) II. Mr. LOEB  
Currents in gases, nature and property of ions, ionization by collision, spark, arc, and glow discharges.
124. Radioactivity and Nuclear Structure. (3) I and II. Mr. ALVAREZ  
Prerequisite: course 121.  
Discovery of radioactivity, nature of radioactivity,  $\alpha$ ,  $\beta$ , and  $\gamma$  rays, theory of successive transformation, artificial transmutations, nuclear structure.
125. Introduction to Medical Physics. (1) I. Mr. JONES, Mr. JOHN LAWRENCE  
Application of recent advances in nuclear physics to biological and medical problems.
126. Biological Applications of Artificial Radioactivity. (3) II.  
Lectures and laboratory. Mr. HAMILTON, Mr. TOBIAS  
Prerequisite: Chemistry 1A-1B, course 2A-2B, and one of the following: Zoölogy 1A-1B, Physiology 1A-1C, or Botany 1.  
The theory and methods used in the applications of artificial radioelements to research problems in the biological sciences.
127. Biophysics. (2) II. Mr. TOBIAS  
Prerequisite: courses 4A, 4B, 4C; Chemistry 1A, 1B, 8; analytic geometry and calculus. Recommended: 12 units of biology and Physics 110A-110B, 112, 121, 125.  
Application of modern physical concepts and experimental methods to the problems of large molecules and their biological functions.
199. Special Study for Advanced Undergraduates. (1-5) I and II.  
The STAFF (Mr. BIRGE in charge)  
All special work of upper division grade not included in courses announced above. Designed to introduce students to advanced topics and to the technique and methods of research. Credit value to be fixed in each case.

## GRADUATE COURSES

Concerning conditions for admission to graduate courses, see page 156.

- 204A-204B. The Reduction of Observations. (2-2) Yr. Mr. BIRGE  
Instruments and methods, analytical and graphical, employed in reduction of data to final results, and errors of the results—including numerical interpolation and integration, theory of least squares, theory of errors.
- 205A. Advanced Dynamics. (3) I. Mr. LENZEN  
Prerequisite: course 105A-105B.  
The generalized methods of Lagrange, Hamilton, and Jacobi.
- \*205B. Advanced Dynamics. (3) II. Mr. LENZEN  
Prerequisite: course 105A-105B or equivalent. Course 205A is not prerequisite to 205B.  
Theory of elasticity and hydrodynamics.

\* Not to be given, 1947-1948

- 208A-208B. Advanced Physical Optics. (2-2) Yr. Mr. BIRGE, Mr. JENKINS  
 208A. Mr. Jenkins.  
 208B. Mr. Birge.  
 Prerequisite: course 108B.  
 A résumé of the more important experimental and theoretical material concerning the properties of light, when treated as a wave motion.
- 210A-210B. Theory of Electricity and Magnetism. (2-2) Yr. Mr. PANOFSKY  
 Prerequisite: course 110A-110B and a working knowledge of differential equations.  
 Classical description of the electromagnetic field, including special relativity and electron theory.
- 211A. Spectroscopy and Atomic Structure. (3) II. Mr. JENKINS  
 Prerequisite: courses 108B, 121.  
 A summary of the applications of optical and X-ray spectra to the investigation of the structure of atoms, diatomic molecules, and nuclei.
212. Thermodynamics. (3) I and II. Mr. WILLIAMS  
 The principles of thermodynamics, based upon the first and second laws. The thermodynamic investigation of the equilibrium states of various physical systems. Applications to radiation. A brief discussion of the so-called third law.
219. Kinetic Theory. (3) II. Mr. LENZEN  
 Classical kinetic theory and its explanation of the properties of matter. Introduction to statistical mechanics and the statistical interpretation of thermodynamics. Modification of the classical treatment by quantum theory. Bose-Einstein and Fermi-Dirac statistics.
- 221A-221B. Theoretical Atomic Physics. (3-3) Yr. \_\_\_\_\_  
 Physical principles of quantum theory, correspondence, complementarity; atomic states and transitions; elementary atomic and nuclear collision problems.
- \*222. Mathematical Methods of Theoretical Physics. (3) II. \_\_\_\_\_  
 The setting up and solution of differential and integro-differential equations; statistical and algebraic methods for the treatment of problems of physics.
- 223A-223B. Methods of Theoretical Physics. (3-3) Yr. \_\_\_\_\_  
 Systematic development of methods of quantum mechanics, electromagnetics, and statistical mechanics; methods of group theory in atomic problems; field theories.
224. Nuclear Physics. (3) II. Mr. SEGRÈ  
 Prerequisite: a knowledge of the elements of quantum mechanics.  
 The structure of the nucleus. Spontaneous nuclear transformations and radiations accompanying them. Induced nuclear reaction. Neutron physics.
230. Electrodynamics. (3) II. Mr. SERBER  
 Prerequisite: course 210A-210B.  
 Electrodynamics, radiation, and relativity.

---

\* Not to be given, 1947-1948.

290. Seminar. (1-3) I and II.

The STAFF (Mr. BIRGE in charge)

Advanced study in various fields of modern physics. Topics will vary from year to year. The program for 1947-1948 will probably include Seminar in Theoretical Physics (I and II, \_\_\_\_\_, \_\_\_\_\_), Cosmic Rays (I and II, Brode), Discharge Through Gases (I and II, Loeb), Experimental Techniques of Nuclear Physics (II, McMillan).

295. Research. (1-6) I and II.

The STAFF (Mr. BIRGE in charge)

COURSES IN OTHER DEPARTMENTS

The Theory of Waves in an Elastic Medium. (See Geology 204.)

Advanced Seismometry. (See Geology 217.)

## PHYSIOLOGY

## A Division of the Medical School

I. LYON CHAIKOFF, M.D., Ph.D., Professor of Physiology.

SHERBURNE F. COOK, Ph.D., Professor of Physiology and Lecturer in Optometry.

JAMES M. D. OLMSTED, Ph.D., Sc.D., Professor of Physiology (Chairman of the Division).

LESLIE L. BENNETT, M.D., Ph.D., Assistant Professor of Physiology.

D. HAROLD COPP, M.D., Ph.D., Assistant Professor of Physiology.

CECIL ENTENMAN, Ph.D., Lecturer in Physiology.

HARDIN B. JONES, Ph.D., Assistant Professor of Medical Physics and Assistant Professor of Physiology.

GORDON L. WALLS, Sc.D., Associate Professor of Physiological Optics and Optometry, and Lecturer in Physiology.

*Letters and Science List.*—All undergraduate courses in physiology except 115 are included in the Letters and Science List of Courses. For regulations governing this list, see page 82.

*Departmental Major Adviser:* Mr. OLMSTED.

*Preparation for the Major.*—Required: course 1A-1C (5) or Zoölogy 1A-1B (8); Physics 2A-2B (6); Chemistry 1A-1B (10), 8 (3). Recommended: Anatomy 102; Chemistry 5 and 109; a knowledge of calculus; and a reading knowledge of French and German.

*The Major.*—The major must include courses 100A (3), 100B (3), 110A-110B (6), 112 (3); the following courses, if they are given while the student is in the upper division: 104A (2), 106 (2); sufficient additional units to make up the required 24 units may be selected from upper division courses in related departments, subject to the approval of the Chairman.

For fees charged in the Medical School see the ANNOUNCEMENT OF THE MEDICAL SCHOOL.

## LOWER DIVISION COURSES

- 1A. Introductory Physiology, Lectures. (3) I. Mr. COOK  
Prerequisite: high school chemistry. Not open to entering freshmen.  
Enrollment will be limited to the capacity of the lecture room available.
- 1C. Introductory Physiology, Laboratory. (2) I. Mr. COOK and Assistants  
Prerequisite: course 1A completed or in progress.  
Each laboratory section will be limited to 90 students. Preference will be given to those for whose major the course is required.

## UPPER DIVISION COURSES

- \*100A. General and Comparative Physiology. (3) II. Mr. COOK  
Prerequisite: Chemistry 1A-1B, Physics 2A-2B and course 1A-1C, or Zoölogy 1A-1B.

\* Not to be given, 1947-1948.

- 100B. General and Comparative Physiology. (3) I. Mr. COOK  
Prerequisite: Chemistry 1A-1B, Physics 2A-2B and course 1A-1C, or Zoölogy 1A-1B.
- 100D. General and Comparative Physiology. (3) II. Mr. JONES and Mr. COOK  
Prerequisite: Chemistry 1A-1B, Physics 2A-2B and course 1A-1C, or Zoölogy 1A-1B. Lectures on the physiological effects of radiation.
- 101M. Human Physiology. (8) II.  
Mr. OLMSTED, Mr. CHAIKOFF, Mr. BENNETT,  
Mr. COPP, and Assistants  
Lectures, laboratory, and conferences or demonstrations.  
Prescribed for, and limited to, students in the first year of the Medical School. (See ANNOUNCEMENT OF THE MEDICAL SCHOOL for statement of fees.)
102. Physiology of Growth and Development in the Child. (2) I. Mr. COPP  
Prerequisite: course 1A, or Zoölogy 1A-1B, or the equivalent.  
Lectures on the physiological changes taking place during development of the child, including those occurring *in utero*, at birth, during growth and at puberty. The influence of heredity, congenital defects, nutrition, and other factors on growth and development will also be discussed.
- 104A. Physiology of the Endocrines. (2) I. Mr. CHAIKOFF  
Prerequisite: Physiology 1A-1C, or Zoölogy 1A-1B; or the consent of the instructor. Not open to students who have taken 110B.
- 104B. Physiology of the Endocrines, Laboratory. (2) I.  
Mr. ENTENMAN and Mr. CHAIKOFF  
Prerequisite: permission of instructor.
106. History of Human Physiology. (2) I. Mr. OLMSTED  
Lectures and reports.  
Prerequisite: upper division standing and a laboratory course in one of the following: physiology, biochemistry, anatomy, zoölogy.
- 110A-110B. Mammalian Physiology. (3-3) Yr.  
Mr. OLMSTED, Mr. CHAIKOFF, Mr. BENNETT, Mr. COPP  
Prerequisite: course 1A-1C or Zoölogy 1A-1B, Physics 2A-2B, Chemistry 1A-1B, 8. At the discretion of the instructor Biochemistry 103 or Zoölogy 1A-1B may be substituted for course 1A-1C.  
A comprehensive survey of mammalian physiology.
112. Mammalian Physiology. Laboratory only. (3) II.  
Mr. OLMSTED, Mr. CHAIKOFF, Mr. BENNETT,  
Mr. COPP, and Assistants  
Prerequisite: course 110A-110B completed or in progress.  
Course 112 covers the laboratory work of course 101M and is limited to 20 students.
115. Anatomy and Physiology of the Eye. (3) I. Mr. COOK, Mr. WALLS  
Lectures and laboratory.  
Prerequisite: course 1A-1C.  
Open to students in the Curriculum in Optometry and to those whose major is physiology.



199. Special Study for Advanced Undergraduates. (2-4) I and II.  
The STAFF (Mr. OLMSTED in charge)  
Prerequisite: courses 100A-100B, or 110A-110B.

## GRADUATE COURSES

Concerning conditions for admission to graduate courses, see page 156.

- 201A-201B. Research. (2-8; 2-8) Yr. The STAFF (Mr. OLMSTED in charge)
203. Seminar. (1) I. Mr. OLMSTED  
Designed to give students an acquaintance with recent physiological literature, and practice in making reports.
204. Seminar in the Endocrines. (1-3) I. Mr. CHAIKOFF  
Hours to be arranged.

## POLITICAL SCIENCE

CHARLES AIKIN, LL.B., Ph.D., Professor of Political Science.

RAYMOND G. GETTELL, M.A., Litt.D., Professor of Political Science.

JOSEPH P. HARRIS, Ph.D., Professor of Political Science.

HANS KELSEN, Ph.D., Professor of Political Science.

\*AUSTIN F. MACDONALD, Ph.D., Professor of Political Science.

<sup>1</sup>SAMUEL C. MAY, M.A., LL.B., Professor of Political Science and Director of the Bureau of Public Administration.

FRANK M. RUSSELL, Ph.D., Professor of Political Science (Chairman of the Department).

O. W. WILSON, A.B., Professor of Political Science.

DAVID P. BARROWS, Ph.D., LL.D., Litt.D., Professor of Political Science, Emeritus.

P. ORMAN RAY, Ph.D., LL.D., Professor of Political Science, Emeritus.

ERIC C. BELLQUIST, Ph.D., Associate Professor of Political Science (Vice-Chairman of the Department).

N. WING MAH, Ph.D., Associate Professor of Political Science.

DWIGHT WALDO, Ph.D., Assistant Professor of Political Science.

HAROLD WINKLER, Ph.D., Assistant Professor of Political Science.

RICHARD GRAVES, M.A., Lecturer in Public Administration.

HELEN V. HAMMARBERG, Ph.D., Lecturer in Political Science.

BOYNTON KAISER, A.B., Lecturer in Political Science.

GEORGE A. LIPSKY, A.B., Lecturer in Political Science.

L. DEMING TILTON, B.S., Lecturer in Political Science and Architecture.

*Letters and Science List.*—All undergraduate courses in political science except courses 167A-167B, 168A-168B, and 183 are included in the Letters and Science List of Courses. For regulations governing this list, see page 82.

*Departmental Major Advisers:* Mr. AIKIN, Mr. BELLQUIST, Mr. HARRIS, Mr. MAH, Mr. MAY.

*Preparation for the Major.*—Students are not accepted in the major in political science unless they have at least a C average in the prerequisite courses. Required: Courses 1, 2 (or 1A-1B as formerly given), and one of the following: Anthropology 1, Economics 1A-1B, Geography 1, 2, History 4A-4B, 8A-8B, 17A-17B, Philosophy 6A-6B, Political Science 8, 9, Social Institutions 2A-2B, 10A-10B.

*Fields of Study.*—Instruction in the department falls into the following main fields: Political Theory and Public Law; International Relations; Government and Politics; Public Administration. Emphasis in one field is required of each major.

*The Major.*—Candidates' programs must be submitted to a departmental adviser for approval. The department will certify to the completion of a major program for graduation upon fulfillment of the following requirements:

1. Completion of at least 24 units of upper division courses in the major, of which 18 must be in political science. The 6 upper division units which may

\* Absent on leave, 1947-1948.

<sup>1</sup> In residence fall semester only, 1947-1948.

be taken in other departments must normally represent courses related to the candidate's field of emphasis and must be approved by his departmental adviser.

2. Inclusion of at least one course in each of the following four groups:

I. 100, 111, 112A, 112B, 113, 114, 115, 117, 118A, 118B, 119, 156, 157A, 157B, 158.

II. 123, 124, 127, 128, 129, 133A, 133B, 135, 136, 138, 139, 142, 175.

III. 140, 141, 143, 144, 145, 146, 147, 148A, 148B, 150, 151, 152, 154, 159, 182

IV. 155, 162, 167A, 167B, 168A, 168B, 172, 174, 180, 181, 183, 184, 185.

3. The candidate must have at graduation at least a C average in all upper division courses included in the major. Students who do not maintain such an average may be required at any time to withdraw from the major in political science.

*Special Study Course.*—In the senior year students who have shown high attainment may pursue a systematic scheme of reading under the direction of some member of the department. The maximum credit for this course (199) will usually not exceed 4 units in any semester.

#### LOWER DIVISION COURSES

1. Introduction to Government. (3) I and II. Mr. BELLQUIST  
An introduction to the principles and problems of government, with particular emphasis on national government in the United States. This course is accepted in partial satisfaction of the American History and Institutions Requirement.  
Two lectures, and one section meeting weekly.
2. Introduction to Government. (3) I and II. Mr. LIPSKY  
A comparative study of constitutional principles, governmental institutions, and political problems of selected governments abroad.  
Two lectures, and one section meeting weekly.

#### UPPER DIVISION COURSES

Nonmajors who plan to take upper division courses in political science are strongly advised to take courses 1 and 2. Lacking these, or course 1A—1B, students with satisfactory equivalents may be admitted to upper division courses upon permission of instructor.

Unless otherwise stated, the first half of any course (A) is not prerequisite to the second half (B).

#### Group I—Political Theory and Public Law

100. Origins of Legal Institutions. (2) II. Mr. KELSEN  
The development and agencies of legal growth since primitive times and the interrelations between law and government. The early legal institutions of Europe and their influence on the modern juridical systems.
111. Theory of the State. (3) I. Mr. GETTELL  
The nature of the state, its organization and activities, and its relation to individuals and to other states.
- 112A—112B. Principles of Politics. (3—3) Yr. Mr. WINKLER  
An analysis of the philosophical implications of different forms of political authority such as democracy, liberalism, fascism, socialism, and communism. Problems of communication between political societies based on natural law and on reason of state. Evaluation of institutional developments in each system.

113. American Political Theory. (3) II. Mr. GETTELL  
Underlying theories and principles of American governmental policy.
114. Public Opinion. (3) I. Mr. BELLQUIST  
An analysis of the nature of public opinion and the methods of influencing it. The press, radio, and other instruments of communication; political parties and pressure groups; government and the formation of public opinion, informational agencies and activities. Emphasis will be given to problems of government and public opinion in war and peace.
115. Recent American Political Thought. (3) I. Mr. WINKLER  
An analytical appraisal of recent thinking about American politics. The broader implications of selected economic, religious, and literary works. Basic problems such as force and persuasion, majority rule and minority rights, public opinion and propaganda discussed in the search for a philosophy for democracy.
117. Elements of Jurisprudence. (3) I. Mr. KELSEN  
Fundamental legal principles, especially from the analytical, historical, philosophical, and sociological points of view. Particular attention will be given to modern theories of the function of law.
- 118A-118B. History of Political Theory. (2-2) Yr. Mr. GETTELL
- \*119. The Development of American Federalism. (3) II. ———
156. Comparative Administrative Law. (3) II. Mr. AIKIN  
The law of American public administration compared with that of France and of Great Britain.
- 157A-157B. Constitutional Law of the United States. (3-3) Yr. Mr. AIKIN  
(A) The federal system: Expansion of national authority; interstate barriers; separation of powers; admission of states to the Union; interstate compacts; constitutional amendments; treaties.  
(B) Rights of individuals; citizenship; suffrage; education; civil liberty; rights of accused; rights in war; slavery.
158. Government and Business. (3) I. Mr. AIKIN  
A study of the basis of national and state control of industry and agriculture, and the extent to which government may control competition, maintain prices, protect home industries, prevent waste, establish quality standards, regulate conditions of labor, etc.

### Group II—International Relations

123. International Politics. (3) I. Mr. RUSSELL, Mr. LIPSKY  
Rise and development of the Western State system; problems of nationalism and imperialism, particularly in connection with the peace settlement following the Second World War.
124. International Organizations. (3) II. Mr. RUSSELL  
International unions and commissions of the nineteenth century. First World War and establishment of the League of Nations; Second World War and formation of the United Nations and other agencies of international cooperation.

\* Not to be given, 1947-1948.

127. Theories of International Relations. (3) II. Mr. WALDO  
 Historical development and present range of political thought on relations between nations; origins and implications of the idea of sovereignty; the theory of an international community; theories of imperialism; Christian, Social, and Fascist ideas; geopolitical theories.
- \*128. Recent American Foreign Policy. (3) I. Mr. RUSSELL  
 Abandonment of isolation and assumption of leadership during the First World War. Return to isolationist policies in the Twenties. The neutrality acts of the Thirties. The Second World War and reversal of the policy of isolation.
- \*129. The Foreign Policies of the Great Powers. (3) II. Mr. RUSSELL  
 A study of the basic factors—historic, geographic, economic, strategic, and ideologic—that underlie and condition the foreign policies of the principal powers.
- 133A-133B. Principles of International Law. (3-3) Yr. Mr. KELSEN  
 The nature and sources of international law, its historical development, and its scope and function as a part of the contemporary legal system.
135. Political Development of China. (3) I. Mr. MAH  
 China as a nation in the Oriental world; impact of the Occident upon China and its repercussions; the internal and external aspects of the struggle for the creation of a modern democratic state; China in international politics.
136. Problems of the Pacific Area. (3) II. Mr. MAH  
 A discussion of the more important political issues and problems posed by the powers in their relations with each other in the Pacific.
138. International Relations of the Far East. (3) I. Mr. MAH  
 A general survey.
139. The Problem of Colonialism in the Far East. (3) II. Mr. MAH  
 A survey of colonial rule in the Far East, its changing status and resultant problems.
142. The Foreign Policy of the Soviet Union. (3) II. Mr. LIPSKY  
 Policy of the early years as affected by Marxian ideology, internal conditions, and foreign interference. Period of truce and limited cooperation with the Western Powers. Effect of the breakdown of the League. The Second World War and aftermath.
175. The Conduct of American Foreign Relations. (3) II. Mr. BELLQUIST  
 Diplomacy and the conduct and control of foreign relations. The Department of State and the Foreign Service. Case studies in recent diplomacy to illustrate policy formation and execution. Some comparative materials will be introduced but emphasis will be placed upon the United States.

### Group III—Government and Politics

140. Politics of Labor. (3) II. Mr. WINKLER  
 The political dynamics of American organized labor. Effect of the internal structure of labor on its external policies. Interaction between labor and other pressure groups, political parties, the government. International experiences of labor as the vanguard of liberal values.

\* Not to be given, 1947-1948.

141. Government of the Soviet Union. (3) I. Mr. LIPSKY  
The peoples and resources of the Union; the Bolshevik Revolution of November, 1917; and the experiment with Communism. The Communist ideology and its relation to the Soviet political and social structure. Evolution of Soviet internal policy.
143. Government of the British Dominions. (3) II. Mr. WALDO  
Development of the New British Empire and imperial relations of the self-governing dominions; government of Canada, Australia, New Zealand, and South Africa; conditioning historical, economic, and racial factors.
144. Government of Great Britain. (3) I. Mr. WALDO  
Origins, laws, and conventions of the British constitution; popular participation and political parties; parliament and the law-making process: king, prime minister, cabinet, civil service, and the organs and processes of administration; the judiciary; local government.
- \*145. Government and Policies of Japan. (3) II. Mr. MAH  
How Japan is governed, with consideration of major changes in her basic political structure and policies under Allied military occupation.
- \*146. Government and Policies of the Northern Countries. (3). Mr. BELLQUIST  
Constitutionalism and parliamentarism in the countries of Northern Europe—Denmark, Finland, Iceland, Norway, and Sweden. Development of their political institutions; wartime government in Northern Europe; their present governmental systems. Social legislation in Scandinavia; foreign policies; inter-Scandinavian cooperation.
- \*147. Government and Policies of Germany. (2) Mr. BELLQUIST
- \*148A-148B. Governments of Latin America. (3-3) Yr. Mr. MACDONALD  
The structure of Latin-American governments; parties and politics; governmental activities and problems. 148A emphasizes the A B C powers and Peru; 148B stresses Mexico and the Caribbean area, and traces the growth of Pan-Americanism.
150. Survey of American Governments. (3) I and II. Mr. LIPSKY  
Open to sophomores, juniors, and seniors, without prerequisites. Not open to Political Science majors nor to students who have taken courses 1 or 151. Accepted in partial satisfaction of the American History and Institutions Requirement.
- \*151. American National Government. (3) I. Mr. LIPSKY  
Origin and development of the constitution; powers, functions, and interrelations of executive, administrative, legislative, and judicial branches of the government; expansions of governmental activities; the national party system. Not open to students who have taken courses 1 or 150.
152. Political Parties in the United States. (3) II. Mr. HARRIS  
The role of political parties in American government; organization and activities of parties; nominating systems, the conduct of elections, campaign techniques, voting and non-voting, the spoils system; the influence of parties on public policy and administration.

