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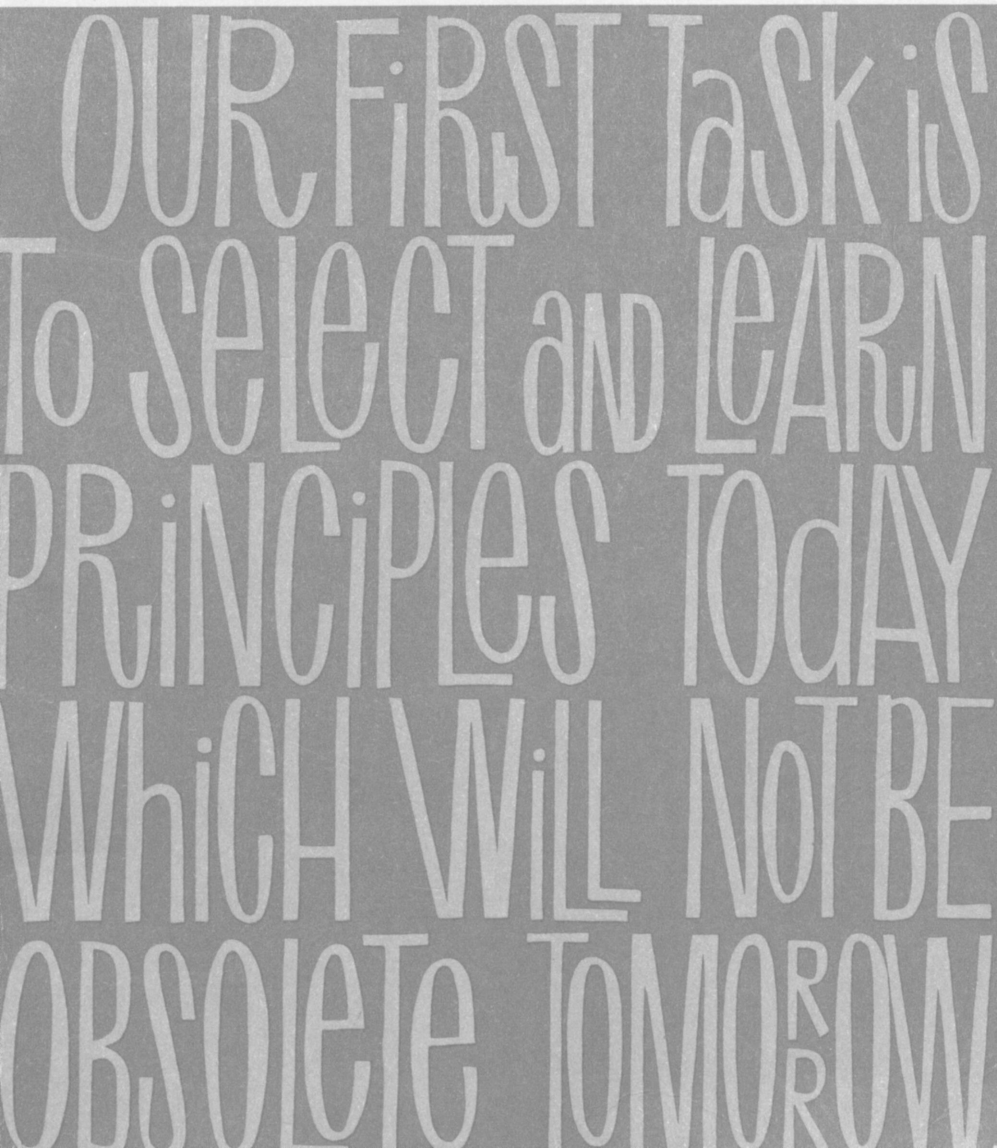