\* Not to be given, 1947-1948.

- \*154. American Legislative Bodies. (3).  
 Structure, internal organization, limitations, and methods of transacting business in Congress, state legislatures, and city councils; influences at work in such bodies; character of the legislative output.
159. Basic Factors in American Politics. (3) I. Mr. WALDO  
 The constitutional-legal background of American political action; historical, social, and ideological factors affecting American politics; the politics of economic interests and geographical areas; emergent political patterns in the two-party system.
- \*182. Federal, State, and Local Relations. (3) I. Mr. HARRIS  
 The legal, financial, and administrative relationships and cooperative arrangements between the several levels of government; centralization, states' rights, uniform state laws, interstate cooperation; home rule and state supervision over cities and other local units of government.

#### Group IV—Public Administration

- \*155. National Administration in the United States. (3) II. Mr. MAY  
 History, organization, personnel, business methods and accomplishments of the various departments of the administrative branch of the United States Government, with special reference to the developments since 1933.
- \*162. Municipal Government and Administration. (3) I. Mr. MACDONALD  
 How cities are organized and what they are doing; municipal politics; relations of city and state; problems and activities of modern cities; traffic regulation, city and regional planning, zoning, police, and fire protection, budget making; the war against crime.
- 167A-167B. Principles of Police Organization and Administration. (3-3) Yr.  
 Enrollment only on consultation with the instructor. Mr. WILSON  
 167A is prerequisite to 167B.  
 An introduction to the principles of police organization and administration, discussion of police statistics, criminal identification and investigation, and educational methods for combating crime and vice, and controlling traffic.
- 168A-168B. Criminal Investigation and Identification. (2-2) Yr.  
 Mr. WILSON  
 Principles involved in the investigation of crime scenes; searching for, preserving, and recording physical evidence; interrogation of witnesses and suspects; the identification of persons and property, including a discussion of fingerprint identification.
- \*172. State Government and Administration. (3) II. Mr. MACDONALD  
 Organization of state government; federal-state relations; elections and politics; the courts; county government; current administrative problems such as state finance, the merit system, regulation of business, the state and labor, conservation of natural resources, health, welfare, correction.
- \*174. Public Expenditure and Financial Administration. (3) II.

\* Not to be given, 1947-1948.

180. American Administrative Theory. (3) I. Mr. WALDO  
A study of the theory of the American public administration movement; leading men, movements, and motifs in the development of administrative doctrine; review and criticism of administrative theory on such subjects as separation of powers and interrelation of functions; relationships of administrative theory and political theory.
181. Principles of Public Administration. (3) I. Mr. MAY  
Development of public administration and its relation to other branches of government; powers and liabilities of administrative officials; organization for different governmental functions, including line, staff, and auxiliary services, with special reference to budget and personnel administration and administrative planning.
183. Public Personnel Administration. (3) I. Mr. HARRIS  
A survey of public personnel administration, including the history of civil service, the personnel agency, classification, recruitment, examination techniques, promotion, service ratings, training, discipline, employee organizations, and retirement.
184. Advanced Principles of Public Administration. (3) II. Mr. HARRIS  
Advanced study of organization, financial administration, planning, overhead management, and the relationships of administration to the legislature, public opinion, and pressure groups.
185. Government Planning. (3) I. Mr. MAY  
An analysis of governmental agencies which conduct research and disseminate information concerning our physical, economic, and human resources, and stimulate, regulate, or control their use through orderly programs of national, regional, and local development directed toward optimum utilization and social stability in peace and mobilization for defense.

## GRADUATE COURSES

Concerning conditions for admission to graduate courses, see page 156. Only graduate students may enroll in seminars.

Unless otherwise stated, the first half (A) of any seminar is not prerequisite to the second half (B).

- \*200. Bibliography and Research Methods in Political Science. \_\_\_\_\_
210. Seminar in Fundamental Concepts in Modern Political Thought. (2) II.  
Mr. WINKLER  
An intensive examination of the roots and development of the utilitarian and idealist political philosophies. Fundamental ideas such as progress, freedom, justice, and equality analyzed with reference to the philosophic-dialectic in the German tradition and the economic-statistical in the British school.
- 212A-212B. Seminar in Contemporary Political Theory. (2-2) Yr.
214. The Scope and Method of Political Science. (2) I. Mr. GETTELL  
Mr. WINKLER  
Politics as the unifying focus of the social sciences. The philosophical, historical, juristic, psychological, sociological, and statistical approaches to political problems; the theory of causation in the social sciences.

\* Not to be given, 1947-1948.



- 232A-232B. Seminar in International Relations. (2-2) Yr. Mr. RUSSELL
- 233A-233B. Seminar in International Law. (2-2) Yr. Mr. KELSEN  
Technique of international law and legal problems of international organization; critical analysis of the Charter of the United Nations; discussion of some actual projects for world organization from a legal point of view.
- 238A-238B. Seminar in International Relations: The Far East and the Pacific Area. (2-2) Yr. Mr. MAH  
Open to students who have already had basic training in international politics of the Far East.
- 248A-248B. Seminar in Comparative Government. (2-2) Yr. Mr. BELLQUIST  
Studies in European political and constitutional developments during and after the war.
- \*250A-250B. Seminar in Governments and International Relations of Latin America. (2-2) Yr. Mr. MACDONALD  
Problems of government, politics, and administration in Latin America; inter-American relations.
253. Seminar in Comparative National Administration. (2) II. Mr. WALDO  
Comparative studies of national administration in relation to constitutional structures, economic systems, historical traditions, and cultural patterns.
- 255A-\*255B. Seminar in Federal Administration. (2-2) Yr. Mr. MAY  
Special studies in problems of federal administration.
- 257A-257B. Seminar in Constitutional and Administrative Law. (2-2) Yr. Mr. AIKIN  
Fundamental principles of constitutional law; leading cases; judicial decisions affecting the liabilities, rights, duties, and procedure of governmental officers and agencies.
- \*259A-259B. Seminar in American Politics. (2-2) Yr. ———
261. Seminar in Municipal Administration. (2) I. Mr. GRAVES
- 264A-264B. Seminar in Planning. (2-2) Yr. Mr. TILTON  
Principles and methods of governmental planning, with particular reference to the work of federal, state, and local planning agencies in California.
- 267A-267B. Seminar in Police Administration. (2-2) Yr. Mr. WILSON
- \*272. Seminar in State Administration. (2) II. Mr. MAY
- 273A-273B. Research in Public Personnel Administration. (2-2) Yr. Mr. HARRIS, Mr. KAISER  
The first semester is devoted to an advanced study of the major aspects of public personnel administration; the second semester consists of research assignments on selected topics.  
Course 273A or equivalent training is prerequisite to 273B, or permission of the instructor.

---

\* Not to be given, 1947-1948.

\*274A-274B. Public Expenditure and Financial Administration. (2-2) Yr.  
Mr. HARRIS

\*275A-275B. Research in the Administration of Criminal Justice. (2-2) Yr.

281A-281B. Seminar in Public Administration. (2-2) Yr. Mr. HARRIS

The first semester is devoted to an advanced study of the major problems and processes of administration; the second semester is devoted to research assignments on selected topics.

#### COURSES COMMON TO ALL GROUPS

199. Special Study for Advanced Undergraduates. (1-4) I and II.  
The STAFF (Mr. WINKLER in charge)

298. Individual Study. (1-4) I and II. The STAFF (Mr. WINKLER in charge)

#### BUREAU OF PUBLIC ADMINISTRATION

The Bureau of Public Administration, in conjunction with the Library of Economic Research, maintains an extensive collection of current pamphlets, periodicals, and documents relating to the work of government, in Rooms 112-120, Library. Through its director and research staff, it offers to properly qualified graduate students opportunities for study and research in various fields of public administration, and coöperates with governmental agencies in placement. It is prepared to coöperate with upper division students in arranging combinations of existing courses leading toward particular types of governmental service.

Further information may be obtained by consulting the Director, Mr. Samuel C. May, Room 113, Library.

#### BUREAU OF INTERNATIONAL RELATIONS

The Bureau of International Relations, in rooms 207-208 South Hall, was established by the University in 1921. It provides facilities for upper division and graduate students and interested members of the faculty to enable them to pursue study and research in the field of international law and relations. Among other primary sources, it contains a complete set of official documents of the League of Nations, including its Treaty Series, the Publications of the Permanent Court of International Justice, and the documentation of the United Nations. In addition to the documentary collection, the Bureau has many important secondary works dealing with current international problems, a number of outstanding American and foreign periodicals, and certain American and English newspapers regarded as most useful in the field.

Further information may be obtained from Mr. F. M. Russell, 207 South Hall.

\* Not to be given, 1947-1948.

## PSYCHOLOGY

- OLGA L. BRIDGMAN, M.D., Ph.D., Sc.D., Professor of Psychology and Pediatrics.
- CLARENCE W. BROWN, Ph.D., Professor of Psychology.
- <sup>2</sup> WARNER BROWN, Ph.D., Professor of Psychology.
- EGON BRUNSWIK, Ph.D., Professor of Psychology.
- HAROLD E. JONES, Ph.D., Professor of Psychology.
- JEAN WALKER MACFARLANE, Ph.D., Professor of Psychology.
- DONALD W. MACKINNON, Ph.D., Professor of Psychology.
- \* EDWARD C. TOLMAN, Ph.D., Professor of Psychology.
- ROBERT CHOATE TRYON, Ph.D., Professor of Psychology (Chairman of the Department).
- GEORGE M. STRATTON, Ph.D., Professor of Psychology, Emeritus.
- EDWIN E. GHISELLI, Ph.D., Associate Professor of Psychology.
- DAVID KRECH, Ph.D., Associate Professor of Psychology.
- <sup>2</sup> R. NEVITT SANFORD, Ph.D., Associate Professor of Psychology.
- READ D. TUDDENHAM, Ph.D., Assistant Professor of Psychology.
- RHEEM F. JARRETT, Ph.D., Instructor in Psychology.
- ALEX C. SHERRIFFS, Ph.D., Instructor in Psychology.
- HAROLD M. HILDRETH, Ph.D., Visiting Professor of Psychology.
- EDWARD N. BARNHART, Ph.D., Lecturer in Psychology and Assistant Professor of Speech.
- NANCY BAYLEY (Nancy Bayley Reid), Ph.D., Lecturer in Psychology.
- HUBERT S. COFFEY, Ph.D., Lecturer in Psychology.
- ELSE FRENKEL-BRUNSWIK, Ph.D., Lecturer in Psychology.
- JANE HAMILTON, A.B., Lecturer in Psychology.
- ROBERT E. HARRIS, Ph.D., Lecturer in Psychology and Associate Professor of Medical Psychology.
- MARY C. JONES, Ph.D., Lecturer in Psychology.
- CATHERINE LANDRETH, Ph.D., Lecturer in Psychology.

*Letters and Science List.*—All undergraduate courses in this department except 3, 104, 116, 117, 185, and 186 are included in the Letters and Science List of Courses. For regulations governing this list, see page 82.

*Departmental Major Advisers:* Mr. KRECH, Mr. TUDDENHAM (Clinical Psychology); Miss BRIDGMAN, Mr. JARRETT; Graduate Advisers: Mr. BRUNSWIK, Mr. GHISELLI, Miss HAMILTON, Mr. JONES.

*Preparation for the Major.*—Required: courses 1A, 1B, and 5, and either Physiology 1A, 1C, or Zoölogy 1A-1B. Recommended: French, German, chemistry, physics, Speech 12, or Public Speaking 12. Note that second-year high school algebra or Mathematics D is prerequisite to course 5, and that Physiology 1A, 1C are not open to freshmen. For students who have had a course

<sup>2</sup> In residence spring semester only, 1947-1948.

\* Sabbatical leave in residence, 1947-1948.

elsewhere, related but not strictly equivalent to course 1B, an examination (without credit) will be required before admission to the major.

Courses 1B and 5 are not open to entering freshmen. The required physiology or zoölogy should, if possible, be included in the program of the freshman or sophomore years and must be completed before the beginning of the senior year.

*The Major.*—Required: a sequence of courses which must include courses 106A, 107, to be taken not later than the junior year, and 12 other units of upper division courses in psychology. (Speech 119 may be included in the "12 other units.") At least 6 of these 12 units must be taken after the completion of courses 106A and 107. The remaining 6 units may be chosen in whole or in part from upper division courses in psychology or, subject to approval, from the following: Agricultural Economics 113; Anatomy 102, 103; Business Administration 153; Economics 106, 150A, 150B, 180; Education 110, 113, 116; Home Economics 132, 133; Political Science 181, 183; Social Welfare 105, 106; Zoölogy 114; any upper division course in anthropology, philosophy, physiology, or sociology and social institutions. Attention of the student is directed to prerequisites for courses which may be elected in the major program.

For students intending to take the sequence of clinical courses the order is: courses 160 (I) and 162 (I and II) as juniors, and courses 163 (I and II) and 164 (I and II) as seniors.

In planning a major in psychology the student should note that four semesters of work are required in the upper division. Unless all the preparatory courses have been completed in the lower division more than four semesters may be required in the upper division.

The department will certify to the completion of a major program for graduation only on the basis of at least a C average in the upper division courses included in the major. Students who cannot maintain such an average may be required at any time to withdraw from the major in psychology.

*Honor Students.*—Candidates for honors should consult the chairman of the department. Honors are usually granted on the basis of the whole record of the student. The department extends to candidates for honors special privileges and guidance in experimental work and reading, arranges for conferences with the instructor in charge of the students' work, and does not always insist upon the completion of formal prerequisites. The attention of honor students is directed to course 199.

#### LOWER DIVISION COURSES

- 1A. General Psychology. (3) I and II. Mr. KRECH, Mr. W. BROWN  
Three lectures and section meeting weekly. Not open to freshmen.
- 1B. General Psychology. (3) I and II. Mr. C. W. BROWN  
A continuation of course 1A with more detailed treatment of important problems. Intended primarily for prospective major students.
2. Survey of Psychology. (3) I and II. Mr. SHERRIFFS, Mr. KRECH  
Prerequisite: course 1A. Not open for credit to students who have completed 1B.  
A continuation of course 1A intended primarily for students who will not continue in psychology. A survey of the special fields and applications of psychology.  
The sequence 1A-2 or 1A-1B will be accepted in fulfillment of requirement (e) for the degree of Associate in Arts,

## 3. Introduction to Applied Psychology. (3) I.

Mr. GHISELLI

Prerequisite: sophomore standing.

A survey of psychological problems involved in the selection of employees, industrial production, conditions of work, motivation of employees, advertising, selling, market research, measurement of public opinion, law, and highway safety.

## 5. Introduction to Psychological Measurements. (3) I and II.

Mr. JARRETT and Teaching Assistants

Three lectures, and one section meeting.

Open only to students whose major subject is psychology.

Prerequisite: second year high school algebra or Mathematics D, and course 1A completed or in progress. Not open to students who are taking, or have taken, another course in statistics.

Arrays of experimental measurements, central tendencies, variability, correlation, significance of measures; elementary reliability and validity of tests.

## UPPER DIVISION COURSES

Course 1A and junior standing are prerequisite to all upper division courses, except 180 and 185, for which course 3 may be used as prerequisite. For psychology majors 1B is prerequisite to all except 160, 180, 185 (students not majoring in psychology may substitute course 2 for 1B, with the consent of the instructor). Course 5 or its equivalent is prerequisite to all except 108A-108B, 120, 134, 160, 168, 180, 185.

## 104. Principles of Test Construction. (3) II.

Mr. C. W. BROWN

Lectures and demonstrations.

Prerequisite: course 5 or an equivalent course in statistics.

Methods of constructing and validating psychological tests and scales, devising adequate criteria, principles of item construction, item reliability and validity, determining optimal scoring and weighting, devising relative and absolute scales.

## 106A. Experimental Psychology. (3) I and II.

Mr. BRUNSWIK, Mr. W. BROWN, and Teaching Assistants

Lectures and laboratory.

Prerequisite: course 5 or an equivalent course in statistics.

A survey with performance of typical experiments on reaction tendencies, perception, learning and problem solving. Emphasis on methods of experimentation.

## \*106B. Experimental Psychology. (3) II.

Mr. W. BROWN and Teaching Assistants

Lectures and four hours laboratory to be arranged.

Individual laboratory problems.

## 107. Advanced Psychological Measurements. (3) I and II.

Mr. C. W. BROWN, Mr. JARRETT

Lectures and laboratory. Students will enroll for their sections on Friday and Saturday of the week of registration.

Prerequisite: course 5 or an equivalent course in statistics.

Reference points and units of measurement, correlation, reliability and validity, scoring of individual achievement, partial and multiple correlation, construction of scaled tests, representation of learning functions.

---

\* Not to be given, 1947-1948.

- 108A. Physiological Psychology. (3) I. Mr. JARRETT  
Lectures and laboratory. Enrollment limited to 20 students.  
Prerequisite: Physiology 1A or consent of instructor.
- \*108B. Physiological Psychology. (3) II. \_\_\_\_\_
- \*109. Measurement of Traits. (3) I. Mr. TRYON  
Prerequisite: course 107.  
Experimental evidence on interrelations between intelligence, emotion, temperament and attitudes; objective theories of ability; mental "factors"; theories of Thorndike, Spearman, Thomson, Kelley, et al.
112. Child Psychology. (2) I. Mr. JONES  
The development of motor functions, social and emotional traits, language, and mental abilities. Individual differences in development and performance, as related to physical, social and psychological factors.
113. Adolescence. (2) II. Mr. JONES  
A survey of current research, with particular reference to the analysis and interpretation of data from growth studies. Individual projects and reports.
115. Laboratory in Adolescent Development. (1) II. Mr. JONES  
Three hours to be arranged. Prerequisite: consent of instructor.  
Offered to a limited number of students also enrolled in course 113.
116. Tests and Measurements of Infants and Preschool Children. (1) I. Miss BAYLEY  
Instruction in the most commonly used techniques of measurement of physical, motor, and mental development, with evaluation and interpretation of test scores and measures of infants and young children.
117. Laboratory Tests and Measurements of Infants and Preschool Children. (1) I. Miss BAILEY  
Laboratory work at the Institute of Child Welfare, accompanying course 116. Admission only by permission of the instructor.
120. History of Psychology. (3) II. Mr. BRUNSWIK  
Prerequisite: twelve upper division units in psychology, or graduate standing in philosophy, biology or sociology.  
The major problems of modern psychology—perception, thinking, emotion, behavior, personality, physiological psychology, methods of psychology—will be traced from their beginnings to the present. Comparison of early speculative with modern scientific approach.
- \*126. Contemporary Psychology. (3) II. Mr. W. BROWN  
Prerequisite: at least 6 upper division units in psychology. Primarily for seniors and graduates.  
Reading and discussion of current books and monographs, affording a survey of contemporary aims, methods, and achievements.
128. Systems of Psychology. (3) I. Mr. BRUNSWIK  
Prerequisite: 12 upper division units in psychology, or graduate standing in philosophy, biology, or sociology.  
Introspective and behavioristic, structural, configurational and functional, peripheral, central depth-psychological and achievement-oriented approaches and contemporary schools of thought will be presented and discussed. The status of theory in modern psychology.

---

\* Not to be given, 1947-1948.

131. Perception. (3) II. Mr. BRUNSWIK  
Problems of figure-ground organization including geometrical illusions (Gestalt psychology), of the perception of space, of the thing-constancies, and of social perception will be demonstrated and theoretically discussed.
132. Thinking and Learning. (3) II. Mr. KRECH  
Survey of experimental material, both animal and human, available in the field. Attempt to formulate systematically a theory of learning and thinking.
134. Motivation. (3) I. Mr. TOLMAN  
The nature of primary and secondary drives; the theories concerning drives found in animal, child, experimental, social and abnormal psychology, and in philosophy.
136. Psychology of the Unconscious. (3) II. Mr. MACKINNON  
A consideration of the evidence for, and the nature and role of, unconscious psychological processes in behavior.
140. Personality Assessment. (3) I. Mr. MACKINNON  
Lectures and practicum.  
Prerequisite: senior or graduate standing and permission of the instructor.  
The rationale and practice of procedures for the diagnosis and assessment of personality.
141. Personality in Society and Culture. (3) I. Mr. MACKINNON  
A consideration of the social and cultural determinants of personality.
142. Opinions, Beliefs, and Attitudes. (3) I. Mr. KRECH  
Definition, how they function and develop; their role in social behavior, their control and change; techniques of measuring by polls, mass and field observations, questionnaires, projective material, and interviews.
- \*143. Propaganda. (3) Mr. KRECH  
Theory of suggestion, imitation, and propaganda; the function of speech in propaganda and communication; analysis of current propaganda techniques and objectives.
- Analysis of Communication Content (Speech 119). (3) II. Mr. BARNHART  
Introduction to research techniques in communication with special emphasis on content analysis and audience response. Individual and group research projects will be carried out by students under supervision.
- 145A. Social Psychology. (3) I. Mr. TRYON  
Sections to be arranged.  
Psychological nature of: society, its functions and instruments; social groups, their ways, sanctions, symbols, social controls; social status, prestige and mobility; social interaction, including conflict; social change. The person's adjustment to these phenomena.
- 145B. Social Psychology. (3) II. Mr. TRYON  
Consideration of special problems in social psychology. Individual projects and reports; lectures and discussions.
- \*146. Differential Psychology. (3) II. Mr. TRYON  
The origin and nature of psychological differences between individuals.

---

\* Not to be given, 1947-1948.

147. Group Dynamics. (3) I. Mr. COFFEY  
Lectures and laboratory.  
Ways in which groups may be utilized in the training and therapy of the individual. Review of the role of the group in the development of the individual, survey of pertinent literature, and actual experience with group techniques such as role playing, psychodrama, reality testing, as training and therapeutic devices.
- 148A. Personality. (3) II. Mr. SANFORD  
Prerequisite: Psychology 162 or 168 and senior or graduate standing.  
A survey of recent thought and research in the field of personality, with emphasis on dynamic and genetic problems.
- \*148B. Personality. (3) Mr. SANFORD
149. Dynamic Psychology. (3) II. Mr. MACKINNON  
Two hours of lecture, and four hours of laboratory work a week to be arranged.  
Prerequisite: senior or graduate standing and permission of the instructor.  
A general survey of the psychodynamics of behavior, with special emphasis upon the experimental literature.
- 150A. Animal Psychology. (3) II. Mr. TOLMAN  
General survey of the behavior of the higher animal forms.
- \*150B. Animal Psychology. (3) I. Mr. TOLMAN  
A more intensive survey of the experimental literature on learning, motivation and problem solving in the higher forms. Lectures and laboratory demonstrations.
- \*151. Experiments in Animal Psychology. (3) II. Mr. TOLMAN  
One lecture, and six hours laboratory to be arranged. Prerequisite: course 150A and the consent of the instructor.
160. Mental Deficiency. (3) I. Miss BRIDGMAN  
Prerequisite: course 1A.  
Mental deficiency and abnormality in children, including a consideration of tests used in clinical examinations.
162. Clinical Psychology. (3) I and II. Mr. TUDDENHAM, Mr. SHERRIFFS  
Prerequisite: courses 5, or equivalent, and 160, or 112, or Home Economics 132.  
Behavior of normal children. Dynamics of personality development.
163. Clinical Techniques. (3) I and II. Mr. COFFEY, Mr. SHERRIFFS  
Lecture and laboratory; four hours field work to be arranged.  
Prerequisite: courses 1B, 5, 160, 162, and consent of instructor.  
Consideration of outstanding types of clinical device for measurement, interview and observation.
164. Advanced Clinical Psychology. (3) I and II. Miss HAMILTON  
Lecture and laboratory.  
Prerequisite: courses 162, 163 and consent of instructor.

---

\* Not to be given, 1947-1948.



168. Abnormal Psychology. (3) II. Miss BRIDGMAN  
Prerequisite: 6 units of upper division psychology or, with consent of the instructor, premedical status.  
The relations of psychology to the psychoneuroses and insanity; the appearance of abnormal traits in incipient stages of mental disturbance.
180. Psychological Aspects of Advertising, Selling, and Market Research. (3) I. Mr. GHISELLI  
Prerequisite: course 1A or 3.  
A consideration of the application of psychological techniques and principles derived from controlled observation to the study of problems in advertising, selling, and market research. Field work.
185. Personnel and Industrial Psychology. (3) II. Mr. GHISELLI  
Prerequisite: courses 1A, 3 or Business Administration 153.  
A discussion of techniques for the selection and classification of employees, the psychological aspects of the study of work methods, conditions of work, training, employee motivation and morale.
186. Occupational Counseling and Classification. (3) II. Mr. GHISELLI  
Prerequisite: courses 162 or 185 and the permission of the instructor.  
For seniors and graduates.  
Principles of occupational counseling, nature and sources of occupational information, evaluation and use of standard occupational tests.
199. Special Study for Advanced Undergraduates. (1-5) I and II.  
The STAFF (Mr. C. W. BROWN in charge, fall semester;  
Mr. GHISELLI in charge, spring semester)  
By permission, honor students who are adequately prepared may carry on study or research under the guidance of a member of the department.

## GRADUATE COURSES

Concerning conditions for admission to graduate courses, see page 156. In addition, permission of the instructor in charge must be obtained and a comprehensive examination must be passed before enrollment.

213. Research. (1-6) I and II.  
The STAFF (Mr. BRUNSWIK in charge, fall semester;  
Mr. C. W. BROWN in charge, spring semester.)  
Hours by arrangement.  
Laboratory, library, or field work as the problem requires.
214. General Seminar. (No credit) I and II.  
The STAFF (Mr. GHISELLI in charge, fall semester;  
Mr. C. W. BROWN in charge, spring semester)  
Open to all students with full graduate standing in psychology, and to graduates similarly qualified in neighboring fields.
- Special Seminars. I and II:
- 214A. Abnormal Psychology. (2) Miss BRIDGMAN  
214B. Physiological Psychology. (2) Mr. C. W. BROWN  
214C. Experimental Psychology. (2) Mr. W. BROWN  
214D. Perception and Its Research Methodology. (2) Mr. BRUNSWIK

- 214E. Developmental Psychology. (2) Mr. JONES
- 214F. Clinical Psychology. (2) Mrs. MACFARLANE
- 214G. Animal Psychology. (2) Mr. TOLMAN
- 214H. Individual Differences. (2) Mr. TRYON
- 214K. Applied and Industrial Psychology. (2) Mr. GHISELLI
- 214L. Psychology of Personality. (2) Mr. SANFORD
- 214M. Social Psychology. (2) Mr. KRECH, Mr. TRYON
- 214N. Advanced Readings in Psychology. (1-2) Mr. C. W. BROWN
- 214O. Case Histories. (1-2)  
Mrs. MACFARLANE, Mr. SANFORD, Mr. COFFEY, Mr. TUDDENHAM,  
Mr. SHERRIFFS, Miss HAMILTON
- 214P. Projective Methods. (1-2) Mr. HARRIS, Miss HAMILTON
- 214Q. Medical Psychology. (1-2) Mr. HARRIS
- 214R. Group Dynamics and Group Therapy. (1-2) Mr. COFFEY
- 214S. Thematic Apperception. (1-2) Mr. SANFORD
- 214T. Dynamic Psychology. (2) Mr. MACKINNON

## PUBLIC HEALTH

- HAROLD B. GOTTAAS, Sc.D., Professor of Sanitary Engineering.  
 W. McDOWELL HAMMON, A.B., M.D., Dr.P.H., Professor of Epidemiology.  
 DOROTHY BIRD NYSWANDER (Dorothy Nyswander Palmer), Ph.D., Professor of Public Health Education.  
 EDWARD S. ROGERS, A.B., M.D., M.P.H., Professor of Public Health and Medical Administration.  
 ROBERT T. LEGGE, Ph.G., M.D., F.A.C.S., Professor of Hygiene, Emeritus, and Lecturer in Industrial Medicine, Emeritus.  
 MARGARET BEATTIE, M.A., Gr.P.H., Associate Professor of Public Health.  
 LEON LEWIS, B.S., M.D., Associate Professor of Industrial Health.  
 WALTER S. MANGOLD, B.S., Associate Professor of Public Health.  
 WILLIAM W. STILES, B.S., M.D., M.P.H., Associate Professor of Public Health.  
 EDITH LINDSAY, M.A., Ed.D., Assistant Professor of Public Health.  
 WILLIAM W. SAMPSON, Ph.D., Instructor in Public Health.  
 CHARLES R. NICEWONGER, M.A., Associate in Public Health.  
 MARY LOU SKINNER, B.S., M.P.H., Associate in Public Health.  
 WILLIAM F. TAYLOR, A.B., Associate in Public Health.

- 
- RICHARD A. BOLT, A.B., M.D., Dr.P.H., Lecturer in Public Health.  
 PETER COHEN, M.D., Lecturer in Public Health, for the spring semester.  
 HAROLD F. GRAY, M.S., Gr.P.H., Lecturer in Public Health.  
 NELL HOLLINGER, Ph.D., Lecturer in Public Health.  
 KARL F. MEYER, A.B., Dr.Phil. (Zurich), Dr.Med. h.c. (Zurich), Lecturer in Public Health.  
 WILLIAM C. REEVES, Ph.D., Lecturer in Public Health.  
 JAMES H. SKILLIN, M.S., Lecturer in Public Health.  
 TRACY I. STORER, Ph.D., Lecturer in Public Health.

*Letters and Science List.*—Courses 5A-5B, 21, 163A-163B are included in the Letters and Science List of Courses. For the regulations governing this list, see page 82.

## LOWER DIVISION COURSES

5A-5B. Elementary Public Health. (3-3) Yr.

Mr. STILES

Lectures, three hours.

Course 5A is prerequisite to 5B.

A survey of the entire field of public health, including a consideration of the evolution of disease prevention and control; the social, medical, and economic aspects of sickness, disability, and death.

11. Microbiology Applied to Environmental Sanitation. (1) II.  
(Formerly Bacteriology 5.) Miss EDDIE, Mr. MANGOLD  
Lectures and field trips.
16. Elementary Public Health Statistics and Epidemiology for Sanitarians.  
(2) I and II. Mr. STILES  
Lectures, one hour; laboratory, three hours.  
Enrollment limited to students in the Special Program for Sanitarians.  
The study of diseases as they affect the population, the factors which determine their distribution, and the collection and analysis of information concerning them.
21. Personal Health. (3) I. Miss LINDSAY  
(Formerly numbered 2.)  
Enrollment limited to students in the lower division.  
Scientific facts and their interpretation for the promotion and protection of the student's health and for the improvement of the health of the community.
49. Field Training Course. (No credit) I and II. Mr. MANGOLD  
Prerequisite: permission of the instructor.  
Field training in health departments and/or military establishments for learning administrative methods and practical procedures in environmental sanitation.

## UPPER DIVISION COURSES

105. Public Health Administration. (3) I and II. ———  
Prerequisite: course 5A-5B, or consent of the instructor.  
Lectures, reading, and individual reports in public health administration and procedures.
- †108. Advanced Problems in Public Health Administration. (1-5) I and II.  
(Formerly numbered 196.) Mr. ROGERS
111. Environmental Sanitation. (3) I and II. Mr. GRAY  
Fundamentals of housing, heating, ventilation, lighting, water supply, waste disposal, insect and rodent control, and control of milk and other food supplies.
- 113A. Principles and Practices in Sanitary Inspection. (3) I.  
Mr. MANGOLD, Mr. SKILLIN  
Prerequisite: course 111 or the permission of the instructor.  
Lectures, two hours; laboratory or field trips, three hours.  
Objectives and special techniques in general sanitation covering communicable disease control, water and sewage, housing, ventilation, lighting, and vector control.
- 113B. Principles and Practices in Sanitary Inspection. (3) II.  
Mr. MANGOLD, Mr. SKILLIN  
Prerequisite: course 111 or the permission of the instructor.  
Lectures, two hours; laboratory or field trips, three hours.  
Objectives and special techniques in food sanitation covering milk, meat, markets, restaurants, and processing plants.

---

† To be given if a sufficient number of students enroll.

115. Control of Rodents Affecting the Public Health. (2) I and II.  
Prerequisite: Permission of the instructor. Mr. SAMPSON  
The role of the common rodents in the transmission and causation of diseases of human beings and domesticated animals; other relations to human affairs; identification of species; principles governing control.
121. Child Hygiene. (3) II. Mr. COHEN  
(Formerly numbered 102.)  
Lectures, three hours; and conference hours.  
A consideration of conditions pertaining to the health of children from the time of conception to the end of puberty.
122. Individual Hygiene. (3) II. Miss LINDSAY  
(Formerly numbered 112.)  
The maintenance of optimal physical, mental, and nutritional status; the prevention and control of common deficiencies and abnormalities such as those related to nutrition, digestion, circulation, the central nervous system, vision, hearing, speech, and body mechanics.
123. Control of Venereal Diseases. (2) I and II. ———  
Prerequisite: permission of the instructor.  
Study of administrative methods, epidemiology, etiology, treatment, prophylaxis and health education pertaining to control of the venereal diseases in civilian and military communities.
131. Health Education Laboratory. (1) II. Miss NYSWANDER  
Prerequisite: open only to graduate students in public health who have been in the School of Public Health for one semester or who have permission of instructor.  
Emphasis will be placed on techniques of teaching health to adults through the media of radio, films, slides, posters, press, printed materials and lectures. Research in these fields will be evaluated and exercises in preparing and using materials will be included.
145. Community Control of the Communicable Diseases. (3) I and II. ———  
(Formerly numbered 115.)  
Lectures, three hours.  
The epidemiology and community control of communicable disease, including tuberculosis and the venereal infections.
- 147A. Epidemiology. (3) II. Mr. HAMMON, Mr. STILES  
(Formerly numbered 107A.)  
Lectures, two hours; laboratory, three hours.  
Prerequisites: course 164A and Bacteriology 101, or permission of instructor.  
Principles of epidemiological investigation, including the methods of collection and analysis of statistical data.
- 147B. Epidemiology. (4) I. Mr. HAMMON, ———  
(Formerly numbered 107B.)  
Lectures, two hours; laboratory, six hours.  
Prerequisite: course 147A.  
A study of the mass action of disease in the population, and the factors which determine its distribution.

- †148. Advanced Problems in Epidemiology. (1-5) I and II. Mr. HAMMON  
(Formerly numbered 197.)  
Prerequisite: course 147B, or permission of the instructor.
151. Public Health Laboratory Techniques. (8) II.  
(Formerly numbered 108.) Miss BEATTIE, Mr. NICEWONGER  
Lectures, three hours; laboratory, fifteen hours.  
Prerequisite: Bacteriology 101, and consent of the instructor.  
Enrollment limited to forty students. Laboratory diagnosis of communicable diseases.
152. Laboratory Procedure in Hematology. (3) I.  
(Formerly numbered 118.) Miss HOLLINGER, Mr. NICEWONGER  
Lecture, one hour; laboratory, six hours.  
Prerequisites: Biochemistry or advanced bacteriology.  
Designed to present the elements of hematology and technique useful in diagnostic laboratories.
153. Laboratory in Sanitary Practice. (4) I. Mr. SKILLIN  
Lectures, two hours; laboratory, six hours.  
Prerequisite: Bacteriology 101. Primarily for students in the Public Health Sanitarian curriculum, but open to others by permission of the instructor.  
Laboratory and field work with equipment and techniques useful to the sanitarian in his application of the principles of sanitary practice. Lectures and demonstrations covering processes and procedures encountered in various types of inspectional service.
154. Public Health Laboratory Procedures. (2) I and II. Mr. SKILLIN  
A study of public health laboratory procedures, methodology, significance, interpretation and reliability. A descriptive course with laboratory practice and demonstrations, designed to develop an understanding of the procedures and their public health significance rather than proficiency in laboratory methods.
- †158. Advanced Problems in Public Health Laboratory. (1-5) I and II.  
(Formerly numbered 193.) Miss BEATTIE  
Prerequisites: course 151, and the consent of the instructor.  
Special investigations of public health laboratory problems.
- 163A. Biometry. (2) I and II. \_\_\_\_\_  
(Formerly numbered 103A.)  
Lectures, two hours.  
Open only to students who have completed at least 8 units of laboratory courses in the biological sciences. Students who have completed courses in statistics may enroll only with the consent of the instructor.  
Elements of statistical analysis; introduction to the methods of statistical analysis and their applications in the fields of the biological sciences.
- 163B. Biometry. (2) II. \_\_\_\_\_  
(Formerly numbered 103B.)  
Lectures, two hours.  
Prerequisite: course 163A, or permission of the instructor.  
Consideration of the theories of sampling and measures of relationship as applied in the fields of public health, biology, and medicine.

---

† To be given if a sufficient number of students enroll.

- \*163c. Biometry. (2) I. \_\_\_\_\_  
 (Formerly numbered 103c.)  
 Lectures, two hours.  
 Prerequisite: course 163B, or permission of the instructor.  
 Consideration of the theories of small samples as applied in the fields of public health, biology, and medicine.
- 164A. Public Health Statistics. (3) I. \_\_\_\_\_  
 (Formerly numbered 104A.)  
 Lectures, one hour; laboratory, six hours.  
 Open only to students who have completed course 5A-5B, or who have the consent of the instructor.  
 An introduction to the collection, tabulation, and use of population data and vital statistics.
- 164B. Demography. (4) II. \_\_\_\_\_  
 (Formerly numbered 104B.)  
 Lectures, two hours; laboratory, three hours.  
 Prerequisite: course 164A, or consent of the instructor.  
 Statistical study and quantitative description of the population of a community based on data collected by enumeration, registration, and survey.
- †168. Advanced Problems in Biometry. (1-5) I and II. \_\_\_\_\_  
 (Formerly numbered 194.)  
 Prerequisite: course 163B.
- †169. Advanced Problems in Public Health Statistics and Demography. \_\_\_\_\_  
 (1-5) I and II. (Formerly numbered 195.)  
 Prerequisite: course 164B.
170. Introduction to Occupational Health and Industrial Hygiene. (2) I. \_\_\_\_\_  
 (Formerly numbered 112.) Mr. LEWIS  
 A survey of the field of industrial hygiene and occupational health problems. Discussion of public and private organizations concerned with the health of the industrial worker; common occupational hazards causing morbidity; industrial safety and environmental control; medical care and compensation for disability resulting from industrial accident and disease.
171. Industrial Environment Control: Sanitary Air Analysis. (2) II. \_\_\_\_\_  
 Mr. GOTTAAS  
 Prerequisites: Chemistry 5 or Civil Engineering 123 or equivalent; Physics 1C-1D or equivalent; Mechanical Engineering 103 or Civil Engineering 110.  
 Physical, chemical and sanitary analysis of the condition of the air and other environmental factors affecting the health and welfare of workers in industry. Application of principles of sanitation in industry.
172. Industrial Toxicology. (2) II. \_\_\_\_\_  
 Mr. LEWIS  
 Prerequisites: Chemistry 5 and 9 or equivalent; Physics 1C-1D or equivalent; Physiology 1A-1C or equivalent.  
 Chemical and clinical laboratory techniques applied to investigation of toxic manifestations of industrial hazards.
198. Directed Group Study. (1-5) I and II. \_\_\_\_\_  
 The STAFF (Mr. ROGERS in charge)

\* Not to be given, 1947-1948.

† To be given if a sufficient number of students enroll.

199. Special Study for Advanced Undergraduates. (1-5) I and II.  
The STAFF (Mr. ROGERS in charge)

## GRADUATE COURSES

201. Public Health Organizations and Programs. (2) I. Mr. ROGERS  
(Formerly numbered 215.)  
Lectures, two hours.  
History of public health; governmental and voluntary agencies and their activities; legal bases of public health administration; public health administration; public health personnel, their training and duties.
202. Public Health Administration. (4) II. Mr. ROGERS  
Prerequisite: course 105 or 201.  
Technical bases of public health administration; systematic consideration of administrative policies in public health. Each student will be obliged to present a project of his own choosing and acceptable to the instructor.
211. Sanitation. (3) I. Mr. GRAY  
Study of water supply and treatment, sewerage and sewage treatment, wastes collection and disposal, meat, milk and other food sanitation, housing, industrial sanitation, insect and rodent control, and related subjects.
212. Seminar in Analysis of Administration of Sanitary Inspection Services. (3) I. Mr. MANGOLD  
Prerequisites: courses 111, 113A, 113B or their equivalents.  
Critical analysis and evaluation of administrative organizations which deal with the duties of the sanitarian: state, county, and city bureaus of inspection; use and development of record forms; comparative study of sanitation laws and regulations, efficiency ratings, recruitment and training programs.
213. Seminar in Analysis of Sanitary Inspection Practices. (3) II. Mr. MANGOLD  
Prerequisite: courses 111, 113A-113B or their equivalent.  
Critical analysis and evaluation of the sanitary practices including field techniques and equipment used by sanitarians in the performance of their duties; scope and limitations under present standards; adequacy of these standards and newer trends.
- 229A-229B. Seminar in Maternal and Child Health. (2-2) Yr. Mr. BOLT
233. Group Work Procedures in Health Education. (2) II. MISS NYSWANDER  
Prerequisite: Open only to graduate students in public health.  
A consideration of the more usual techniques of group work together with investigations of the social and psychological factors which determine the effectiveness of group work in promoting public health activities.
234. Seminar in School Health Administration. (2) I. Miss NYSWANDER  
Prerequisite: Open to graduate students in the fields of public health and education who have permission of the instructor.  
Consideration of the principles basic to organization, administration and supervision of school health programs in elementary and secondary schools. Health services, health instruction, environmental factors, communicable disease control and hygiene of the school day. Students will undertake field studies.



241. **Biology of Infectious Diseases (Epidemiology).** (3) II. Mr. HAMMON  
Lectures and discussion total 48 hours per semester; one two-hour period and one one-hour period per week. Prerequisite: an adequate knowledge of infectious diseases. To be taken concurrently with course 251.  
Discussion of parasite, vector, reservoir host, and environment in relation to survival or interruption of the infection chain.
242. **Applied Epidemiology.** (2) II. Mr. HAMMON  
Lectures: one hour per week; laboratory, three hours per week.  
Prerequisite: courses 241, 251, 261.  
Methods used in collection of data, their analysis, interpretation, and reporting; study of type epidemics.
251. **Functions of the Public Health Laboratory.** (1) II. Miss BEATTIE  
Lecture and demonstration, sixteen sessions of one hour each. To be taken concurrently with course 241.  
Use of the public health laboratory; laboratory methods, collection and submission of suitable specimens, interpretation of results, special research problems in diagnosis.
261. **Public Health Statistics and Biometry.** (4) I. \_\_\_\_\_  
Primarily for students in the Health Administrators' curriculum, but open to others by permission of the instructor.  
Procedures of enumeration, registration, survey, and demographic investigation which are of importance to public health officers. Technics of biometric analysis useful in elucidating laboratory and field studies and of particular value in epidemiological investigation will be presented and demonstrated.
262. **Advanced Public Health Statistics.** (3) II. \_\_\_\_\_  
Lecture, one hour; laboratory, six hours.  
Prerequisite: courses 163A, 164A.  
Procedures and practices of administrative statistics.
290. **Seminar in Public Health Administration.** (2 or 4) I and II. Mr. ROGERS  
Specific problems dealing with organization and planning of public health activities will be assigned.
- †291. **Seminar in Sanitation.** (2 or 4) I and II. Mr. MANGOLD, Mr. GRAY  
Prerequisite: course 211.  
Seminars on the application of the principles of sanitation to specific problems in such fields as water supply, sewerage, waste disposal, foods, housing, industrial sanitation, insect and rodent control, and related subjects.
- 293A-293B. **Seminar in Community Health Education** (1-2; 1-2) Yr. Miss NYSWANDER  
A consideration of the factors influencing community participation in group work and present trends. Attention will be given to divergent philosophies of community organization with special reference to voluntary and public health agencies. Open to graduate students in public health, nutrition, home economics and related fields who obtain the permission of the instructor.

---

† To be given if a sufficient number of students enroll,

- †294A. Seminar in Epidemiology. (4) II. Mr. HAMMON  
Prerequisite: course 242.  
Primarily for students in Health Administrators' curriculum.
- †294B. Seminar in Epidemiology. (2) I. Mr. HAMMON  
Primarily for students not in Health Administrators' curriculum.  
Prerequisite: courses 147B, 163B, 164B.
- †295. Seminar in Public Health Laboratory Practice. (2-4) I and II.  
Miss BEATTIE
- †296. Seminar in Biostatistics. (2-4) II,  
Prerequisite: courses 163B, 164B. \_\_\_\_\_
- †297A-297B. Seminar in Occupational Health. (2-2) Yr.  
Mr. LEWIS, Mr. GOTAAS
299. Special Study for Graduate Students. (1-4) I and II.  
(Formerly numbered 201.) The STAFF (Mr. ROGERS in charge)

---

† To be given if a sufficient number of students enroll.

## ROMANCE PHILOLOGY

HERBERT H. VAUGHAN, Ph.D., Professor of Italian.

CHARLES E. KANY, Ph.D., Professor of Spanish.

FRANCIS J. CARMODY, Ph.D., Associate Professor of French.

YAKOV MALKIEL, Ph.D., Assistant Professor of Spanish.

NOTE.—Courses 201, 202, and 203 are open only to students who have had at least one year of graduate study, including Old French and either Italian Dialects or Old Spanish.

†200. Linguistic History of the Roman Empire. (2) I. Mr. MALKIEL

201. Vulgar Latin. (2) I. Mr. VAUGHAN

202. General Romance Linguistics. (2) II. Mr. VAUGHAN

\*203. Old Provençal. (2) II. Mr. KANY

†204A-204B. Comparative Romance Phonetics. (1-1) Yr. Mr. CARMODY

Hours to be arranged.

Prerequisite: course 202.

Special attention will be paid to the Western Romance Group.

Historical French Grammar (see French 201A-201B).

Italian Philology and Dialects (see Italian 201A-201B).

Old Spanish (see Spanish 212A-212B).

† To be given if a sufficient number of students enroll.

\* Not to be given, 1947-1948.

## SCANDINAVIAN LANGUAGES AND LITERATURE

ARTHUR G. BRODEUR, Ph.D., Professor of English and Germanic Philology  
(Chairman of the Department).

ASSAR GÖTRIK JANZÉN, Ph.D., Visiting Professor of Scandinavian Languages  
and Literature.

*Letters and Science List.*—All undergraduate courses in Scandinavian Languages and Literature are included in the Letters and Science List of Courses. For regulations governing this list, see page 82.

## LOWER DIVISION COURSES

- 1A-1B. Elementary Swedish. (3-3) Yr. Mr. JANZÉN  
 1A. Swedish grammar, composition, reading.  
 1B. Advanced composition, conversation, and reading of selected novels and plays.
- \*3A-3B. Elementary Norwegian. (3-3) Yr. Mr. JANZÉN  
 3A. Norwegian grammar, composition, reading.  
 3B. Advanced composition, conversation, reading of selected novels, plays, and lyrics.
4. Elementary Danish. (3)·II. Mr. JANZÉN  
 Danish grammar, composition, reading.