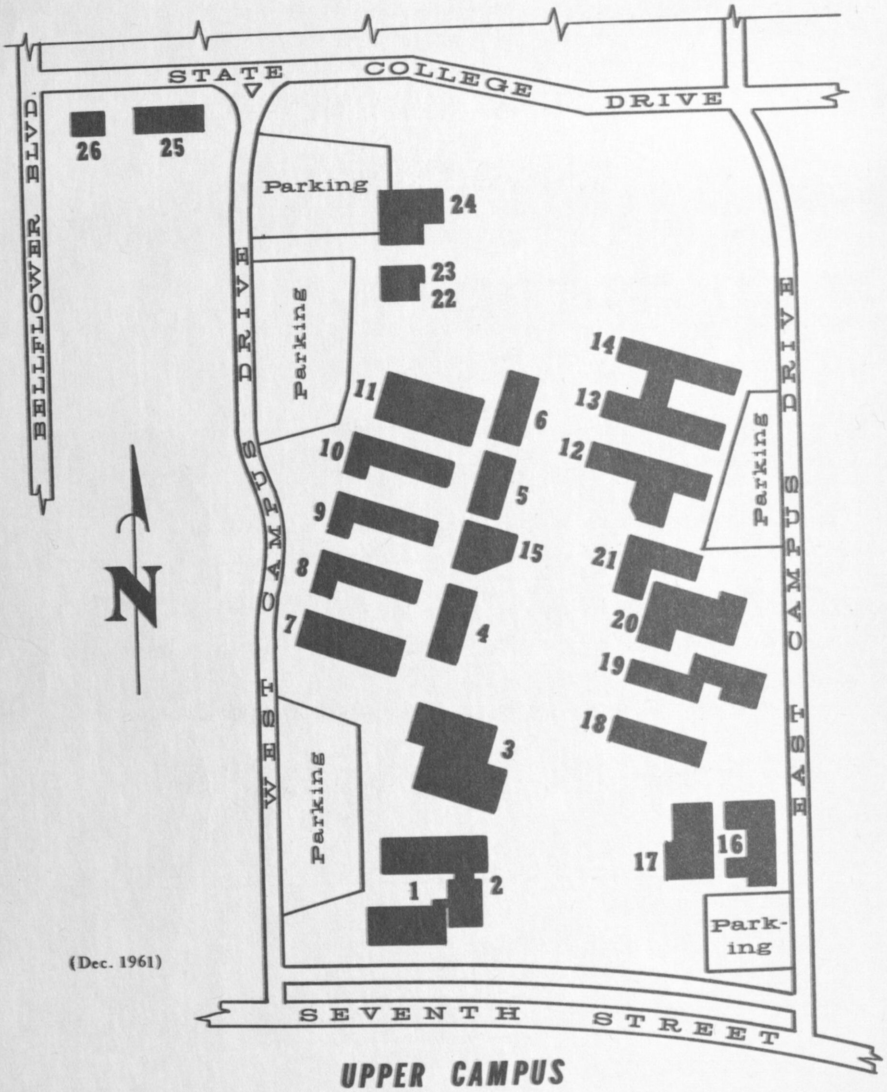
# CALIFORNIA STATE COLLEGE LONG BEACH