## UPPER DIVISION COURSES

- \*100A-100B. History of Scandinavian Literature. (3-3) Yr. Mr. JANZÉN  
 Survey course: reading of selected works of Danish, Swedish, and Norwegian literature in translation; lectures.
- 101A-101B. Advanced Swedish. (3-3) Yr. Mr. JANZÉN  
 Intensive reading of masterpieces; composition and conversation.
106. History of Scandinavian Drama. (3) I. Mr. JANZÉN  
 Reading of Danish, Swedish, and Norwegian plays in translation; lectures.

---

\* Not to be given, 1947-1948.

## SLAVIC LANGUAGES

WACŁAW LEDNICKI, Ph.D., Professor of Slavic Languages.

GLEB STRUVE, A.B., Professor of Russian.

GEORGE R. NOYES, Ph.D., LL.D., Litt.D., Professor of Slavic Languages, Emeritus.

OLEG A. MASLENIKOV, Ph.D., Assistant Professor of Russian (Chairman of the Department).

GEORGE C. GUINS, LL.M., Lecturer in Russian.

LUDMILA A. PATRICK, M.A., Lecturer in Russian.

*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 82.

*Departmental Major Adviser:* Mr. MASLENIKOV.

*The Major.*—Required: 24 units, of which 12 units must be in upper division language courses in the Department of Slavic Languages and at least one lecture course in the Department; not more than 6 units may be chosen from other departments. Courses in other departments that will be accepted as part of the major are upper division courses in the Greek, Latin, or Gothic languages, in phonetics or comparative linguistics, and any upper division courses in European literature, or in history, that may be specifically approved by the department as combining properly with the work in Slavic languages. Such courses are, for example, those given by the English department on the novel and on nineteenth-century poetry, and by the History department on modern European history, particularly the history of eastern Europe.

*Honor Students in the Upper Division.*—Candidates for honors must do at least 24 units of upper division work in the department, of which at least 12 units must be of grade A and the remaining 12 units must average not below grade B. The 24 units must include at least 18 units of work in upper division language courses in the department.

## LOWER DIVISION COURSES

1. Beginning Russian. (4) I and II. Beginning each semester.

Mr. MASLENIKOV in charge

Two lectures and three recitation hours weekly. See also course 18A.

2. Elementary Russian. (4) I and II. Beginning each semester.

Mr. MASLENIKOV in charge

Two lectures and three recitation hours weekly. Continuation of course 1. See also 18B.

3. Intermediate Russian. (2) II.

Mrs. PATRICK

Continuation of Russian 2. Reading, composition translation. Not required for 102A.

- \*6A-6B. Elementary Polish. (3-3) Yr.

Mr. LEDNICKI

- \*10A-10B. Elementary Serbo-Croatian. (3-3) Yr.

\_\_\_\_\_

- 14A-14B. Elementary Bohemian. (3-3) Yr.

Mr. MASLENIKOV in charge

\* Not to be given, 1947-1948.

- 18A-18B. Elementary Russian Conversation. (2-2) Yr. Beginning each semester.  
 Mr. GUINS in charge  
 Open only to students who also are taking courses 1 or 2.

UPPER DIVISION COURSES

A. Language Courses

- 102A-102B. Second-year Russian. (3-3) Yr.  
 Mr. STRUVE, Mr. GUINS, Mrs. PATRICK
- 103A-103B. Third-year Russian. (3-3) Yr. Mr. MASLENIKOV
- 104A-104B. Fourth-year Russian. (3-3) Yr. MR. STRUVE, MR. GUINS
105. Written Translation from Slavic Languages. (1-3) I and II.  
 The STAFF (Mr. MASLENIKOV in charge)  
 This course may be taken only in combination with some other course in Slavic languages.
- \*107A-107B. Second-year Polish. (3-3) Yr. Mr. LEDNICKI
- †108A-108B. Third-year Polish. (3-3) Yr. Mr. LEDNICKI
- 111A-111B. Second-year Serbo-Croatian. (3-3) Yr. ———
- \*112A-112B. Third-year Serbo-Croatian. (3-3) Yr. ———
- \*115A-115B. Second-year Bohemian. (3-3) Yr. Mr. MASLENIKOV
- \*116A-116B. Third-year Bohemian. (3-3) Yr. Mr. MASLENIKOV
- 119A-119B. Intermediate Russian Conversation. (2-2) Yr. Mr. GUINS
- 120A-120B. Advanced Russian Conversation and Composition. (2-2) Yr.  
 Mrs. PATRICK
- †121. The Russian Language. (2) I.  
 Morphological and etymological structure. Mr. MASLENIKOV
- †122. The Pronunciation of Russian. (2) II.  
 Phonetics and accentuation. Mr. MASLENIKOV
- \*123A. Russian Syntax. (2) II. Mr. GUINS
198. Advanced Group Work. (1-3) I and II.  
 The STAFF (Mr. MASLENIKOV in charge)
199. Special Study for Advanced Undergraduates. (1-5) I and II.  
 The STAFF (Mr. MASLENIKOV in charge)

B. Lecture Courses on Slavic Literature

These courses require no knowledge of any language other than English. They are open to all students of at least junior standing and, with the consent of the instructor, to properly qualified sophomores.

\* Not to be given, 1947-1948.

† To be given if a sufficient number of students enroll.

130. Introduction to Russian Literature of the Nineteenth Century. (3) I.  
Survey of Russian literature and intellectual trends. Mr. STRUVE  
Open to sophomores who in the judgment of the instructor are properly  
qualified including those enrolled in courses in the Slavic languages.
131. Recent Russian Literature (1880-1947). (3) II. Mr. MASLENIKOV  
Garshin, Chekhov, Gorki, Andreyev, Bunin, Kuprin, Korolenko, the  
Symbolists, and others.
- \*132. Russian Literature Since 1917. (2) I. Mr. STRUVE  
Alexey Tolstoy, Gladkov, Fadeyev, Fedin, Leonov, Sholokhov, Simonov,  
Aldanov, Nabokov, and others.
- 133A. Russian Novelists of the Nineteenth Century (except Tolstoy and Dosto-  
yevski). (2) I. Mr. LEDNICKI
- 133B. Tolstoy and Dostoyevski. (2) II. Mr. LEDNICKI
134. Russian Literature and Folklore. (2) II. Mrs. PATRICK  
Development of the literature, exclusive of the novelists, and general  
features of the folklore.
- \*135. The Russian Drama. (2) I. Mrs. PATRICK  
Survey of Russian Drama from the seventeenth century to the twentieth.
- \*136. Russian Poetry. (2) II. Mr. MASLENIKOV  
Prerequisite: course 103A or its equivalent.  
Study of form and content from the Byliny to present-day poetry.
- \*138. Modern Russia. (2) II. Mr. STRUVE  
Prerequisite: junior standing.  
Life and intellectual currents of modern Russia as reflected primarily  
in Russian literature.
- \*144. Slavic Folklore. (2) I. \_\_\_\_\_
150. Survey of Polish Literature. (3) II. Mr. LEDNICKI  
The development of Polish literature from the sixteenth century to the  
present.
- \*152. Polish Romantic Poetry. (2) II. Mr. LEDNICKI  
Mickiewicz, Slowacki, and Krasinski.
- \*160. Survey of Czech and Slovak Literature. (2) II. \_\_\_\_\_  
The development of Czech and Slovak literature from the sixteenth cen-  
tury to the present.
- \*170. Survey of South Slavic Literature. (2) II. \_\_\_\_\_
- 180A-180B. Survey of Russian Culture. (2-2) Yr. Mr. GUINS  
The development of Russian ideas from the earliest days to the present;  
and achievements in literature, art, music, education, and science.
185. Survey of Slavic Culture. (2) II. Mr. LEDNICKI

\* Not to be given, 1947-1948.

## GRADUATE COURSES

Concerning conditions for admission to graduate courses, see page 156.

## Language Courses

200. Slavic Bibliography. (1) II. The STAFF
224. Old Church Slavic. (3) I. Mr. MASLENIKOV  
Relation to other Indo-European languages. The textbook for this course is in German.
- †225. Old Church Slavic and Early Russian. (3) II. Mr. MASLENIKOV  
Continuation of course 224. Relation of Old Church Slavic to Russian and other Slavic languages.
- \*226. Early Russian; Historical Russian Grammar. (2) I. Mr. MASLENIKOV
- \*227. Early Russian Literature. (2) I. Mr. STRUVE
- \*240. Pushkin. (2) I. Mr. LEDNICKI
245. Studies in the Russian Novel. (2) I. Mr. LEDNICKI
- \*246. Twentieth-century Russian Literature. (2) II. Mr. STRUVE
247. The Russian Critics. (2) II. Mr. STRUVE
- †248. The Symbolist Movement. (2) II. Mr. MASLENIKOV
- \*250. Mickiewicz. (2) I. Mr. LEDNICKI
298. Individual Work. (1-4) I and II.

The STAFF (Mr. MASLENIKOV in charge)

Graduate students will be offered opportunities for independent reading and study. Credit will be assigned according to the amount of work done.

† To be given if a sufficient number of students enroll.

\* Not to be given, 1947-1948.



## SOCIAL WELFARE

MILTON CHERNIN, Ph.D., Associate Professor of Social Welfare (Chairman of the Department).

<sup>2</sup> MARTIN B. LOEB, A.B., Assistant Professor of Social Welfare.

MAURINE MCKEAN, M.A., Assistant Professor of Social Welfare and Supervisor of Field Work.

---

RUNNO ARNE, M.S., Lecturer in Social Welfare.

PEARL L. AXELROD, M.A., Lecturer in Social Welfare.

PEARL H. BERMAN, A.B., M.S.S., Lecturer in Social Welfare.

RUTH COOPER, M.A., Lecturer in Social Welfare and Director of the Social Service Department, University of California Hospital.

SALLY DEWEES, M.S., Lecturer in Social Welfare.

<sup>2</sup> ERIK H. ERIKSON, Lecturer in Social Welfare.

HAZEL H. FREDERICKSEN, M.A., Lecturer in Social Welfare.

WALTER FRIEDLANDER, Ph.D., Lecturer in Social Welfare.

<sup>2</sup> JOSEPHINE R. HILGARD, M.D., Ph.D., Lecturer in Social Welfare.

DAVIS MCENTRE, Ph.D., Lecturer in Social Welfare.

<sup>2</sup> ANNA MAENCHEN, Ph.D., Lecturer in Social Welfare.

HASSETTINE BYRD TAYLOR, J.D., Ph.D., Lecturer in Social Welfare.

ADDIE THOMAS, M.A., Lecturer in Social Welfare.

---

DOROTHY S. THOMAS, Ph.D., Professor of Rural Sociology.

LESLIE L. BENNETT, M.D., Ph.D., Assistant Professor of Physiology and in Institute of Experimental Biology, and Lecturer in Social Welfare.

<sup>1</sup> DOUGLAS G. CAMPBELL, M.D., Assistant Clinical Professor of Psychiatry and Lecturer in Neuroanatomy in the Medical School, and Lecturer in Social Welfare.

PETER COHEN, M.D., Lecturer in Pediatrics in the Medical School, Lecturer in Public Health, and Lecturer in Social Welfare.

The School of Social Welfare administers a two-year graduate program of training for social work, leading to the degree of Master of Social Welfare.

For information regarding admission to and requirements prescribed for the graduate program, see the ANNOUNCEMENT OF THE SCHOOL OF SOCIAL WELFARE.

The Department administers the group major in social welfare (in the College of Letters and Science), a preprofessional preparatory program, which is described on page 81.

*Letters and Science List.*—Courses 100, 101A, 101B, 106, and 110A–110B are included in the Letters and Science List of Courses. For regulations governing this list, see page 82.

<sup>1</sup> In residence fall semester only, 1947–1948.

<sup>2</sup> In residence spring semester only, 1947–1948.

## UPPER DIVISION COURSES

100. The Field of Social Welfare. (3) I. Mr. FRIEDLANDER  
 A survey of the field of social welfare and social work functions. The rise of modern social work and the distinctive techniques of the social work profession. Designed to acquaint undergraduates and nonprofessional students with the field of social welfare. Not open to students who are taking or have completed course 110A-110B.
- 101A-101B. Crime and Delinquency. (2-2) Yr. Mr. CHERNIN  
 101A. Survey of the problem of adult crime and juvenile delinquency, including nature and extent, statistics, associated factors, processes in the administration of criminal justice, and the juvenile court.  
 101B. Survey of the treatment of adult and juvenile delinquents, including penal and correctional institutions, private agencies, parole and probation, and crime prevention activities.
102. Methods in Social Work. (3) II. MRS. FREDERICKSEN  
 Prerequisite: course 110A, completed or in progress. Open only to seniors in the social welfare major.  
 An introduction to the techniques or skills of social case work, social group work, and community organization, designed to acquaint undergraduates with the leading concepts of these methods and with the literature. Observational visits to agencies and institutions will be arranged.
104. Health and Medical Care. (2) I and II. MR. BENNETT, MISS THOMAS  
 Health as a social problem; elementary medical information for social workers; the major health and medical services, public and private.
105. Psychiatry and Social Welfare. (2) I. Mr. CAMPBELL  
 Prerequisite: senior standing and completion of Psychology 160, 162, or 168.  
 Elementary psychiatry for students of social welfare. An introduction to the development of the normal person and to deviations from the norm, including the neuroses and psychoses.
- \*106. Community. (2) II. Mr. LOEB  
 The concept of community; the major institutions of the modern community; community surveys in the United States; how to study the community; the sociological background of "community organization."
- \*108. Race Relations. (2) I. Mr. LOEB  
 The composition and background of American population; biological, social, and cultural aspects of race; interracial tensions in America; techniques for improving race relations.
- 110A-110B. The Social Services. (3-3) Yr. Mr. FRIEDLANDER  
 Course 110A is prerequisite to 110B.  
 110A. Concepts of the social services; the historical background of the poor law and its breakup; the modern public assistance services.  
 110B. Other social services, including child welfare, mental hygiene, corrections, and social insurance, their development and present status; problems of social welfare organization and administration.

\* Not to be given, 1947-1948.

## 191. Function and Organization of the Modern Social Services. (2) I.

Mr. FRIEDLANDER

Designed primarily for graduate students who have not completed the group major in social welfare. Not available to those who have completed course 110A-110B.

## 199. Special Study for Advanced Undergraduates. (1-3) I and II.

The STAFF (Mr. FRIEDLANDER in charge)

Prerequisite: senior standing and approval of major adviser.

Individual readings, research and conferences with instructor in a field chosen by the student with approval of instructor.

## GRADUATE AND PROFESSIONAL COURSES

These courses are intended primarily for students enrolled in the graduate program of the Department, and are limited to such students except by permission of the Department.

## 201. Law and Social Welfare. (2) II.

Mrs. TAYLOR

Legal information for social workers; the sources of California laws. The courts of California; fundamentals of law governing domestic relations, neglected and dependent children, delinquents, landlord and tenant, etc.; problems of legal procedure.

## 202A-202B. Social Case Work. (2-2) Yr.

Mrs. DEWEES, ———

Introduction to the study and practice of social case work.

## 203. Community Organization. (2) I and II. Mr. ARNE, Mr. FRIEDLANDER

A study of the social resources of the community and of methods of organizing these resources for the meeting of human needs.

## 251A-\*251B. Public Assistance. (2-2) Yr.

Miss MCKEANY

251A. The problem of relief for the needy; poor law policy and practice; the categorical aids, problems of policy and administration. In 1947-1948 course 251A will be given in the spring semester also.

\*251B. Medical care; work relief programs; youth programs; rural relief and rehabilitation; relations with social insurance and other security measures; the prevention of destitution.

## 252A-252B. Public Welfare Administration. (2-2) Yr.

252A. The organizational structure of public welfare services in the United States, on federal, state, and local levels, and problems of reorganization.

252B. The administrative process within the public welfare agency. Problems of administration.

## 253A-253B. Child Welfare. (2-2) Yr.

Mrs. FREDERICKSEN

NOTE.—Course 253B will also be given in the first semester.

253A. The Field of Child Welfare: history and background of child welfare; changing conceptions of children's needs in the light of modern theory; special measures for the care and protection of dependent and neglected children; the organization and functions of public and private services for children.

253B. Child Placing: principles and methods of child placing; adoptions; selection of substitute environments such as foster homes and institutions.

\* Not to be given, 1947-1948.

- 254A-254B. Medical Social Work. (2-2) Yr. Miss COOPER  
 254A. The social component of illness; social case work in the medical setting.  
 254B. The development, organization, and administration of medical social service functions in institutional and extramural settings.
- 255A-255B. The Medical Services. (2-2) Yr. Mr. COHEN, Miss THOMAS  
 255A. Advanced medical information regarding causes of disease, diagnosis, treatment, and prevention.  
 255B. The public medical services. Policies and problems of organization, administration, and services.
- 257A-257B. The Treatment of Delinquency. (2-2) Yr. Mr. CHERNIN  
 257A. Institutional treatment; history and development of penal and correctional institutions for adults and juveniles; theories and programs of treatment; organization and administration of correctional services.  
 257B. Noninstitutional treatment, probation, and parole; theory and development of probation, parole, and the indeterminate sentence; the organization and administration of parole and probation services.
- 258A-258B. Advanced Social Case Work. (2-2) Yr. Mrs. AXELROD, Miss BERMAN  
 258A. Philosophy of social case work theory and practice, with consideration of treatment problems.  
 258B. Continuation of course 258A with greater emphasis on refinement of skill in diagnosis and treatment.
262. Psychiatry and Social Work. (2) II. Mrs. HILGARD  
 The diagnosis and treatment of the psychoneuroses, neuroses, psychoses, and mental deficiencies, and their social implications; the various schools of psychiatric thought.
263. Psychiatric Social Work. (2) II. Mrs. AXELROD  
 The practice of psychiatric social work; case work in the psychiatric setting; methods and procedures in handling cases; the organization and administration of psychiatric social work units.  
 Limited to students specializing in psychiatric social work.
264. The Mental Hygiene Services. (2) I. Mrs. FREDERICKSEN  
 The mental hygiene movement and the basic principles of mental health; the development of specialized services for the mentally ill and deficient; commitment policies and procedures; the organization, functions, and administration of mental institutions and clinics; extramural programs.
265. Social Welfare Research. (2) I. Mr. McENTIRE, Mrs. THOMAS  
 A seminar in the theory and methodology of research.
- 266A-266B. Emotional Development of Children. (2-2) Yr. Mrs. MAENCHEN, Mr. ERIKSON  
 266A (Mrs. Maenchen). Dynamics of childhood behavior in conflicting situations; the contribution of psychoanalytic theory to social case work with children.  
 266B (Mr. Erikson). Child development and family structure; the dynamics of the relationship between the social and cultural determinates of personality. This course is limited to students specializing in psychiatric social work.  
 Course 266A is not prerequisite to 266B.

291. International Social Services. (2) II. Mr. FRIEDLANDER  
(Formerly numbered 298c.)  
An examination of the international social agencies and their activities. Comparative analysis of the development and main characteristics of the system of public and private social services in selected foreign countries.
298. Special Studies. (1-6) I and II. The STAFF (Mr. CHERNIN in charge)  
Individual or group study, with emphasis on original research, as may be arranged.
299. Special Research. (2) II. Mr. McENTIRE
401. Field Work. (2-10) I and II. The STAFF (Miss McKEANY in charge)  
Field work in social agencies under supervision, as prescribed and arranged by the staff. The normal program for first-year students is 400 hours of supervised work (two days per week during two semesters), for which 8 units of credit are granted; for less work, proportionately less credit is allowed. For second-year students advanced field practice in specialized types of social work, to be offered two or three days a week during each semester, or to be arranged in periods of continuous work, is normally required. Arrangements of field work vary in extent and credit in accordance with the needs of individual students.

## SOCIOLOGY AND SOCIAL INSTITUTIONS

†EDWARD STRONG, Ph.D., Professor of Philosophy (Chairman of the Department of Sociology and Social Institutions).

MARGARET T. HODGEN, Ph.D., Associate Professor of Sociology and Social Institutions.

ROBERT A. NISBET, Ph.D., Assistant Professor of Sociology and Social Institutions.

REINHARD BENDIX, M.A., Lecturer in Sociology and Social Institutions.

KENNETH E. BOCK, M.A., Lecturer in Sociology and Social Institutions.

THEODORE D. MCCOWN, Ph.D., Associate Professor of Anthropology.

DAVID C. MANDELBAUM, Ph.D., Associate Professor of Anthropology.

ROBERT CHOATE TRYON, Ph.D., Professor of Psychology.

*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 82.

*Departmental Major Adviser:* Mr. NISBET.

*Preparation for the Major.*—Required: courses 2A-2B, 10A-10B, Economics 40, or Psychology 5. Recommended: Anthropology 2A-2B, Economics 1A-1B, History 4A-4B, Philosophy 10A-10B, Psychology 1A-1B.

*The Major.*—Required: 24 units in the upper division consisting of 6 units in each of the three groups A, B, and C under I, and 6 units from I and II, as approved by the departmental major adviser. The completion of the major will require the maintenance of a satisfactory grade average.

## LOWER DIVISION COURSES

2A-2B. Introduction to Sociology. (3-3) Yr.

Mr. NISBET

Two lectures, one recitation section weekly to be arranged. Course 2A is prerequisite to 2B.

Principal concepts and problems, including personality, social organization, and institutions, social change, and social status. Emphasis will be on the background of contemporary problems.

## SOPHOMORE COURSE

10A-10B. Progress and Civilization. (3-3) Yr.

Mr. BOCK

An introduction to social thought; role in the social sciences of leading ideas of progress and order.

## UPPER DIVISION COURSES

## I

## Group A: Method and Theory

101A-101B. Theories of Social Change. (3-3) Yr.

Miss HODGEN

101A. Critical analysis of geographical, racial and economic theories of social progress.

101B. Comparison of the procedures of investigation employed in studies of social evolution, in natural history, and history.

† Sabbatical leave in residence fall semester, 1947-1948.

- 121A-121B. History of Sociological Theory. (3-3) Yr. Mr. BOCK  
Background in eighteenth-century moral philosophy and philosophy of history; establishment of sociology as a discipline; contemporary sociologists, their aims, methods, and results.

**Group B: Historical and Comparative**

- The Nature of Culture (Anthropology 118A-118B). (3-3) Yr. Mr. MANDELBAUM  
An examination of what culture is, how it functions and changes, and how it influences human beings.
- 131A-131B. History of Social Institutions. (3-3) Yr. Mr. BOCK  
Nine hours of laboratory weekly.  
Research in selected fields of institutional history such as family, state, war, technology, art, music, religion; preceded by critical examination of representative works in the subject chosen.
141. History of Western Social Organization. (3) II. Mr. NISBET  
An analysis of the changing position of the family and community in Western society; effects of war, industrialism, and nationalism upon these groups; background of contemporary problems.
142. Comparative Institutions. (3) I. Mr. NISBET  
Comparative treatment of social and political institutions in selected areas; relation of ideas to institutions; the state and kinship groups; emphasis on the problem of disorganization.
- \*147. Theory of Historical Inquiry. (3) I. Mr. STRONG
- 151A-151B. The History of Civilization. (3-3) Yr. Miss HODGEN  
Nine hours of laboratory weekly.  
A study of historical changes in the civilization of selected areas.

**Group C: Social Processes and Relations**

- 102A-102B. Social Problems of Large-Scale Organizations. (3-3) Yr. Mr. BENDIX  
The growth of large-scale organizations in business and government; social and psychological factors affecting human relations.
132. Social Stratification. (3) I. Mr. BENDIX  
Analysis of recent occupational trends and of social problems of occupational stratification; social classes in local communities and the nation as related to interest organizations.
- Social Psychology (Psychology 145A-145B). (3-3) Yr. Mr. TRYON
148. Problems in the Study of Group Behavior. (3) II. Mr. BENDIX  
Modern theories of group behavior examined in the light of empirical studies dealing with the interrelation of personality and culture.
- Living Races of Man (Anthropology 153). (3) I. Mr. McCOWN  
Physical characters, distribution, and relationships of the living races of mankind.
199. Special Study for Advanced Undergraduates. (1-3) I and II. The STAFF

\* Not to be given, 1947-1948.

## II

## RECOMMENDED COURSES IN OTHER DEPARTMENTS

## Group A: Method and Theory

- Economic Theory (Economics 100A-100B). (3-3) Yr. Mr. BAIN and others  
 Ethics (Philosophy 104). (3) I. Mr. ADAMS  
 Social Philosophy (Philosophy 108). (3) I. Mr. DENNES  
 Principles of Politics (Political Science 112A-112B). (3-3) Yr.  
 Elements of Jurisprudence (Political Science 117). (3) I. Mr. WINKLER  
 Mr. KELSEN

## Group B: Historical and Comparative

- History of Economic Doctrine (Economics 101A-101B). (3-3) Yr.  
 Social Reform Movements (Economics 106). (3) I and II. Mr. BRADY  
 Mr. LANDAUER  
 Economic History Since 1850 (Economics 110). (3) II. Mr. KNIGHT  
 Chapters in Cultural History (Anthropology 102). (3) II. Mr. LOWIE  
 Contemporary Civilization (Anthropology 160). (3) I. Mr. LOWIE  
 Social History of the United States (History 176A-176B). (3-3) Yr. ———

## Group C: Social Processes and Relations

- Rural Sociology (Agricultural Economics 112A-112B). (2-2) Yr.  
 Mr. TAYLOR  
 Population and Migration (Economics 188A-188B). (3-3) Yr.  
 Mrs. THOMAS, Mr. TAYLOR  
 Crime and Delinquency (Social Welfare 101A-101B). (2-2) Yr.  
 Mr. CHERNIN  
 Social Problems of Families (Home Economics 142). (3) II. Miss COLES  
 Problems of Poverty (Economics 180). (3) I. Miss HUNTINGTON  
 Public Opinion (Political Science 114). (3) I. Mr. BELLQUIST  
 Personality (Psychology 148A). (3) II. Mr. SANFORD  
 Personality in Society and Culture (Psychology 141). (3) I.  
 Mr. MACKINNON

## GRADUATE COURSES

- 202A-202B. Seminar in Comparative Analysis of the Sociological Aspects of  
 Government Administration. (2-2) Yr. Mr. BENDIX  
 \*215A-215B. Interdepartmental Seminar. (2-2) Yr. The STAFF and others  
 221A-221B. Seminar in Social and Historical Processes. (2-2) Yr.  
 Miss HODGEN  
 221A. An analysis of a selected group of sociological theories and their  
 means of verification.  
 221B. Invention.

\* Not to be given, 1947-1948.



- 241A-241B. Seminar in Social Organization. (2-2) Yr. Mr. NISBET  
Studies in the relationships of social groups to modern political and  
economic institutions.
247. Seminar in Theories of History. (2) II. Mr. STRONG
250. Research Specialization by Arrangement with Related Departments.  
(1-3) I and II. \_\_\_\_\_
299. Individual Study and Research. (3-6) I and II. The STAFF

## SPANISH AND PORTUGUESE

ERASMO BUCETA, Doctor en Derecho, Professor of Spanish.

CHARLES E. KANY, Ph.D., Professor of Spanish.

JOSÉ F. MONTESINOS, Licenciado en Filosofía y Letras, Professor of Spanish.

S. GELSWOLD MORLEY, Ph.D., Litt.D., Professor of Spanish.

LESLEY B. SIMPSON, Ph.D., Professor of Spanish (Chairman of the Department).

ARTURO TORRES-RIOSECO, Ph.D., Professor of Latin-American Literature.

BEATRICE Q. CORNISH, Ph.D., Assistant Professor of Spanish, Emeritus.

\*ROBERT K. SPAULDING, Ph.D., Associate Professor of Spanish.

YAKOV MALKIEL, Ph.D., Assistant Professor of Spanish.

EDWIN S. MORBY, Ph.D., Assistant Professor of Spanish.

\*FERNANDO A. ALEGRIA, Ph.D., Instructor in Spanish.

MARIO CAMARINHA DA SILVA, Licenciado em Letras, Instructor in Portuguese.

ARNOLD CHAPMAN, Ph.D., Instructor in Spanish.

ALBERT E. SLOMAN, M.A. (Oxon.), Instructor in Spanish.

MARIAN FREDINE, M.A., Associate in Spanish.

MADRE MERRILL, M.A., Associate in Spanish.

CECLIA G. ROSS, M.A., Associate in Spanish.

DOROTHY C. SHADI, Ph.D., Lecturer in Spanish.

*Letters and Science List.*—All undergraduate courses are included in the Letters and Science List of Courses. For regulations governing this list, see page 82.

*Departmental Major Adviser:* Mr. L. B. SIMPSON.

*Preparation for the Major.*—Courses 1, 2, 3, 4 (with a grade of A or B), or four years of high school Spanish and course 25A-25B, or other equivalent to be tested by examination. If course 4 is passed with grade lower than B, the student must complete course 25A-25B as prerequisite to upper division courses.

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 obtaining the degree of Associate in Arts.

Students who do not enter with a minimum of two years of high school Latin, or its equivalent, must take Latin 1 and 2, before entering upon the senior year.

Only students who pronounce Spanish correctly and read it fluently will be admitted to upper division courses. Students transferring from other institutions may be tested by examination.

*The Major.*—Required: 24 upper division units, course 101A-101B (may be omitted if 25A-25B has been passed with a grade of A or B), and 107A-107B. The remaining units may be completed from courses 100A, 100B, 103, 104, 105, 109, 110, 111, 112, 116, and 199 and Portuguese 122, 123. The department recommends to major students in Spanish the continuation in the upper division of courses in French, Italian, Portuguese, or Latin. A course in Hispanic and

\* Absent on leave, 1947-1948.

Hispanic-American history (History 160A-160B, 161A-161B) is also recommended.

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 Executive Committee of the College of Letters and Science, be excluded from the major in Spanish.

*Honor Students in the Upper Division.*—Candidates for honors must do distinguished work in 24 units of upper division courses, as outlined in the major.

*Higher Degree.*—See the ANNOUNCEMENT OF THE GRADUATE DIVISION, NORTHERN SECTION.

### SPANISH

#### LOWER DIVISION COURSES

(Enrollment limited to thirty students per section)

NOTE.—A student whose native tongue is Spanish will not be admitted to courses 1, 2, 3, 4, 25A-25B. This applies to students who have not received matriculation credit in Spanish as well as to those who have such credit.

1. Elementary Spanish. (4) I and II. Miss FREDINE in charge  
Sections meet five hours weekly.
  2. Elementary Spanish (continuation of 1). (4) I and II. Mr. MORBY in charge  
Sections meet five hours weekly.  
Prerequisite: course 1 or two years of high school Spanish, or the equivalent.
  3. Intermediate Spanish (continuation of 2). (4) I and II. Mrs. ROSS in charge  
Sections meet five hours weekly.  
Prerequisite: course 2 or three years of high school Spanish, or the equivalent.
  4. Intermediate Spanish (continuation of 3). (4) I and II. Mrs. SHADI in charge  
Sections meet five hours weekly.  
Prerequisite: course 3 or four years of high school Spanish, or the equivalent.
- 25A-25B. Advanced Spanish. (3-3) Yr. Beginning each semester.  
Prerequisite: course 4 or the equivalent. Mr. SIMPSON in charge

#### UPPER DIVISION COURSES

Prerequisite: 16 units of lower division Spanish, including course 4 with a grade of A or B, or course 25A-25B.

- 100A. Introduction to Spanish Linguistics. (2) I. Mr. KANY
- 100B. American-Spanish Divergencies from Standard Castilian. (2) II. Mr. KANY  
Course 100A is not prerequisite to 100B.
- 101A-101B. Oral and Written Composition. (3-3) Yr. Beginning each semester. Mr. BUCETA in charge  
Enrollment limited to 20 in each section.  
Prerequisite: course 25B, or course 4 with grade of A or B. Sophomores who have had course 25A-25B may also be admitted.  
Students who have passed course 25A-25B with grade of A or B may omit course 101A-101B.

- 103A-103B. Nineteenth-Century Literature (1830-1900). (3-3) Yr.  
Mr. SIMPSON, Mr. TORRES-RIOSECO  
Enrollment limited to 30 students in each section.
- 104A-104B. Spanish-American Literature. (3-3) Yr. Beginning each semester.  
Mr. TORRES-RIOSECO
- 105A-105B. Modern Drama: From the Romantic Movement to the Present.  
(2-2) Yr. Mr. MORLEY
- 107A-107B. History of Spanish Literature to 1830. (3-3) Yr. Mr. MORLEY  
Prerequisite: at least 10 units of upper division courses, of which 6  
units must be in Spanish literature.
- 109A-109B. The Spanish Drama of the Sixteenth and Seventeenth Centuries.  
(2-2) Yr. Mr. MONTESINOS
- 110A-110B. The Prose of the Twentieth Century. (2-2) Yr. Mr. BUCETA
- 111A-111B. Cervantes. (2-2) Yr. Mr. SIMPSON
112. The Origins of Spanish Culture. (2) II. Mr. MALKIEL
- 116A-116B. Advanced Grammar and Composition. (3-3) Yr. Mr. KANY  
Required only of candidates for the Certificate of Completion, teacher-  
training curriculum; recommended for all major students. Enrollment  
limited to 20.
199. Special Study for Advanced Undergraduates. (1-3) I and II.  
Mr. SIMPSON in charge

## GRADUATE COURSES

Concerning conditions for admission to graduate courses, see page 156.

In the requirements for the master's degree this department follows Plan II.

- 201A-201B. History of the Spanish Lyric. (2-2) Yr. Mr. BUCETA
- \*202A-202B. History of the Spanish Novel to the End of the Seventeenth Cen-  
tury. (2-2) Yr. Mr. BUCETA
- \*204A-204B. La Novela hispanoamericana. (2-2) Yr. Mr. TORRES-RIOSECO
206. Problems in American Spanish. (2) II. Mr. KANY
- 208A-208B. The Ballad. (2-2) Yr. Mr. MORLEY
- \*209A-209B. The Drama of the Golden Age. (2-2) Yr. Mr. MORLEY  
An intensive study of one author.
- 212A-212B. Old Spanish. (2-2) Yr. Mr. MALKIEL  
Reading and historical grammar. Required for candidates for the  
master's degree.
- 213A-213B. The Novel in the Nineteenth Century. (2-2) Yr. Mr. MONTESINOS
- 214A-214B. Modernism in Hispano-America. (2-2) Yr. Mr. TORRES-RIOSECO  
(Formerly numbered 210A-210B.)

\* Not to be given, 1947-1948.

- †216. Spanish Versification. (2) II. Mr. MORLEY  
 218A-218B. The Fifteenth Century. (2-2) Yr. Mr. MONTESINOS  
 225. Pronunciation. (2) I. Mr. KANY  
 299. Special Advanced Study. (1-3) I and II. Mr. SIMPSON in charge  
 Open to qualified students who wish to take special advanced work.

## PORTUGUESE

## LOWER DIVISION COURSES

1. Elementary Portuguese. (4) I and II. Mr. CAMARINHA DA SILVA in charge  
 Sections meet five hours weekly.  
 2. Elementary Portuguese. (4) I and II. Mr. CAMARINHA DA SILVA  
 Prerequisite: course 1 or oral command of the language.  
 Sections meet five hours weekly.  
 25. Advanced Portuguese. (3) I. Mr. CAMARINHA DA SILVA  
 Reading and composition.  
 Prerequisite: courses 1 and 2 or the equivalent, or consent of the instructor.

## UPPER DIVISION COURSES

121. Readings in Portuguese. (3) I and II. Mr. CAMARINHA DA SILVA  
 Prerequisite: junior standing and a satisfactory reading knowledge of Latin or one Romance language, or consent of the instructor.  
 Course 121 or the equivalent is prerequisite to courses 122, 123, 199, 201, and 299.  
 †122. Portuguese Literature. (3) II. Mr. MALKIEL  
 Survey of the literature of Portugal, with emphasis on the sixteenth and nineteenth centuries.  
 123. Brazilian Literature. (3) I and II. Mr. CAMARINHA DA SILVA  
 Survey of the literature of Brazil, with emphasis on the nineteenth and twentieth centuries.  
 199. Special Study for Advanced Undergraduates. (1-3) I and II.  
 Mr. CAMARINHA DA SILVA

## GRADUATE COURSES

201. The Brazilian Novel. (2) II. Mr. CAMARINHA DA SILVA  
 299. Special Advanced Study. (1-3) I and II. Mr. MALKIEL in charge

† To be given if a sufficient number of students enroll.

## SPEECH

C. DOUGLAS CHRÉTIEN, Ph.D., Associate Professor of Speech.

GERALD E. MARSH, M.A., Associate Professor of Speech (Chairman of the Department).

<sup>2</sup> ARNOLD PERSTEIN, Ph.M., Associate Professor of Speech.

EDWARD Z. ROWELL, Ph.D., Associate Professor of Speech.

JACOBUS TEN BROEK, J.S.D., Associate Professor of Speech.

ALAN R. THOMPSON, Ph.D., Associate Professor of Speech and Dramatic Literature.

DWIGHT E. WATKINS, M.A., Associate Professor of Speech, Emeritus.

KARL ASCHENBRENNER, Ph.D., Assistant Professor of Speech.

EDWARD N. BARNHART, Ph.D., Assistant Professor of Speech and Lecturer in Psychology.

WILLIAM B. MCCOARD, Ph.D., Assistant Professor of Speech.

AURORA M. QUIROS, M.A., Assistant Professor of Speech.

DAVID RYNIN, Ph.D., Assistant Professor of Speech.

GARFF B. WILSON, Ph.D., Assistant Professor of Speech.

WILLIAM B. HOLTHER, Ph.D., Instructor in Speech.

---

MARGARET G. BLACKBURN, M.A., Lecturer in Speech.

MARIE E. BRITTIN, M.A., Lecturer in Speech.

MARGUERITE H. FOSTER, M.A., Lecturer in Speech.

REBECCA HAYDEN, M.A., Lecturer in Speech.

MARIANNE B. LEARY, M.A., Lecturer in Speech.

ELIZABETH F. RUSSELL, Ph.D., Lecturer in Speech.

FRED STRIPP, M.A., B.D., Lecturer in Speech.

WARD E. TABLE, A.B., Lecturer in Speech.

JOE TUSSMAN, M.A., Lecturer in Speech.

MARJORIE WALSH, A.B., Lecturer in Speech.

Students must have passed Subject A before taking any course in speech. The courses in speech fall into two well-defined groups:

(a) *Oral Expression*. In this group come such courses as those in voice culture and oral interpretation of literature.

(b) *Logical Discourse—Expository and Argumentative*. Under this heading are grouped the courses covering the logical and rhetorical bases of those forms of discourse that are primarily addressed to the intellect. The field covered includes study of methods of investigation, analysis, briefing, the testing of evidence, and practice in oral presentation.

Generally speaking, students may choose courses in either group, or in both, but those students who elect speech for their major study are required to so arrange their courses as to cover the fundamentals in both phases of the work before taking advanced studies in their special field. It is hoped that by a combination of both kinds of work a foundation may be laid which will prove valuable not only to teachers of oral English in the high school but also to all

<sup>2</sup> In residence spring semester only, 1947-1948.

those who are preparing for professional careers in which the clear and orderly presentation of thought, orally, plays an important part.

*Letters and Science List.*—All undergraduate courses in speech are included in the Letters and Science List of Courses. For regulations governing this list, see page 82.

*Departmental Major Adviser:* Mr. ROWELL.

*Preparation for the Major.*—Students who wish to make speech their major subject must have completed, with an average grade of C or better, courses 1A-1B and 2A-2B. It is recommended that Philosophy 6A-6B be taken concurrently with course 1A-1B.

*The Major.*—Required: 24 units in upper division courses which must include 107A-107B, 110A-110B, and 111A-111B. Course 107A-107B should be taken in the junior year. Six of the 24 units required for the major may, with the approval of the departmental representative, be chosen from the following courses in English: 153A-153B, 114A-114B, 116, 117E, and 110; or the following courses in Philosophy: 104, 108, 112, 125, 128, 136A-136B, and 146.

*Honors.*—Candidates for honors at graduation must have completed the major with an average grade not lower than B.

#### LOWER DIVISION COURSES

1A-1B. Elements of Speech. (3-3) Yr. Beginning each semester.

Mr. ASCHENBRENNER, Mr. BARNHART, Miss BRITTON,  
Mr. CHRÉTIEU, Mrs. FOSTER, Mr. HOLTHERR, Mr. MARSH,  
Mr. PERSTEIN, Mr. ROWELL, Mr. RYNIN, Mr. STRIPP,  
Mr. TEN BROEK, Mr. TABLER, Mr. THOMPSON, Mr.  
TUSSMAN, Mr. R. WILSON

A forum of organized student discussion and speeches based on an intensive study of selected essays chosen from the writings of representative English and American authors; training in the principles of oral rhetoric, in summarizing and outlining, in the use of the library, and in the presentation from the platform of prepared speeches.

NOTE.—In each semester Mr. ten Broek's section of 1A and 1B is primarily for prelegal students.

2A-2B. The Fundamentals of Oral Interpretation of Literature. (3-3) Yr. Beginning each semester.

Miss BLACKBURN, Miss HAYDEN, Mr. MCCOARD, Miss QUIROS,  
Mrs. RUSSELL, Miss WALSE, Mr. G. B. WILSON

Introduction to the oral reading of prose and poetry; practice in speaking and reading with training in the principles for effective delivery.

10. Logic of Argument. (3) I and II.

Mr. RYNIN

An examination of the nature and validity of evidence, especially from the point of view of rational discussion of social problems.

12. Psychology of Argument. (3) I.

Mr. BARNHART

Primarily concerned with the function of communication in inducing belief and directing behavior; an introductory study of techniques used in speech and political propaganda.

25. Oral English for Foreign Students. (4) I and II.

Miss HAYDEN

For foreign students only. Pronunciation, speaking, grammar, reading and writing of English. Required for those who fail to pass the Examination in English and who are not qualified to take course 26.

26. Oral English for Foreign Students. (4) I and II. Miss HAYDEN  
Continuation of and required for those who take course 25.
40. Advanced Oral English for Foreign Students. (3) I and II. Mrs. RUSSELL  
Practice in précis writing of advanced material, designed to improve the student's ability to grasp and restate meaning of material and to plan and present formal speeches.  
Prerequisite: course 26 or the permission of the instructor.

## UPPER DIVISION COURSES

103. English Phonetics. (3) II. Mr. CHRÉTIEN  
Lectures on physical, anatomical, and physiological background of speech. Detailed study of American English speech sounds. Construction of phonemic patterns. Standards of pronunciation. American dialects.
- 107A-107B. Argumentative Discourse: Oral and Written. (3-3) Yr. Mr. ASCHENBRENNER, MR. ROWELL, MR. TUSSMAN  
Beginning each semester. Prerequisite: course 1A-1B.  
107A. I, three sections. II, one section. 107B. I, one section. II, three sections.
- 110A-110B. Oral Argumentation and Debate. (3-3) Yr. Mr. MARSH  
Prerequisite: courses 1A-1B, 2A-2B, and 107A-107B.
- 111A-111B. The Reading of Prose and Poetry. (3-3) Yr. Mr. McCOARD, MR. G. B. WILSON, MISS QUIROS, MISS BLACKBURN  
Prerequisite: course 2A-2B.  
(a) The essay and the short story. (b) The ballad, the lyric, the ode, etc.  
111A. I, three sections. II, two sections. 111B. I, one section. II, three sections.
117. Semantics. (3) I. Mr. RYNIN  
A basic analysis of the nature and functions of language, with special emphasis on the problem of meaning as it relates to science, art, morals, politics, and religion.
- \*118. Symbolism: A Study of the Expressive Functioning of Signs. (3) II. Mr. BARNHART  
The nature of symbols and signs, and their function in human experience, with emphasis on their expressive role in poetry and speech.  
Prerequisite: courses 1A-1B, 12.
119. Analysis of Communication Content. (3) II. Mr. BARNHART  
Introduction to research techniques in communication with special emphasis on content analysis and audience response; individual and group research projects will be carried out by students under supervision.
120. The Use of the Library. (3) II. Mr. ROWELL  
Practical exercises in the use of the more important library tools; the card catalogue, the unabridged dictionaries, encyclopedias, general and special yearbooks, general atlases, chronologies, aids to the choice of books, special bibliographies, etc.

\* Not to be given, 1947-1948.



132. Classical Rhetoric. (3) II. Mr. ASCHENBRENNER  
 A study of rhetoric based on the writings of Plato, Aristotle, and other writers, with reference to criticism, aesthetic theory, and speech in the Classical era.
- \*135. British Public Address during the Eighteenth and Nineteenth Centuries. (3) II. Mr. TEN BROEK  
 Critical analysis of speeches of Burke, Pitt, Peel, Cobden, Bright, Gladstone, Disraeli, Newman, Huxley, Mill, and others. Attention given to issues with which they were identified and their relationship to the social movements of their time.
137. American Public Address during the Eighteenth and Nineteenth Centuries. (3) I. Mr. TEN BROEK  
 Critical analysis of speeches of Randolph, Williams, Franklin, Washington, Hamilton, Marshall, Calhoun, Webster, Emerson, Lincoln, Douglas, and others.
138. Modern Public Address. (3) II. Mr. TEN BROEK  
 Critical analysis of speeches of Wilson, Roosevelt, Churchill and other leaders from 1914 to the present time.
152. Debate. (2) I and II. Mr. TEN BROEK, Mr. R. WILSON  
 Designed for those who wish to participate in intercollegiate debate. It may be repeated for a maximum of 6 units. Students wishing to take this course and 107A-107B may enroll in the latter only with the permission of the instructor and in any combination of the two courses may not receive more than 8 units.
198. Directed Group Studies for Upper Division Students. (1-5) I and II. Mr. MARSH and the STAFF
199. Special Study for Advanced Undergraduates. (1-5) I and II. The STAFF (Mr. MARSH in charge)

---

\* Not to be given, 1947-1948.

**SUBJECT A: ENGLISH COMPOSITION**

JAMES M. CLINE, Ph.D., Professor of English.

EDWIN S. MORBY, Ph.D., Assistant Professor of Spanish.

PAULINE SPERRY, Ph.D., Associate Professor of Mathematics.

---

PHIL S. GRANT, M.A., Supervisor of Instruction in Subject A.

Subject A. I and II. No credit.

Mr. GRANT and Assistants

Three hours weekly. I, thirty-two sections as announced in the SCHEDULE OF EXERCISES. II, fifteen sections. Required of all students who do not pass the examination in Subject A. Fee, \$15; to those students who maintain an average grade of A during the first seven weeks of the semester \$5 will be refunded. For the regulations governing this requirement, see page 37.

Training in correct writing, including drill in sentence and paragraph construction, diction, punctuation, grammar, and spelling. Weekly compositions and written tests on the text. The principles of English composition are presented, and typical student compositions are analyzed and discussed in sections limited to thirty students.