*Bulletin 64/65*






## UPPER CAMPUS

*(Lower Campus -- see inside back cover)*

**LEGEND**

1. Administration
2. Information Desk
3. Library
4. Faculty Office No. 1
   Speech Department
5. Faculty Office No. 2
6. Faculty Office No. 3
7. Liberal Arts No. 1 (LA1-)
8. Liberal Arts No. 2 (LA2-)
9. Liberal Arts No. 3 (LA3-)
10. Liberal Arts No. 4 (LA4-)
11. Liberal Arts No. 5 (LA5-)
12. Science Building No. 1 (SC1-)
13. Science Building No. 2 (SC2-)
14. Science Building No. 3 (SC3-)
15. Lecture Hall (LH 150 and 151)
16. Music Building
17. Theatre
18. Fine Arts Building No. 1 (FA1-)
19. Fine Arts Building No. 2 (FA2-)
20. Fine Arts Building No. 3 (FA3-)
21. Fine Arts Building No. 4 (FA4-)
22. Bookstore
23. Associated Student Body Offices 5
24. Cafeteria
25. Home Economics Building
26. Soroptimist House

CALIFORNIA STATE COLLEGE

LONG BEACH

# BULLETIN

VOL. 15 APRIL, 1964

# GENERAL CATALOG

GENERAL INFORMATION AND ANNOUNCEMENT OF COURSES

## Fall and Spring Semesters 1964-1965

6101 E. Seventh Street, Long Beach, California 90804
Telephone, GE 3-0951

*Edited by Linda L. Mangers, News Bureau*
*Cover by Joseph H. Krause, Art Department*
*Maps by Norm Bueche, Audio Visual Center*
*Campus Photographs by Wes Wendland, Audio Visual Center*

# CONTENTS


| | Page |
|---|---|
| College Calendar | 6–7 |
| College Administration | 11 |
| The College | 17 |
| Student Services and Activities | 24 |
| Admission to the College | 29 |
| General Regulations and Procedures | 34 |
| Fees and Expenses | 39 |
| Baccalaureate Degrees | 41 |
| Classification and Designation of Courses | 49 |
| Baccalaureate Degree Requirements, by Academic Area | 51 |
| Preprofessional Programs | 91 |
| Graduate Degree Requirements | 93 |
| Credential Requirements | 117 |
| Courses of Instruction | 129 |
| Faculty and Professional Library Staff | 283 |
| Index | 305 |

# 1964

### JULY

| S | M | T | W | T | F | S |
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### AUGUST

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# 1965

### JANUARY

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### DECEMBER

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# 1966

## JANUARY

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## FEBRUARY

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## MARCH

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## JUNE

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## JULY

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## AUGUST

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## SEPTEMBER

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## OCTOBER

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## NOVEMBER

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## DECEMBER

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# 1964-65 CALENDAR

## FALL SEMESTER—1964

| | |
|---|---|
| July 18 | Graduate Aptitude Examination |
| July 25 | The NLN Graduate Nurse Examination |
| September 1 | Application for admission, with official transcripts, must be on file with the Office of Admissions and Records by this date. To assure consideration for admission, applications should be filed as early as possible. Processing of an application cannot be completed until *all* transcripts are received |
| September 14 | Beginning of fall semester |
| September 14 | Faculty and staff meetings |
| September 15-19 | Registration. Refer to Schedule of Classes |
| September 21 | Instruction begins |
| September 22 | Last day to add new class to program |
| October 9 | Last day to drop a course with mark of W if work is not of "C" grade |
| October 17 | Graduate Aptitude Examination |
| November 7 | Entrance examinations: American College Testing Program Examinations, available at centers throughout state and nation |
| November 11 | Veteran's Day—Holiday |
| November 26-27 | Thanksgiving recess |
| December 19-January 3, inclusive | Christmas vacation |
| January 15 | Applications for admission and official transcripts must be on file by this date |
| January 20-22, 25-28, inclusive | Final examinations |
| January 30 | End of fall semester |

## SPRING SEMESTER—1965

| | |
|---|---|
| January 15 | Application for admission, with official transcripts, must be on file with the Office of Admissions and Records by this date. To assure consideration for admission, applications should be filed as early as possible. Processing of an application cannot be completed until *all* transcripts are received |
| February 1 | Beginning of spring semester |
| February 1 | Faculty and staff meetings |
| February 2-6 | Registration. Refer to Schedule of Classes |
| February 8 | Instruction begins |
| February 9 | Last day to add new class to program |
| February 12 | Lincoln's Birthday—Holiday |
| February 27 | Graduate Aptitude Examination |
| February 20, April 24, June 19 | Entrance examinations: American College Testing Program Examinations, available at centers throughout state and nation |
| February 26 | Last day to drop a course with mark of W if work is not of "C" grade |
| April 12-16, inclusive | Spring vacation |
| April 24 | Entrance examinations: American College Testing Program Examinations, available at centers throughout state and nation |
| May 31 | Memorial Day—Holiday |
| June 2-4, 7-10, inclusive | Final examinations |
| June 11 | Commencement |
| June 12 | End of spring semester |
| June 19 | Entrance examinations: American College Testing Program Examinations, available at centers throughout state and nation |