## VETERINARY SCIENCE

J. RAYMOND BEACH, D.V.M., Professor of Veterinary Science.

WILLIAM H. BOYNTON, D.V.M., Professor of Veterinary Science.

CLARENCE M. HARING, D.V.M., Professor of Veterinary Science (Chairman of the Department).

OSCAR W. SCHALM, D.V.M., Ph.D., Professor of Veterinary Science.

JACOB TRAUM, D.V.M., Professor of Veterinary Science.

RAYMOND A. BANKOWSKI, D.V.M., Ph.D., Assistant Professor of Veterinary Science.

KENNETH B. DEOME, Ph.D., Assistant Professor of Animal Pathology.

## UPPER DIVISION COURSES

- \*101. Poultry Hygiene. (2) II. MR. BEACH, MR. DEOME  
 Lecture and laboratory. Given each fourth semester.  
 Prerequisite: Bacteriology 1 (completed or in progress) or Bacteriology 1 (Davis); Physiology 1A and 1C or Animal Husbandry 110 (Davis).  
 A study of the principles and measures for the maintenance of health of poultry.  
 NOTE.—This course in addition to Entomology 117 meets the requirement of 4 units of parasitology and animal pathology in the animal science curriculum for the poultry majors resident at Berkeley.
199. Special Study for Advanced Undergraduates. (1-5) I and II.  
MR. HARING, MR. BEACH, MR. TRAUM, MR.  
SCHALM, MR. DEOME, MR. BANKOWSKI  
 Prerequisite: courses basic to the problem elected, and consent of the instructor.

## GRADUATE COURSE

- 200A-200B. Research in Animal Pathology. (1-6; 1-6) Yr.  
MR. HARING, MR. BEACH, MR. TRAUM, MR.  
SCHALM, MR. DEOME, MR. BANKOWSKI

NOTE.—Research in poultry diseases may be elected in above courses.

\* Not to be given, 1947-1948.

**WORLD AFFAIRS**

*Supervisory Committee:*

FRANK M. RUSSELL, Ph.D., Professor of Political Science.

ERIC C. BELLQUIST, Ph.D., Associate Professor of Political Science.

WOODBIDGE BINGHAM, Ph.D., Associate Professor of Far Eastern History.

ROBERT W. DESMOND, Ph.D., Professor of Journalism.

---

HELEN V. HAMMARBERG, Ph.D., Lecturer in Political Science.

100. World Affairs. (1) I and II.

Miss HAMMARBERG in charge

A survey of global problems by various lecturers, particularly from the point of view of the policies and fundamental interests of the United States as a member of an interdependent society of nations.

Two lectures each week, without examination, carrying one unit of University credit, for satisfactory attendance. Students will be marked "passed" or "not passed"; and the unit gained will count toward the units required for graduation or the degree of Associate in Arts for which grade points are required.

Open to all undergraduate students, without prerequisite.

## ZOÖLOGY

- <sup>1</sup> SUMNER C. BROOKS, Ph.D., Professor of Zoölogy.  
 RICHARD GOLDSCHMIDT, Ph.D., M.D., Sc.D., Professor of Zoölogy.  
 HAROLD KIRBY, Ph.D., Professor of Zoölogy.  
 ALDEN H. MILLER, Ph.D., Professor of Zoölogy and Director of the California Museum of Vertebrate Zoölogy.  
 CURT STEEN, Ph.D., Professor of Zoölogy.  
 SAMUEL J. HOLMES, Ph.D., LL.D., Professor of Zoölogy, Emeritus.  
 JOSEPH A. LONG, Ph.D., Professor of Embryology in the Institute of Experimental Biology.  
 SETH B. BENSON, Ph.D., Associate Professor of Zoölogy and Curator of Mammals, California Museum of Vertebrate Zoölogy.  
<sup>1</sup> RICHARD M. EAKIN, Ph.D., Associate Professor of Zoölogy (Chairman of the Department).  
 J. E. GULLBERG, A.B., Associate Professor of Metrology.  
 MORGAN HARRIS, Ph.D., Assistant Professor of Zoölogy.  
 A. STARKER LEOPOLD, Ph.D., Assistant Professor of Zoölogy and Conservationist, California Museum of Vertebrate Zoölogy.  
 FRANK A. PITELKA, Ph.D., Assistant Professor of Zoölogy and Assistant Curator of Birds, California Museum of Vertebrate Zoölogy.  
 RALPH I. SMITH, Ph.D., Assistant Professor of Zoölogy.  
 ROBERT C. STEBBINS, Ph.D., Assistant Professor of Zoölogy and Assistant Curator in Herpetology, California Museum of Vertebrate Zoölogy.  
 WILLIAM E. BERG, Ph.D., Instructor in Zoölogy.  
 OLIVER P. PEARSON, Ph.D., Instructor in Zoölogy.  
 RICHARD E. PAULSON, A.B., Associate in Zoölogy.  
 ELIZABETH SCOTT, M.A., Associate in Parasitology, for the spring semester.
- FRANCES M. WEESNER, A.B., Lecturer in Microscopic Technique.

*Letters and Science List.*—All undergraduate courses in zoölogy except courses 109 and 145 are included in the Letters and Science List of Courses. For regulations governing this list, see page 82.

*Departmental Major Adviser:* Mr. HARRIS.

*Preparation for the Major.* Required: courses 1A, 1B, Chemistry 1A, and either Chemistry 1B or 8. Recommended: German, French, and elementary courses in other biological and physical sciences.

*The Major.*—Required: (1) 24 units of upper division courses in zoölogy. (a) For 6 of these units substitutions may be made from upper division courses in bacteriology, biochemistry, botany, organic chemistry, entomology, genetics, microscopic anatomy, paleontology, physiology, physical chemistry and physics. (b) Honor students whose major is zoölogy may be permitted a broader selection of related courses, and may under special circumstances make substitution for more than 6 units. (2) At least a 1.5 average in upper division courses included in the major.

<sup>1</sup> In residence fall semester only, 1947-1948.

## LOWER DIVISION COURSES

- 1A. General Zoölogy. (4) I. MR. HARRIS, MR. PAULSON  
 Lectures and laboratory.  
 Prerequisite: Chemistry 1A.  
 An introduction to the principles of biology with special reference to structure, physiology, heredity, and evolution of animals. Laboratory study of cells, tissues, and organ systems of the frog; of representatives of the major invertebrate groups; and of genetics.
- 1B. General Zoölogy. (4) II. MR. PEARSON, MR. PAULSON  
 Lectures and laboratory.  
 Prerequisite: course 1A.  
 Anatomy, histology, development, function, and history of the vertebrate body. Laboratory study of amphioxus, ammocoetes, the shark, the amphibian embryo and larva, and the rat.
4. Microscopic Technique. (2) I and II. MISS WEESNER  
 Laboratory.  
 Prerequisite: course 1A and elementary chemistry.
10. General Biology. (3) I and II. MR. BERG, MR. PEARSON, MR. SMITH  
 I: Mr. Berg, Mr. Pearson; II: Mr. Smith.  
 Lectures and demonstrations.  
 An outline of the main facts and principles of biology with special reference to the bearing of biology upon human life. Open without prerequisite to all students, but designed for those not specializing in zoölogy. Not open for credit to students who have had course 1A, but students who have taken course 10 may elect course 1A for credit.

## UPPER DIVISION COURSES

*Prerequisites.*—Course 1A and either 1B or an approved course in some field of biology are prerequisite to courses 101, 102, 110, 111, 112, and 140.

Course 1A or 10 and upper division standing are prerequisite to courses 114 and 116; upper division standing and a year's work in any of the biological sciences, to 117A-117B.

Courses 1A and 1B are prerequisite to courses 100, 103, 105, 106, 107, 113, 115, 123, 124, 125, 135, 136, and 137.

Upper division or graduate status in some biological or physical science is prerequisite to courses 119A-119B and 120A-120B.

100. Vertebrate Embryology. (4) I. MR. EAKIN  
 Lectures and laboratory.  
 Details of development of the vertebrate body with emphasis on human embryology in lectures and on chick and pig in the laboratory.
101. Introduction to Physicochemical Biology. (2) I. MR. BROOKS  
 Prerequisite: elementary zoölogy, botany, chemistry and physics.  
 The application of physical and chemical methods to the study of the nature of protoplasm, diffusion processes, absorption, accumulation and bioelectric phenomena.
- 101c. Physicochemical Biology Laboratory. (2) I. MR. BROOKS  
 Prerequisite: course 101 (may be taken concurrently).

- \*102. Introduction to Physicochemical Biology. (2) II. Mr. BROOKS  
Prerequisite: course 101.  
A continuation of course 101, applied to reactions, enzymes, oxidation, growth, and the effects of salts, temperature, and radiation.
- \*102c. Physicochemical Biology Laboratory. (2) II. Mr. BROOKS  
Prerequisite: courses 101, 101c, and 102 (may be taken concurrently).
- \*103. Experimental Embryology. (2) I. Mr. EAKIN  
A study of the production of body form and the induction, differentiation, and growth of primary organ systems.
- 103c. Experimental Embryology Laboratory. (2) II. Mr. BERG  
Emphasis in 1948 on the invertebrates. Enrollment limited to ten students.
- \*105. Growth and Form. (2) II. Mr. HARRIS  
The mechanics and regulation of body growth; repair, ageing, and abnormal growth of adult tissues as studied in regeneration, transplantation, and tissue culture.
106. Comparative Anatomy of the Vertebrates. (4) II. Mr. HARRIS  
Lectures and laboratory.  
Recommended: course 100.  
Evolution of organ systems and phylogeny of the major vertebrate groups.
107. Cytology. (2) II. Mr. GOLDSCHMIDT  
The structure and activities of the cell, especially in development, in sex determination, and in heredity.
- 107c. Cytology Laboratory. (2) II. Mr. GOLDSCHMIDT  
Prerequisite: course 107 (may be taken concurrently).
109. Biological Examination of Water. (1) II. Mr. KIRBY  
Microorganisms, other than bacteria, in relation to water supplies.  
Restricted to students in sanitary engineering.
110. Biology of the Protozoa. (4) I. Mr. KIRBY  
Lectures and laboratory.  
Consideration of the groups of protozoa and of the contributions made through study of them to problems of biology.
111. General Parasitology. (4) II. Mr. KIRBY, MRS. SCOTT  
Lectures and laboratory.  
Study of the characteristics, life history, and host relationships of animal parasites other than protozoa and higher arthropods, with emphasis on helminthology.
112. Invertebrate Zoölogy. (4) II. \_\_\_\_\_  
Lectures, laboratory and field work.  
Anatomy, classification, and natural history of common invertebrate animals.  
Given also at the seashore in alternate summers (in odd-numbered years).

---

\* Not to be given, 1947-1948.

113. Natural History of the Vertebrates. (4) II.  
Mr. MILLER, Mr. BENSON, Mr. STEBBINS  
Lectures, field trips, and laboratory.  
The birds, mammals, reptiles, and amphibians, chiefly of California; identification of species; observational methods in study of behavior and habitat relations; systematics, distribution, and speciation. Field work emphasized.
114. Genetics. (3) I. Mr. GOLDSCHMIDT  
The facts of heredity, basic and advanced.
- \*114c. Genetics Laboratory. (2) I. Mr. STERN  
Course 114 may be taken concurrently.
115. Human Genetics. (3) II. Mr. STERN  
A study of the principles of inheritance as applied to the physical and mental characteristics of man, of the heredity-environment problem, and of the genetic constitutions of populations.
116. Introduction to Wildlife Conservation. (3) I. Mr. LEOPOLD  
Wildlife conservation in the United States; theory and principles of game management; identification of economically important species.
- \*117. History of Biology. (2) II. \_\_\_\_\_
- 119A-119B. Optics and Metrology in Biology. (2-2) Yr. Mr. GULLBERG  
Course 119A or its equivalent is prerequisite for 119B.  
119A. The theoretical principles and the critical use of the microscope, spectroscope, and other primary optical instruments.  
119B. The theory and advanced technique of scientific photography, photomicrography, and special photometric methods.
- 120A-120B. Electrical Measurements in Biology. (2-2) Yr. Mr. GULLBERG
121. Advanced Physicochemical Biology. (2) I. Mr. BROOKS  
Prerequisite: course 1A, Mathematics 1, Physics 2A-2B, Chemistry 1A and 8, and a reading knowledge of German. Recommended: courses 101, 102, and 112, Mathematics 3A-3B, Chemistry 109, Biochemistry 105A, Botany 2, and a reading knowledge of French.  
The molecular structure and permeability relations of protoplasm.
- \*122. Advanced Physicochemical Biology. (2) I. Mr. BROOKS  
Prerequisite: course 121, or equivalent training.  
Biological effects of radiant energy.
123. Invertebrate Embryology. (2) II. Mr. BERG  
Special emphasis will be given to the comparative and experimental embryology of marine invertebrates.
124. Experimental Invertebrate Zoölogy. (4) I. Mr. SMITH  
Lectures and laboratory.  
Prerequisites: course 112 or a course in physiology.  
A study of the major invertebrate groups from a functional point of view, with individual laboratory problems on nutrition, respiration, and coordination.

---

\* Not to be given, 1947-1948.



125. General Ecology. (4) II. Mr. PITELKA  
Lectures, laboratory, and field work.  
Prerequisite: 2 semesters of upper division work in biology, and one of the following: courses 112, 113, Entomology 112, Physiology 100A-100B, or Botany 108.  
Interrelations of organisms and their environment, study of communities, succession, effects of physical gradients, food chains, and population dynamics; analyses involving invertebrates, vertebrates, and plants.
135. Mammalogy. (2) I. Mr. BENSON  
Lecture and laboratory.  
Prerequisite: course 113.  
Advanced study of classification, anatomy, and distribution of mammals.
136. Ornithology. (2) I. Mr. MILLER  
Lecture and laboratory.  
Prerequisite: course 113.  
Advanced study of classification, anatomy, and function in birds.
137. Herpetology. (2) II. Mr. STEBBINS  
Lecture and laboratory.  
Prerequisite: course 113.  
Advanced study of classification, anatomy, and behavior of amphibians and reptiles.
- \*140. Internal Animal Parasites of Man. (4) II. Mr. KIRBY, Mrs. SCOTT  
Lecture and laboratory.  
Materials, laboratory methods, and use of literature in the study of protozoan and helminth parasites of man.
145. Wildlife Management. (3) II. Mr. LEOPOLD  
Prerequisite: course 116.  
Applied aspects of wildlife management.
197. Extra Session Work. (1-4) The STAFF  
Work on assigned topics carried on in the field, or in Berkeley when the University is not in session, under the direction of a member of the staff.
199. Special Study for Advanced Undergraduates. (1-4) I and II.  
The STAFF (Mr. EAKIN in charge)  
All work supplementary to courses above. Credit to be determined for each individual case.  
Prerequisite: senior standing and at least a B average in upper division courses in zoölogy.

## GRADUATE COURSES

Concerning conditions for admission to graduate courses, see page 156.

- \*208. Comparative Anatomy of the Invertebrates. (3) II. \_\_\_\_\_  
Lectures, seminar, and laboratory.
212. Advanced Marine Zoölogy. (4) Mr. PITELKA, Mr. SMITH  
Given at the seashore in alternate summers (in odd-numbered years).  
This course or its equivalent at an approved marine biological station is required of all candidates for the Ph.D. degree in Zoölogy.

\* Not to be given, 1947-1948.

214. Seminar in Heredity and Evolution. (2) I. Mr. STERN  
Prerequisite: graduate standing and one course in genetics.  
Topics will vary from year to year. In 1947 the topic will be the nature and behavior of chromosomes as carriers of genes.
220. Seminar on Speciation and Adaptive Radiation in Vertebrates. (1) I.  
Prerequisite: course 113. Mr. MILLER, Mr. BENSON  
Seminar on problems of speciation and isolating mechanisms in vertebrates.
224. Research. (1-8) I and II. The STAFF (Mr. EAKIN in charge)  
Original study on special topics in laboratory, field, and museum. The work may be carried on in the laboratories at Berkeley or at a marine station at any season of the year. Credit awarded according to work accomplished.
240. Zoölogy Seminar. (No credit) I and II.  
The STAFF (Mr. EAKIN in charge)  
Meetings for the presentation of original work by the faculty, guest investigators, and graduate students.
241. Seminar in Protozoölogy and Parasitology. (1) II. Mr. KIRBY
- \*242. Seminar in Experimental Morphogenesis. (1) I.  
Mr. GOLDSCHMIDT, Mr. HARRIS, Mr. EAKIN
243. Vertebrate Review. (No credit) II. Mr. BENSON, Mr. PITELKA  
Review of current literature.
299. Special Study for Graduate Students. (2-4) I and II.  
The STAFF (Mr. EAKIN in charge)  
Prerequisite: graduate status in zoölogy and approval of instructor.  
Any properly qualified graduate student who wishes to pursue a problem through reading or other advanced study may do so if his proposed project is acceptable to a member of the staff.

#### MUSEUM OF VERTEBRATE ZOÖLOGY

This Museum, situated in the Life Sciences Building on the Berkeley campus, was founded and endowed by Miss Annie M. Alexander as a repository for specimens and information relative to the higher vertebrate animals of the Pacific Coast region of North America. The particular groups of animals with which it is concerned are the mammals, birds, reptiles, and amphibians; of these, it has a large and continually growing collection, as indicated (on March 27, 1947) by a total of 252,279 catalogue entries. The specimens, with the accompanying field notes, photographs, and maps, provide the bases for studies along systematic, faunistic, ecologic, and economic lines. Persons interested in employing the facilities of the Museum may address the Director.

\* Not to be given, 1947-1948.

## INDEX

- A, Subject, 87  
 Abbreviations used, 155  
 Absence, leave of, 49  
 Academic colleges, 18  
 Academic Senate, 17  
 Accounting, courses in, 219, 221  
 Accrediting of schools in California, 28  
 Acoustics, 288, 412  
 Administration of the University, 17  
 Administrative officers, 9-14  
 Admission, in undergraduate status, 26  
   deficiencies, removal of, 29, 31  
   from foreign countries, 32  
   in advanced standing, 30  
   in freshman standing, 26-30  
   in graduate standing, 33  
   late admission, 33  
   of special students, 31  
 Advanced standing, 30, 62  
 Advertising, courses in, 220, 484  
 Advisers, in the College of Letters and  
   Science, 62  
   for foreign students, 13, 32  
 Agricultural, economics, 87, 91, 164, 177  
   chemistry, 164  
   education, 87, 91  
   engineering, 102, 166, 177  
 Agriculture  
   College of, at Davis, 17  
   College of, at Los Angeles, 16, 22  
   College of, at Riverside, 17  
   courses in, 164  
   curricula of the College of, 17, 86  
   high school preparation recommended, 86  
   minimum scholarship requirements, 44  
   requirements for degree, 86  
 Agronomy, 167, 178  
 Air conditioning, 18, 112  
 Air transportation, 221  
 American civilization, group major in, 69  
 American history and institutions, 38  
 American literature, group major in, 69  
 Anatomy, 189  
 Animal science, 87, 91, 167, 178  
 Announcement of courses, 155  
 Anthropology, 191  
   museum, 195  
 Application fee, 26, 34  
 Applied Sciences, Colleges of, 16  
 Appointment registry for teachers, 59  
 Approved lodging houses, 56  
 Arabic, 388  
 Archaeology, 202  
 Architecture  
   courses in, 196  
   curriculum of the School of, 19, 119  
   graduate in, 19, 120  
   Master of Arts in, 119  
 Art, courses in, 200  
 Arts, requirements for degrees of Bachelor  
   of, 67  
   Associate in Arts degree, 63  
     honorable mention with, 66, 84  
   Associated Students, 50, 53  
   Association of American Universities, 33  
   Assyrian, 384  
   Astronomy, 16, 17, 204  
   Attorney for the Regents, 10, 53  
   Audio-Visual education, 261  
   Authority of instructors, 41  
   Automotive engineering, 112  
  
 Bacteriology, 16, 179, 207  
 Biochemistry, 16, 209  
 Biology (see under Botany, Physiology,  
   Zoölogy)  
   Biology Library, 24  
   Board and lodging, 56, 58  
   Bohemian, 446, 447  
   Books and stationery, 52  
   Botany, 16, 179, 213  
   Bowles Hall, 57  
   Brief leave, 49  
   Buddhism, 394  
   Bureau, of Guidance and Placement, 59  
   of International Relations, 15, 24, 427  
   of Occupations, 59  
   of Public Administration, 15, 24, 427  
 Business administration  
   degrees in engineering, 117  
   courses in, 219  
   curriculum of the School of, 19, 123  
   minimum scholarship requirements, 44  
  
 Calendar, 7, 8  
 California Museum of Vertebrate Zoölogy,  
   15  
 California School of Fine Arts, 16  
 Candidacy for degrees, 7, 8, 41  
 Celtic, 303  
 Certificate of Completion, teacher-training  
   curriculum, 19, 124  
 Change of college or major, 41, 68  
 Chemical engineering, 112, 228  
 Chemistry  
   courses in, 179, 226  
   curricula of the College of, 18, 100  
   food chemistry, 89  
   high school preparation recommended,  
     96  
   honors in, 94  
   minimum scholarship requirements, 44  
 Child development, 70, 89, 231  
 Chinese, 392  
 Citrus Experiment Station, 17  
 City planning, 172, 198  
 Civil engineering, curriculum in, 106  
   courses in, 272

- Classics, 16, 232  
 Classification of courses, 155  
 Climate of Berkeley, 51  
 Clothing and textiles, 89, 338  
 College Entrance Examination Board, 29  
 Colleges, and departments of the University, 15-18  
   change of, 41  
 Commerce, College of, see Business administration  
 Commerical law, 219  
 Communication engineering, 18, 109  
   courses in, 280  
 Composition, English, required, 27, 37  
   of the University, 15  
 Condition examination, 47  
 Coöperatives, 56, 164  
 Coptic, 384  
 Correspondence instruction, 23  
 Counseling, 59, 260  
 Courses, classification of, 155  
 Cowell, Ernest V., Memorial Hospital, 36  
 Credentials, teachers', 125  
 Credit, regulations concerning, 42  
   by examination, 45  
   definition, 155  
   upon repetition of lower division course, 47  
 Criminology, 71, 424  
 Crocker Radiation Laboratory, 15  
 Curricula, 17, 70
- Dairy industry, 180  
 Danish, 445  
 Deans in the academic colleges, 12  
 Debating, 465  
 Decorative art, 16, 237, 340  
 Deficiencies, admission, 29  
   in university courses, 47  
 Degrees conferred in the several colleges and schools, 18-22  
   dates of application for, 7, 8, 41  
   regulations concerning, 41  
 Dental hygienists, curriculum for, 21, 99  
 Dental service, 36  
 Dentistry, College of, 16, 21, 53, 98  
   high school preparation recommended, 98  
 Departments of instruction, 16  
 Design (see Landscape, Architecture, Art, and Decorative art)  
 Dietetics, 22, 89, 154, 336  
 Discipline, 49  
 Discontinuance without notice, 49  
 Dismissal, honorable, 49  
   for scholarship delinquency, 44  
 Dormitories, 57  
 Dramatic art  
   courses in, 241  
   major in dramatic literature, 72  
 Drawing (see Art, Engineering)
- Economic geology curriculum, 102, 108
- Economics  
   agricultural, curriculum in, 91  
   courses in, 243  
   social, 81, 82, 148  
 Education, degrees, Master or Doctor of, 19  
   courses in, 181, 250  
   School of, 19, 124  
 Egyptian, 384  
 Electrical engineering, 102, 109, 278  
 Employment, 58  
 Engineering, College of, 21, 100  
   agricultural, 104  
   automotive, 100  
   civil, 104, 106, 272  
   construction, 106  
   courses in, 269  
   degree requirements, 103  
   economic geology, 102, 108  
   electrical, 102, 109, 278  
   examination required, 100  
   high school preparation recommended, 27, 100  
   honors, 117  
   industrial, 111  
   irrigation, 106  
   marine, 112, 286  
   mechanical, 112, 284  
   metallurgy, 113, 293  
   mining, 108, 114, 290  
   petroleum, 115, 291  
   physics, 410  
   sanitary, 107  
   scholarship requirements, 44  
   structural, 107  
   transportation, 107  
 English, examination in, for foreigners, 32  
   composition, 37  
   comprehensive examination, 302  
   courses in, 299  
   for admission, 27, 37  
   required for Associate in Arts degree, 63  
 Entology, 182  
 Entomology, and parasitology, 88, 92, 167, 181  
 Entrance requirements, 26-34  
 Examinations, medical required, 36  
   condition or special, 47  
   credit by, 45  
   for foreign students, 32  
   regulations concerning, 46  
 Excuse for absence, 49  
 Expenses of students, 51  
 Explanatory note, 155  
 Extension, University, 15, 23, 30, 38, 66, 68
- Faculty advisers, 32, 62  
 Failures and conditions, 43, 47  
 Far Eastern studies, 73  
 Fees, application, 26, 34  
   commutation of, 56

- condition examinations, 47
- exempt from tuition, 56
- for Subject A course, 37
- general, 51
- incidental, 52
- laboratory, 53
- late registration, 33
- nonresident, 53
- professional schools, 52
- refunds, 54
- tuition, 53
- Fellowships and scholarships, 60
- Fernwald dormitories, 58
- Final examinations, regulations concerning, 46
- Finance, 165, 220, 246
- Fine Arts, California School of, 16
  - for Associate in Arts degree, 66
- Food chemistry, 89
- Food technology, 169
- Foreign language, credit in, for foreign students, 32
  - for admission, 27, 28
  - in the College of Chemistry, 96
  - required for Associate in Arts degree, 64
- Foreign literature, 305
- Foreign students
  - admission from foreign schools, 32
  - adviser, 32
  - courses for, 464
  - examination in English for, 32
  - language credit in mother tongue, 32
  - living accommodations, 56
  - special advisers for, 32
- Forestry, School of, 19, 130
  - courses in, 306
  - degree requirements, 130
  - preforestry program, 132
  - scholarship requirements, 44
- Fraternalities, 56
- French, 16, 79, 311
- General curriculum, 61, 67
- General Elementary, Junior High School
  - credentials, 128
- General information, 51
- General Secondary credential, 125
- Genetics, 170, 216, 473,
- Geography, 16, 314
- Geological sciences, 16, 182, 317
- Geophysics, 318
- German, 16, 323
- Gothic, 309
- Government
  - courses in, 419
  - of the University, 11
  - student self-government, 50
- Grade points, 42
- Grades of scholarship, 42
- Graduate Division, 33, 45
- Graduate fellowships and scholarships, 60
- Graduate in Architecture, degree of, 19, 120
- Greek, 16, 234
- Group majors, 68, 70
- Guidance, Bureau of, 59
- Gymnasiums, 37
- Hastings College of the Law, 12, 16, 21
- Health educators, 21
- Health service, 36
- Hebrew, 383
- High school program required for admission, 27
- History
  - courses in, 182, 329
  - for admission, 27
  - for graduation, 38
- Home economics
  - courses in, 334
  - curriculum in, 89, 93
  - furnishing, 338
- Honorable dismissal, 49
- Honorable mention, with the degree of Associate in Arts, 84
- Honors, 42, 84, 94, 95, 117, 121
  - courses, 155
- Hooper Foundation, Medical Research, 16, 34
- Horticulture, 171, 182
- Hospital, Ernest V. Cowell Memorial, 36
  - dietetics, 22, 154
  - University, 16, 20
- Household science, major requirements (see Home economics)
- Housing, 53, 56
  - courses in, 198
- Hydraulic engineering, 112
- Hydrology, 275
- Hygiene (see Public health)
- Incidental fee, 52
- Indefinite leave of absence, 49
- Industrial engineering, 111
- Institute, of Child Welfare, 15
  - of Experimental Biology, 15
  - of Industrial Relations, 15
- Instruction, organization of, 15-17
- Instructors, authority, 41
- Insurance, 220, 246
- Interior decorating, 239, 338
- International House, 58
- International Relations, Bureau of, 15, 427
  - courses in, 421
  - major in, 73
- Irish, 303
- Irrigation, 106, 183, 282
- Italian, 16, 341
- Japanese, 392
- Journalism, 16, 348
- Judicial Committee, 50
- Junior College credential, 127

- Junior High School credential, 128  
 Jurisprudence  
   courses in, 846  
   major in the College of Letters and  
   Science, 74  
   School of, 19, 74, 184  
  
 Laboratory fees, 53  
 Laboratory science, for Associate in Arts  
   degree, 64  
   for admission, 27  
 Laboratory technicians, 189  
 Landscape design, 89, 93, 171, 183  
 Lange Library, 24  
 Langley Porter Clinic, 16  
 Languages, credit in, for a foreign student,  
   32  
   foreign, for admission, 27  
   for the Associate in Arts degree, 64  
 Late registration, 33  
 Latin, 16, 284  
 Law  
   commercial, courses in, 219  
   courses in, 846, 421  
   degrees in, 19, 20  
   Hastings College of the, 12, 16, 21  
   preparation for, 74  
   School of Jurisprudence, 12, 19, 74, 134  
 Leave of absence, 49  
 Letters and Science, College of, 61  
   high school preparation recommended, 27  
   honors, 84  
   list of courses, 82  
   requirements for degrees in, 64, 67  
   requirements for majors in, 68-82  
   scholarship requirements, 42  
   study-list regulations, 62  
 Librarianship, courses in, 350  
   School of, 12, 20, 187  
 Library, 24  
   course in the use of, 465  
 Lick Astronomical Department, 17, 84, 206  
 Limits, study-list, 40, 62, 94, 95  
 Linguistics, 233, 304  
 Living, accommodations, 53, 56  
   expenses, 58  
 Loans, 60  
 Location of campus, 51  
 Lodging and board, 52, 56  
 Los Angeles, Medical Department, 16  
 Los Angeles, University of California, at,  
   16, 22  
 Lower division  
   in the College of Letters and Science, 63  
   courses defined, 155  
  
 Majors, change of, 41, 63  
   in the College of Agriculture, 86  
   in the School of Education, 124  
   for the A.B. degree, 68, 69  
 Malay, 392  
 Marine engineering, 18, 112  
  
 Marketing, 165, 219  
 Mathematics, courses in, 184, 855  
   for Associate in Arts degree, 64  
   required for admission, 27  
 Matriculation, credit, 30, 42  
   examinations, 29  
 Mechanical engineering, 112, 184, 284  
 Medical Aptitude Test, 76, 138  
 Medical examination required, 36  
 Medical School, 12, 20, 45, 52, 138  
   premedical curriculum, 76  
   tuition fee, 52  
 Medical science, courses in (see Anatomy,  
   Biochemistry, Physiology)  
   major, 77  
 Medico-military science, 364  
 Metallurgy, 113, 293  
 Meteorology, 315  
 Microbiology, 211  
 Military science and tactics, 39, 185, 365  
   required for Associate in Arts degree,  
   64  
 Mineralogy, 322  
 Minimum scholarship requirements, 44  
 Mining, curricula in, 101, 114  
   courses in, 290  
 Mining geology, 108  
 Modeling, 197  
 Mongolian, 393  
 Morrison Library, 24  
 Museum, of Paleontology, 15, 398  
   of Anthropology, 195  
   of Vertebrate Zoology, 15, 475  
 Music, 16, 373  
  
 Natural science requirement, 64  
 Naval architecture, 286  
 Naval science and tactics, 40, 381  
 Near Eastern languages, 383  
 Nonmajor curriculum, 61, 67  
 Nonresident students, tuition fee for, 53  
 Norse, 309  
 Norwegian, 445  
 Numbering of courses, 155  
 Numismatics, 236  
 Nursery school administration, 338  
 Nursing, curricula in, 20, 141  
   courses in, 385  
   nursing education, 22, 142  
   public health, 22, 142  
   School of, 12, 20, 141  
 Nutrition and dietetics, 89, 337  
  
 Observatory, 17, 206  
 Oceanography, 17, 388  
 Officers, administrative, 11-13  
 Optics, 390, 412, 473  
 Optometry, School of, 20, 45, 145  
   courses in, 389  
 Organization of instruction, 15-17  
 Organization of the University, 15  
 Oriental languages, 16, 79, 392

- Paleontology, 16, 395  
     museum of, 15, 398  
 Parasitology, 88, 92, 167  
 Passing and nonpassing grades, 42  
 Personnel, officer, 18  
     courses in, 220, 425, 426  
 Petroleum engineering, 115, 291  
 Petroleum geology, 115  
 Pharmacology, 211  
 Pharmacy, College of, 16, 21, 44, 53, 117  
 Philology, 444 (and see under the various languages)  
 Philosophy, 16, 399  
 Phonetics, 233, 311, 444, 465  
 Physical education, 37, 78, 404  
 Physical examination required, 36  
 Physical therapy, training course, 140  
 Physics  
     courses in, 185, 410  
     engineering, 410  
     high school preparation recommended, 27  
 Physiological optics, 390  
 Physiology, 16, 185  
 Placement, Bureau of, 59  
 Plant pathology, 172, 185  
 Plant physiology, 215  
 Plant science curriculum, 90, 93  
 Points, grade, 42  
 Police administration, 424  
 Polish, 446  
 Political science, 16, 186, 419  
 Pomology, see Horticulture  
 Portuguese, 462  
 Poultry husbandry, 186  
 Prederal curricula, 98  
 Prelegal preparation, 74  
 Premedical curriculum, 76  
 Preparation for University curricula, 27  
 Prizes, 60  
 Probation, 44  
 Process engineering, 18  
 Professional, curricula, 18, 21, 68, 69  
     courses, 156  
 Psychology, 16, 186, 337, 428  
 Public administration, 15, 24, 424  
 Public health  
     courses in, 186, 436  
     curricula in, 20, 21, 147  
     engineers, 21  
     laboratory technicians, 148  
     Nursing, 22, 141  
     Sanitarians, 148  
     School of, 20, 147  
     Statisticians, 148  
 Public speaking (see Speech)
- Radiation laboratory, 15  
 Radio communication, 231  
 Readmission after dismissal, 44  
 Real estate, 221  
 Recreation, group major in, 78  
     courses in, 407
- Reexamination, 46  
 Refrigeration, 286  
 Refunds of fees, 54  
 Regents, 9  
 Regional group majors, 79  
     China, 79  
     France and French colonies, 79  
     Germany and Central Europe, 79  
     Hispanic America, 80  
     Japan, 80  
     Russia and Eastern Europe, 80  
 Registration, routine of, 35  
     late, 38  
 Regulations concerning students in academic departments, 35-50  
 Religion, 80  
 Removal of deficiencies, 45  
 Repetition of course for higher grade, 47  
 Reports of student grades, 42  
 Requirements, for admission, 26-34  
     for degrees (see under the various colleges)  
 Residence, rules governing, 54  
     requirements for degree, 41, 68  
 Resident courses, 156  
 Romance philology, 444  
 Romanic languages (see under French, Italian, Spanish)  
 Russian, 446
- San Francisco, departments at, 16  
 Sanitary engineering, 107  
 Sanskrit, 16, 235  
 Santa Barbara College, 17  
 Scandinavian languages and literature, 16, 445  
 Scholarship, grades of, 42  
     minimum requirements of, 44  
     requirements for admission, 26  
 Scholarships and fellowships, 60  
 Schools, 15, 19  
 Science  
     requirements for degree of Bachelor of, 86-122  
 Sciences (see under the various departments)  
     for admission, 27  
     for Associate in Arts degree, 64  
 Scripps Institution of Oceanography, 17  
 Sculpture, 81  
 Seismology, 322  
 Self-government of students, 50  
 Self-support of students, 58  
 Semantics, 465  
 Semitic languages (see Near Eastern languages), 16, 383  
 Senate, Academic, 17  
 Serbo-Croatian, 446  
 Siamese, 393  
 Site and climate of Berkeley, 51  
 Slavic languages, 16, 446  
 Social institutions, 16, 455

- Social sciences, for Associate in Arts degree, 66  
 Social welfare, 21, 81, 151, 450  
 Sociology, 16, 185, 455  
 Soil science, 90, 94, 174, 186  
 Sororities and fraternities, 57  
 Spanish, 16, 459  
 Special examinations, 47  
 Special students, 31  
 Special study courses, 155  
 Speech, 16, 186, 463  
 Stagecrafts, 241  
 Statistics, courses in economics, 245, 246  
     for biologists, 184  
     in education, 253, 257  
     in mathematics, 361  
     in psychology, 480  
     in public health, 487  
 Status, change of, 32  
 Stern Hall, 57  
 Student body card, 52  
 Student health and welfare, 36  
 Student self-government, 50  
 Study-list regulations, 40, 62, 95, 97  
 Subject A, 37, 467  
 Subtropical horticulture, 176  
 Sumerian, 384  
 Summer sessions, 23  
     courses for the Associate in Arts degree, 65  
 Supervised teaching, 124  
 Survey of curricula, 17  
 Surveying, 269  
 Swedish, 445  
 Syriac, 384  
 Teacher placement, 59  
 Teacher-training, curricula, 124  
     courses, 156  
 Technicians, 21, 140, 141, 148  
 Textiles, 338  
 Tibetan, 393  
 Transcript of record, 48  
 Transportation engineering, 107  
 Truck crops, 176, 187  
 Tuition, 53  
 Undergraduate curricula, 18  
 Units of work and credit, 42  
 University Extension, 13, 15, 28, 30, 38, 66, 68, 156  
 University Farm, Davis, 17  
 University of California at Los Angeles, 22  
 Unsatisfactory scholarship, 44  
 Upper division, in the College of Letters and Science, 67, 70  
     courses defined, 155  
 Vaccination required, 36  
 Vegetable production, 176  
 Veterans' Affairs, 14  
 Veterinary medicine, 21  
 Veterinary science, 187, 468  
 Visual instruction, 24  
 Viticulture, 182  
 Welfare, social, 21, 81, 151  
 Wildlife conservation, 82, 473, 474  
 Women's Athletic Association, 37  
 World Affairs, 469  
 Year courses, 35, 155  
     required for Associate in Arts degree, 65  
 Zoölogy, 16, 187, 470  
 Zymology, 170



UNIVERSITY OF CALIFORNIA

SUPPLEMENTARY ANNOUNCEMENTS

*to the General Catalogue, Departments at Berkeley*

New Courses; Changes in Courses; New Appointments;  
Changes in Appointments

February, 1948

---

NOTE.—Changes in the time schedule are not included in this circular. Consult the  
SCHEDULE AND DIRECTORY and departmental bulletin boards.  
The number in parentheses represents the unit value of the course.

AGRICULTURE

Agricultural Economics

107, 208. Not to be given.

Entomology and Parasitology

*New Course:*

118. Plant Nematology. (4) II.

Mr. ALLEN

Identification, morphology, biology, and distribution of plant parasitic and associated nematodes. Symptomatology, pathology, and control of nemic infections in cultivated crops. Techniques employed in the manipulation and examination of soil and infected plants.

Food Technology

*New Course:*

120. Plant Pigments. (3) II.

Mr. MACKINNEY

Prerequisite: Chemistry 1A-1B, 8, 109; Biochemistry 103 or equivalent. Enrollment limited to 10 students.

Chemistry, chromatography, absorption spectroscopy, and investigation of plant pigments with particular reference to their behavior in the processing and storage of fruit and vegetable products.

112B. Miss HOHL added to the staff of instruction.

*New Appointments:* Landscape Design

NICHOLAS CIRINO, A.B., Lecturer in Landscape Design.  
ROBERT N. ROYSTON, B.S., Assistant Professor of Landscape Design.  
1B, 116. To be given by Mr. ROYSTON.  
111B. To be given by Mr. CIRINO.  
114B. To be given by Mr. VAUGHAN.  
115B. Not to be given.  
199, 201B. Mr. VAUGHAN in charge.

*New Appointment:* Plant Nutrition

PAUL K. STUMPF, Ph.D., Assistant Professor of Plant Nutrition.  
201B. Mr. STUMPF added to the staff of instruction.

*New Appointment:* Plant Pathology

STEPHEN WILHELM, A.B., Instructor in Plant Pathology.  
123. Mr. WILHELM added to the staff of instruction.

Poultry Husbandry

*Absent on leave, Spring Semester, 1947-1948:*

I. MICHAEL LERNER, Ph.D., Associate Professor of Poultry Husbandry.

*Change in Course:*

104. Unit value changed to 3.

Soil Science

112, 113. Mr. STUMPF added to staff of instruction.  
199. Mr. OVERSTREET and Mr. STORIE added to staff of instruction.  
201B. Mr. OVERSTREET added to the staff of instruction.

*New Appointment:* ANATOMY

ROBERT DURANT RAY, M.A., M.D., Instructor in Anatomy.

*Change in Appointment:*

C. WILLET ASLING, M.D., Assistant Professor of Anatomy.

*Absent on Leave, Spring Semester, 1947-1948:*

WILLIAM O. REINHARDT, A.B., M.D., Assistant Professor of Anatomy.  
199, 213. Mr. RAY added to the staff of instruction.

*New Course:* ANTHROPOLOGY

170. Primitive Education. (2) II. Mr. PETTITT  
This course is included in the Letters and Science List of Courses.

*Change in Course:*

125. Changed to year course, 125A-125B.  
125B. Comparative Society. (3) II. Mr. OLSON  
111, 147. Not to be given.

## ARCHITECTURE

### *New Appointments:*

GEORGE A. DOWNS, M.F.A., Lecturer in Architecture.  
WILLIAM M. GILLIS, M.A., Lecturer in Architecture.  
HENRY J. LAGORIO, M.A., Lecturer in Architecture.  
RICHARD O'HANLON, Lecturer in Sculptural Design.  
C. ARTHUR STEINER, M.A., Lecturer in Architecture.

### *Resigned:*

JOHN LYON REID, M.A., Associate Professor of Architecture.  
RAYMOND PUCCINELLI, Lecturer in Sculptural Design.

### *In residence during Spring Semester, 1947-1948:*

MICHAEL B. GOODMAN, M.A., Professor of Architecture.  
JACQUES SCHNIER, M.A., Assistant Professor of Sculptural Design.  
4, 6B. Mr. DOWNS, Mr. GILLIS, Mr. STEINER added to the staff of instruction.  
5D, 6D, 201A. Not to be given.  
14, Secs. 3 and 4. To be given by Mr. O'HANLON.  
115. To be given by Mr. STEINER.

## ART

### *Sabbatical Leave in Residence, Spring Semester, 1947-1948:*

EUGEN NEUHAUS, Ph.D., Professor of Art.

### *New Appointment:*

ERNST STOLZ, B.F.A., Lecturer in Art.

### *New Courses:*

- 5B. History of Oriental Art. (3) Mr. MAENCHEN  
Survey of Indian, Chinese, Japanese, and Southeastern Asiatic art, 3000 B.C.  
to 1800 A.D.  
This course is included in the Letters and Science List of Courses.
- 160B. History of Chinese Art. (2) Mr. MAENCHEN  
Prerequisite: Upper division standing.  
From 2000 B.C. to the present.  
This course is included in the Letters and Science List of Courses.
287. Seminar in the History of Oriental Art. (2) Mr. MAENCHEN
- 2A. Mr. STOLZ added to the staff of instruction.
173. Not to be given.

## ASTRONOMY

2. To be given by Miss PILLANS, if a sufficient number of students enroll.  
3. To be given by Mr. STERN.  
11. Not to be given.  
104B, 215B. Not to be given.

## BACTERIOLOGY

### *New Appointments:*

- JOHN ENRIGHT, Ph.D., Lecturer in Bacteriology.  
EDWIN H. LENNETTE, M.D., Ph.D., Lecturer in Bacteriology.

### *New Course:*

106. Introduction to the Animal Viruses. (2) II. Mr. LENNETTE, Mr. ENRIGHT  
Prerequisite: Bacteriology 101 with a grade of "C" or better.  
An introduction to the animal viruses including the techniques of virology, inclusion bodies, pathogenesis, immunity and the virus-host relationship.  
This course is included in the Letters and Science List of Courses.

## BIOCHEMISTRY

- 103, 105B, 106B. Mr. SCHLAMOWITZ added to the staff of instruction.  
103. Mr. DUGGAN added to the staff of instruction.  
104. To be given by Mr. DUGGAN.

## BUSINESS ADMINISTRATION

### *New Appointments:*

- WILLIAM LEONARD CRUM, M.A., Sc.D. (hon.), Ph.D., Professor of Economics.  
VAN DUSEN KENNEDY, Ph.D., Assistant Professor of Industrial Relations.  
CAMERON W. WOLFE, LL.B., Lecturer in Commercial Law.  
6B, Sec. 3. To be given by Mr. CORBIN.  
107, Secs. 7 and 11. To be given by Mr. FERCUSSON.  
118, Sec. 3. To be given by Mr. STARK.  
120, Sec. 3. To be given by Mr. ROGERS.  
120, Sec. 4. To be given by Mr. FURST.  
134, Sec. 2 and 234. To be given by Mr. CRUM.  
151, Sec. 3, and 154. To be given by Mr. KENNEDY.  
160A. To be given by Mr. DOYLE and Mr. STAEBLING.  
183. To be given by Mr. WOLFE.  
226. Not to be given.

## CHEMISTRY

### *Absent on Sabbatical Leave, Spring Semester, 1947-1948:*

- JOEL H. HILDEBRAND, Ph.D., Sc.D., Professor of Chemistry.  
GEORGE GIBSON, Ph.D., Professor of Chemistry.

### *New Appointment:*

- CHARLES W. TOBIAS, D.Eng., Instructor in Chemical Engineering.

### *Change in Appointment:*

- CHARLES R. WILKE, Ph.D., Assistant Professor of Chemical Engineering.

### *Died, January 29, 1948:*

- JACK W. PETERSEN, Ph.D., Instructor in Chemistry.

*New Course:*

115. Microchemistry. (3) II. Mr. CUNNINGHAM, Mr. KOCH  
Prerequisite: Senior standing in chemistry.  
Synthesis and preparation of organic and inorganic samples on the milli-gram and microgram scale and their analysis by gravimetric and volumetric methods.  
This course is included in the Letters and Science List of Courses.
- 1B. To be given by Mr. CONNICK and Mr. POWELL instead of Mr. HILDEBRAND.
5. Mr. SIMONSON added to the staff of instruction.
9. To be given by Mr. BRANCH and Mr. DANDLIKER.
- 12A. Mr. CRONYN added to the staff of instruction.
143. To be given by Mr. WILKE instead of Mr. VERMEULEN.
144. Not to be given.
- 146A. To be given by Mr. BROMLEY.
- 146B. To be given by Mr. HANSON instead of Mr. BROMLEY.
147. Mr. VERMEULEN added to the staff of instruction.
- 207B. To be given by Mr. RAPOPORT.

CLASSICS

Classics

*New Courses:*

36. Plato, Lectures and Readings. (2) II. Mr. CHERNISS  
This course is included in the Letters and Science List of courses.
- 37B. Survey of Greek Literature. (2) II. Mr. HELMBOLD  
An effort to present the main movements and personalities in classical Greek literature, Homer to Lucian.  
This course is included in the Letters and Science List of courses.
120. The *Poetics* of Aristotle. (2) II. Mr. POST  
The relation of the doctrines of Aristotle to the development of drama. See also Greek 120.  
This course is included in the Letters and Science List of Courses.
- 146c. Virgil: Aeneid VII-XII. (3) II. Mr. ALEXANDER  
Prerequisite: Latin 105, 106, 107, 108.  
The concentration of attention on the last six books of the Aeneid, neglected in modern times but regarded by Virgil as the more important half of his Aeneid.  
This course is included in the Letters and Science List of Courses.

*Change in Course:*

Greek

120. The *Poetics* of Aristotle. (3) II. Mr. POST  
The relation of the doctrines of Aristotle to the development of drama.  
This course is constituted by taking Classics 120 plus one hour per week in

the original Greek. This third hour will be arranged with the instructor. See Classics 120.

1 and 1B, Sec. 2. To be given by Mr. HELMBOLD.

114. To be given by Mr. LINFORTH instead of Mr. CHERNISS.

*Died, February 2, 1948:*            **DECORATIVE ART**

LILA M. O'NEALE, Ph.D., Professor of Decorative Art and Associate Curator of Textiles.

60A. To be given by Mr. ROSENQUIST.

166. To be given by Mr. ROSENQUIST instead of Miss NELSON.

167. Not to be given.

175B, 179, 193B. Announcements concerning these courses will be made later.

176A. To be given by Mrs. MILLER.

196A. To be given by Mr. WELLINGTON.

*New Appointment:*            **ECONOMICS**

ROBERT M. ROBINSON, M.A., Associate in Economics.

*Absent on Leave, Spring Semester, 1947-1948:*

ROBERT A. BRADY, Ph.D., Professor of Economics.

ROBERT A. GORDON, Ph.D., Professor of Economics.

*Change in Courses:*

The unit value of the following courses has been increased to 3 each semester, beginning in the spring semester, 1947-1948: 201A-201B, 202, 203A-203B, 206A-206B, 212A-212B, 213A-213B, 216A-216B, 217, 231A-231B, 290A-290B, 291.

1B. Mr. ROBINSON added to the staff of instruction.

100A, Sec. 2. To be given by Mr. ROBINSON.

101B. Not to be given.

104. To be given by Mr. LETICHE.

112. To be given by Mr. KNIGHT.

137. To be given by Mr. ROLPH.

142. To be given by Mr. CRUM.

188B. Not to be given.

201B, 204A. Not to be given.

298. Mr. ELLIS added to the staff of instruction.

*New Appointments:*            **EDUCATION**

ROY COCHRANE, Ed.D., Lecturer in Education.

PAUL V. W. LOFGREN, Ph.D., Lecturer in Education.

IONA R. LOGIE, Ph.D., Lecturer in Education.

MAURICE M. SMITH, Ph.D., Lecturer in Education.

110, Secs. 1 and 2. To be given by Mr. SMITH.

113. To be given by Mr. SMITH.

162. To be given by Mr. LOFGREN.  
163, 264. To be given by Mr. COCHRANE.  
164. To be given by Mrs. LOCIE.  
200. To be given by Mr. H. D. CARTER instead of Miss MOREY.  
212. Not to be given.  
260B. Not to be given.  
322. To be given by Mr. DICKERMAN.

## ENGINEERING

### *New Appointments:*

- ROBERT A. CORNOG, Assistant Professor of Mechanical Engineering.  
JOHN D. AXTELL, M.S., Lecturer in Electrical Engineering.  
GARLAND W. BROWN, M.S., Lecturer in Electrical Engineering.  
GEORGE E. DAVIS, M.A., Lecturer in Engineering Design.  
ALFRED E. EDSTROM, M.A., Lecturer in Engineering Design.  
SHERWOOD J. BRADY, M.S., Lecturer in Mechanical Engineering.  
JOSEPH FRISCH, B.S., Lecturer in Mechanical Engineering.  
WILLIAM W. HOWE, A.B., Lecturer in Mechanical Engineering.  
KENNETH K. KELLEY, Ph.D., Lecturer in Engineering.  
LOUIS A. KURTZ, B.S., Lecturer in Electrical Engineering.  
FRANK G. MILLER, M.S., Lecturer in Mining and Metallurgy.  
WILLIAM E. NORRIS, B.S., Lecturer in Electrical Engineering.  
ROLAND W. PINGER, M.E., Lecturer in Mechanical Engineering.  
WILLIAM S. ROUVEROL, M.S., Lecturer in Mechanical Engineering.  
WINFIELD W. SISSON, B.S., Lecturer in Engineering Design.  
GEORGE L. SMITH, B.S., Lecturer in Mechanical Engineering.  
FRANKLIN H. THOMPSON, M.S., Lecturer in Mechanical Engineering.  
JOHN B. TURNER, JR., B.S., Lecturer in Mechanical Engineering.  
HERBERT V. WILEY, B.S., Lecturer in Engineering.

### *Change in Appointment:*

- DAVID W. MITCHELL, Ph.D., Assistant Professor of Metallurgy.  
NATHAN W. SNYDER, Ph.D., Assistant Professor of Mechanical Engineering.

### *Absent on Leave, Spring Semester, 1947-1948:*

- CLEMENT T. WISKOCIL, C.E., Professor of Civil Engineering.

### *Resigned:*

- PHILIP B. BUCKY, E.M., Professor of Mining and Metallurgy.  
MILLET G. MORGAN, Ph.D., Lecturer in Electrical Engineering.  
ELDON M. STOCK, M.S., Lecturer in Civil Engineering.

## Engineering

35. Mr. MERIAM to be in charge instead of Mr. GARLAND.  
41, 48. Not to be given.

## Civil Engineering

- 102A. To be given by Mr. CLYDE and Mr. WOODWARD.  
106. To be given by Mr. JAMEYSON and Mr. JONES.  
107c. Mr. PISTER added to the staff of instruction.  
107G. To be given by Mr. EBERHART.  
108E. Mr. BRESLER, Mr. CLYDE, Mr. JONES, and Mr. WALKER added to the staff of instruction.  
108F. Mr. CLYDE added to the staff of instruction.  
108c. Mr. WOODWARD added to the staff of instruction.  
109A. To be given by Mr. MALONY.  
112. To be given by Mr. POPOV and Mr. WOODWARD instead of Mr. WISKOCIL.  
113. To be given by Mr. VALLERCA.  
114. Mr. HOTES added to the staff of instruction.  
116. Not to be given.  
161. Mr. EINSTEIN added to the staff of instruction.  
241. To be given by Mr. MALONY instead of Mr. GOTAAAS.

### *New Course:*

## Electrical Engineering

- 200A-200B. Research Literature. (2-1) Yr. Mr. MORTON  
Prerequisite: Graduate standing. This course must precede or accompany graduate research in Electrical Engineering.  
Individual study of the historical background and present status of research in the field of special interest to each student, culminating in written and oral reports.  
102, 104B. To be given by Mr. TEALE.  
110B. Mr. SAUNDERS added to the staff of instruction.  
116B. Mr. REUKEMA added to the staff of instruction.  
133. Mr. SAUNDERS to be in charge.  
217. To be given by Mr. SILVER instead of Mr. REUKEMA.  
222. To be given by Mr. ABBOTT instead of Mr. ROBERTSON.

## Irrigation

103. To be given by Mr. HARDING.  
202. To be given by Mr. ETCHEVERRY.

## Mechanical Engineering

- 102B. Mr. CORNET and Mr. KANE added to the staff of instruction.  
105B, 131B, 198. Mr. CORNOG added to the staff of instruction.  
106. Mr. LEUTWILER to be in charge.  
106A. Mr. C. W. NELSON to be in charge.  
128A. To be given by Mr. LAURENSEN.  
128B. Not to be given.  
131B. Mr. BRADY, Mr. ROUVEROL and Mr. G. L. SMITH added to staff of instruction.



151. Mr. H. A. JOHNSON added to the staff of instruction.  
152B. Mr. SNYDER added to the staff of instruction.  
162. Mr. LAITONE added to the staff of instruction.  
171, 172. To be given by Mr. SOROKA.  
276. Mr. SCHAAF added to the staff of instruction.

#### Metallurgy

122. To be given by Mr. MITCHELL instead of Mr. DUSCHAK.  
152. Not to be given.  
298. Topics for seminars for Spring Semester, 1948 are:  
Thermodynamics.  
Plasticity of Metals.

Mr. KELLEY  
Mr. DORN

#### ENGLISH

##### *New Appointment:*

- CHARLES S. MUSCATINE, M.A., Lecturer in English.  
100, Sec. 8; 1B, Secs. 11 and 21. To be given by Mr. MUSCATINE.  
155. To be given by Mr. MUSCATINE.

#### FORESTRY

##### *New Appointment:*

- JOHN A. ZIVNUSKA, Ph.D., Instructor in Forestry.  
121. To be given by Mr. ZIVNUSKA.  
122. Not to be given.

#### FRENCH

##### *New Appointment:*

- EDMOND MASSON, M.A., Lecturer in French.  
114B. Not to be given.  
123B. Not to be given.  
217B. To be given by Mr. MEYLAN.

#### GEOGRAPHY

##### *New Appointment:*

- STANLEY J. JONES, M.A., Visiting Professor of Geography.

##### *New Course:*

202. Seminar in Historical Geography. (2) II.  
123B. To be given by Mr. ROSTLUND.  
143 and 151. To be given by Mr. JONES.  
171. Not to be given.  
199. Mr. ROSTLUND in charge.

Mr. JONES

#### GEOLOGY

107. Not to be given.

#### Mineralogy

- 4B. To be given by Mr. VERHOOGEN instead of Mr. PABST.  
103, 282. Not to be given.

*New Courses:*

GERMAN

1c. German for Graduates in the Physical Sciences. No credit. II.

Mr. STRAUBINGER

An intensive course for graduate students preparing to meet the requirements of a reading knowledge of German in the physical sciences.

220. Goethe (The Pre-Weimar Period). (2) II.

Mr. WOLFF

A study of Goethe's early works with chief emphasis on his lyric poetry, Werther, and Götz—discussion of the literary and philosophical trends of the period.

199. Mr. LOOMIS to be in charge instead of Mr. BELL.

HISTORY

167. Not to be given.

202. To be given by Mr. KANTOROWICZ.

241B. To be given by Mr. GRIFFITHS.

266B. Not to be given.

271B. Not to be given.

HOME ECONOMICS

*New Appointment:*

MARGARET B. BREMNER, M.S., Lecturer in Home Economics.

*Absent on leave, Spring Semester, 1948:*

JESSIE V. COLES, Ph.D., Associate Professor of Home Economics.

*New Course:*

12. Euthenics. (2) II.

Miss BREMNER

A study of the function of the family and the homemaker in modern society, and of the contributions of the basic sciences and arts to the solution of present-day social and economic problems of the individual and the family.

14, 142, 242. Not to be given.

105. To be given by Miss KENNEDY.

140, 140L. To be given by Miss BREMNER.

ITALIAN

*Died, January 4, 1948:*

HERBERT H. VAUGHAN, Ph.D., Professor of Italian.

4. To be given by Mr. NOCE instead of Mr. ALTROCCHI.

100. To be given by Mr. DE FILIPPIS.

101B. To be given by Mr. ALTROCCHI.

206B. Not to be given.

JOURNALISM

*New Appointment:*

JAMES E. MURRAY, A.B., Lecturer in Journalism.

20B, 130B. Mr. MURRAY will assist Mr. GRIFFIN.

## JURISPRUDENCE

### *New Appointments:*

PAUL H. SANDERS, A.B., LL.B., Visiting Professor of Law.  
WILLIAM T. LAUBE, A.B., J.D., LL.M., Lecturer in Law.

### *Absent on Leave, Spring Semester, 1947-1948:*

BARBARA N. ARMSTRONG, A.B., J.D., Ph.D., Professor of Law.  
200B, 274. To be given by Mr. LAUBE.  
226B, 264. To be given by Mr. SANDERS.  
266. To be given by Mr. SURREY.

## MATHEMATICS

### *New Appointments:*

TERRY A. JEEVES, A.B., Associate in Mathematics.  
STEFAN PETERS, Ph.D., Lecturer in Mathematics.

### *In Residence, Spring Semester, 1947-1948:*

PAULINE SPERRY, Ph.D., Associate Professor of Mathematics.

### *Absent on Leave, Spring Semester, 1947-1948:*

CHARLES B. MORREY, JR., Ph.D., Professor of Mathematics.  
SOPHIA L. McDONALD, Ph.D., Associate Professor of Mathematics.

### *New Course:*

122. Life Contingencies. (3) II.

Mr. PETERS

· Prerequisite: Courses 12 and 113 or 130A and 130C.

Mortality tables and related functions. Laws of mortality. Single premiums. Ordinary plans of insurance. Varying benefits and premiums. Policy reserves. Continuous premiums. Installment premiums. Complete annuities. Return of premiums. Some statistical applications of the mortality table. Survey of mortality tables.

4. To be given by Mr. BARANKIN and the staff.

8. To be given by Mr. DILIBERTO and Mr. JAMES.

9. To be given by Mr. SEIDENBERG.

10. To be given by Mr. WILLIAMS.

11B, Sec. 2. To be given by Mr. JEEVES.

110B, Sec. 1. To be given by Mr. BUCK.

220B. To be given by Mr. BUCK instead of Mr. PINNEY.

111A. To be given by Mr. FOSTER.

111B. To be given by Mr. TARSKI.

112A. To be given by Mr. SEIDENBERG.

112B. To be given by Mrs. WAKERLING.

116. To be given by Mr. KELLEY.

150B. To be given by Mr. KELLEY.

270. To be given by Mr. PINNEY.

267. To be given by Mr. NEYMAN instead of Mr. BARANKIN.

## MILITARY SCIENCE AND TACTICS

### *New Appointments:*

CLARENCE O. OLSON, Lieutenant-Colonel, Quartermaster Corps; Associate Professor of Military Science and Tactics.

KENNETH E. PELL, Major, Coast Artillery Corps; Associate Professor of Military Science and Tactics.

KENNETH J. PETERSON, Major, Corps of Military Police; Associate Professor of Military Science and Tactics.

WILLIAM B. WOOTTON, JR., Major, Infantry; Associate Professor of Military Science and Tactics.

ARTHUR W. MERRICK, Captain, Infantry; Assistant Professor of Military Science and Tactics.

JOHN M. SIMMONS, Captain, Coast Artillery Corps; Assistant Professor of Military Science and Tactics.

167B, 177B, 187B. Not to be given.

### MUSIC

### *New Appointment:*

REGINALD KRIEGER, Lecturer in Music.

### *Change in Course:*

198. Unit value changed to (2-3).

300B. To be given by Mr. KRIEGER.

455A. To be given by Mr. TRUTNER.

445D. To be given by Mr. KUBITSCHK.

## NAVAL SCIENCE

### *New Appointment:*

ERWIN N. THODE, Lieutenant-Commander, U.S.N., Associate Professor of Naval Science.

### *New Course:*

107s. Navy Supply. (3) II.

Mr. THODE

Supply department functions, procurement and purchases, issues, stores returns accounting, appropriation and cost reports, commissary and ship's store procedures, transfers and material disposition.

101B. To be given by Mr. WATSON instead of Mr. NICHOLS.

103, 104. Not to be given.

## NURSING

### *New Appointment:*

JEANNETTE S. HILLER, B.N., M.A., Assistant Professor of Nursing.

### *Absent on Leave, Spring Semester, 1947-1948:*

MILDRED E. NEWTON, R.N., M.A., Assistant Professor of Nursing.

416, 419. To be given by Miss THOMSON.

418. To be given by Mrs. HILLER.

## OPTOMETRY

103B. To be given by Mr. MORGAN and Mr. STODDARD.

### *New Appointments:*      **ORIENTAL LANGUAGES**

YUNG-T'UNG TANG, M.A., Lecturer in Chinese.

SHEN-CHOW KUNG, A.B., Assistant in Chinese.

### *New Courses:*

136. Chinese Dialects. (2) II. Mr. CHAO

This course is included in the Letters and Science List of Courses.

177. Types of Linguistic Structure. (2) II. Mrs. HAAS

A rapid general survey followed by a more detailed presentation of selected Far Eastern and American Indian Languages. Open to qualified language students and students of anthropology.

This course is included in the Letters and Science List of Courses.

197B. Linguistics Laboratory. (2) Mrs. HAAS

The technique of recording and analyzing a foreign language by working directly with a native speaker. An Oriental language will be used as a model. The phonetic, and analytic skills will be developed in class. Open to qualified language students and students of anthropology.

21B, Sec. 2. To be given by Mr. KUNG.

113, 121B, 132, 182. Not to be given.

162B, 173B. To be given by Mr. TANG.

## PHILOSOPHY

### *Absent on Leave, Spring Semester, 1947-1948:*

PAUL MARHENKE, Ph.D., Professor of Philosophy.

14, 114, 213B, 225. Not to be given.

113. To be given by Mr. KALISH instead of Mr. MARHENKE.

### *New Appointments:*      **PHYSICS**

BURTON J. MOYER, Ph.D., Lecturer in Physics.

CHAIM RICHMAN, Ph.D., Lecturer in Physics.

### *Absent on Sabbatical Leave, Spring Semester, 1947-1948:*

HARVEY E. WHITE, Ph.D., Professor of Physics.

### *Change in Course:*

126. Unit value changed to (2). Course not to include laboratory work.

### *New Course:*

126L. Biological Applications of Artificial Radioactivity. (1) II.

Mr. HAMILTON

Laboratory work, designed to accompany the lectures of Physics 126. May not be taken independently of Physics 126.

This course is included in the Letters and Science List of Courses.

- 4c, Sec. 3. To be given by Mr. MOYER.  
 115. To be given by Mr. RICHMAN instead of Mr. McMILLAN.  
 124. To be given by Mr. THORNTON instead of Mr. ALVAREZ.  
 211A. To be given by Mr. SEGRÈ instead of Mr. JENKINS.  
 221B. To be given by Mr. SERBER.  
 223B. To be given by Mr. NELSON.  
 224. To be given by Mr. McMILLAN instead of Mr. SEGRÈ.  
 230. Not to be given.

## PHYSIOLOGY

*Absent on Leave, Spring Semester, 1947-1948:*

SHERBURNE F. COOK, Ph.D., Professor of Physiology.

## POLITICAL SCIENCE

*In Residence, Spring Semester, 1947-1948:*

SAMUEL C. MAY, M.A., LL.B., Professor of Political Science.

*New Course:*

169. Legal Relations Involved in Criminology. (3) II. Mr. A. M. KIDD  
 Prerequisite: At least junior standing and Political Science 167A-167B.  
 History of criminal law, relation to civil law, Penal Code, arrest, searches  
 and seizures, evidence, special classes of persons.  
 155, 255B, 261. To be given by Mr. MAY.  
 272. Not to be given.

## PSYCHOLOGY

*New Appointments:*

EGERTON L. BALLACHEY, Ph.D., Lecturer in Psychology.  
 AUDREY S. SCHUMACHER, Ph.D., Lecturer in Psychology.

*New Courses:*

- 214v. Theories of Thinking and Learning. (2) II. Mr. KRECH  
 144. Social Psychology of the Interview. (3) II. Mr. BALLACHEY  
 Lectures and laboratory.  
 Prerequisite: Psychology 164 or 3 units of social psychology, and permis-  
 sion of the instructor.  
 Processes of communication in interview techniques used in the social  
 sciences with especial reference to distortions arising from differences in  
 psychosociological frames of reference of the participants.  
 132. Not to be given.  
 164, 214o. Mrs. SCHUMACHER and Mr. BALLACHEY added to the staff of instruc-  
 tion.  
 214f. To be given by Mrs. SCHUMACHER.

## PUBLIC HEALTH

### *New Appointments:*

JACOB YERUSHALMY, Ph.D., Professor of Public Health.  
RICHARD A. KOCH, M.D., M.P.H., Lecturer in Public Health.  
EDWIN H. LENNETTE, Ph.D., Lecturer in Virology.  
MALCOLM H. MERRILL, M.D., M.P.H., Lecturer in Public Health.  
SUSA H. CONDLIFFE, A.B., Associate in Public Health.  
FERN E. SCNEDER, M.A., Associate in Public Health.

16. To be given by Mr. YERUSHALMY.  
21. To be given by Miss LINDSAY.  
122. Not to be given.  
131, 233. Miss SKINNER added to the staff of instruction.  
105. To be given by Mr. KELLY.  
145. To be given by Mr. BISSELL.  
163A. To be given by Miss CONDLIFFE, Mr. TAYLOR, Mr. YERUSHALMY.  
163B. To be given by Mr. YERUSHALMY and Mr. TAYLOR.  
164B. To be given by Miss CONDLIFFE and Mr. YERUSHALMY.  
168. To be given by Mr. YERUSHALMY if a sufficient number of students enroll.  
169. To be given by Mr. YERUSHALMY if a sufficient number of students enroll.  
171, 172. Not to be given.  
229B. To be given by Miss BIERMAN.  
262. To be given by Mr. YERUSHALMY.  
251. Not to be given.  
296. To be given by Mr. YERUSHALMY if a sufficient number of students enroll.

## ROMANCE PHILOLOGY

202. To be given by Mr. MALKIEL.

## SLAVIC LANGUAGES

### *New Appointment:*

NOEL A. VOGE, A.B., Lecturer in Slavic Languages.  
111B. To be given by Mr. VOGE.  
122. Not to be given.  
180B. To be given by Mr. STRUVE instead of Mr. GUINS.  
185, 200. Not to be given.

## SOCIAL WELFARE

### *New Appointment:*

MARY E. DUREN, M.A., Lecturer in Social Welfare.

### *Additional Appointments:*

PORTIA B. HUME, M.D., Lecturer in Social Welfare.  
NORMAN REIDER, M.D., Lecturer in Social Welfare.  
ALEXANDER SIMON, M.D., Lecturer in Social Welfare.

*Absent on Leave, Spring Semester, 1947-1948:*

MARTIN B. LOEB, A.B., Assistant Professor of Social Welfare.

*Resigned:*

JOSEPHINE R. HILGARD, M.D., Ph.D., Lecturer in Social Welfare.

252B. To be given by Mr. ARNE.

202B, Sec. 1; 258B. Miss DUREN added to the staff of instruction.

262. To be given by Mr. SIMON, Mrs. HUME, Mr. REIDER instead of Mrs. HILGARD.

### SOCIOLOGY AND SOCIAL INSTITUTIONS

247, 250. Not to be given.

*New Appointments:*

#### SPANISH

RUTH D. HOUSE, M.A., Associate in Spanish.

EDWIN J. WEBBER, M.A., Associate in Spanish.

*Resigned:*

ALBERT E. SLOMAN.

107B. To be given by Mr. MORBY instead of Mr. MORLEY.

*New Appointment:*

#### SPEECH

ISABEL HUNGERLAND, Ph.D., Lecturer in Speech.

*Resigned:*

MARIANNE B. LEARY, M.A., Lecturer in Speech.

2A, Sec. 5; 2B, Sec. 9. To be given by Mrs. HUNGERLAND.

103. Not to be given.

118. To be given by Mr. RYNIN.

120. To be given by Mr. BARNHART instead of Mr. ROWELL.

*New Appointment:*

#### ZOOLOGY

WILLIAM N. INGRAM, Ph.D., Lecturer in Zoölogy.

10. To be given by Mr. INGRAM.

112. To be given by Mr. SMITH.

145. To be given by Mr. REYNOLDS instead of Mr. LEOPOLD.

199, 224, 299. Mr. KIRBY in charge, instead of Mr. EAKIN.

242. To be given by Mr. GOLDSCHMIDT.

BERKELEY, February 3, 1948.