## 1965 SUMMER SESSION

| | |
|---|---|
| June 21-July 30, inclusive | Six-week session |
| August 2-August 27, inclusive | Four-week session |

## 1965-66 CALENDAR

| | |
|---|---|
| September 13 | Beginning of fall semester |

# TRUSTEES OF THE CALIFORNIA STATE COLLEGES

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Edmund G. Brown, LL.B. ..... State Capitol, Sacramento
Governor of California and President of the Trustees

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Lieutenant Governor of California

Jesse M. Unruh, B.A. ..... State Capitol, Sacramento
Speaker of the Assembly

Max Rafferty, A.B., M.A., Ed.D. ..... 721 Capitol Ave., Sacramento
State Superintendent of Public Instruction

Glenn S. Dumke, A.B., M.A., Ph.D., LL.D., L.H.D.
2930 W. Imperial Hwy., Inglewood
Chancellor of the California State Colleges

## APPOINTED TRUSTEES

The term of the appointed trustees is eight years, and terms expire March 1 of the years indicated in parentheses. Names are listed in order of original accession to the board.

Louis H. Heilbron, A.B., LL.B., LL.D. (1969)
14 Montgomery St., San Francisco 94104

Donald M. Hart, B.A. (1968)
2230 Pine St., Bakersfield 93302

James F. Thacher, B.A., LL.D. (1970)
310 Sansome St., San Francisco 94104

Paul Spencer, B.A. (1969)
P.O. Box 145, San Dimas 91773

Theodore Meriam, A.B. (1971)
P.O. Box 370, Chico 95927

Thomas L. Pitts (1966)
995 Market St., Rm. 810, San Francisco 94103

Charles Luckman, LL.D., A.F.D. (1966)
Charles Luckman Associates, 9220 Sunset Blvd., Los Angeles 90046

Albert J. Ruffo, LL.B., B.S. in E.E. (1971)
1680 Hedding St., San Jose 95113

John E. Carr, B.A. (1965)
611 Lido Park Dr., Newport Beach 92660

Mrs. Philip Conley, B.A. (1964)
3729 Huntington Blvd., Fresno 93702

E. Guy Warren, B.A. (1965)
P.O. Box 59, Hayward 94541

Daniel H. Ridder, B.A. (1967)
Long Beach Independent, Press-Telegram, 604 Pine Ave., Long Beach 90801

George D. Hart, A.B. (1967)
111 Sutter St., San Francisco 94104

Gregson E. Bautzer, B.A., LL.B. (1968)
190 N. Cañon Dr., Beverly Hills 90069

George A. Thatcher (1970)
10889 Wilshire Blvd., Suite 860, Los Angeles 90024

Simon Ramo, B.S., Ph.D. (1972)
8433 Fallbrook Ave., Canoga Park 91304

## OFFICERS OF THE TRUSTEES

Edmund G. Brown, Governor
President

Albert J. Ruffo
Vice Chairman

Charles Luckman
Chairman

Glenn S. Dumke, Chancellor
and Secretary-Treasurer

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| | |
|---|---|
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| Vice Chancellor, Academic Affairs | Raymond A. Rydell |
| Vice Chancellor, Business Affairs | John F. Richardson |
| Assistant Chancellor<br>Faculty and Staff Affairs | C. Mansel Keene |

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| | |
|---|---|
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| D. W. Campbell | Long Beach |
| Lawrence A. Collins, Sr. | Long Beach |
| William S. Grant | Long Beach |
| John W. Hancock | Long Beach |
| Francis Hertzog, M.D. | Long Beach |
| Harry J. Krusz | Long Beach |
| Jackson R. McGowan | Long Beach |
| Fred Miller | Long Beach |
| Aaron Schultz, Jr. | Long Beach |
| George P. Taubman, Jr. (Chairman) | Long Beach |

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| | |
|---|---|
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| Executive Dean for Administration | David L. Bryant |
| Manager, News Bureau and Publications | Robert G. Wells |
| Executive Dean for Development | Francis J. Flynn |
| Dean of the College | Raymond E. Lindgren |
| Dean of Graduate Studies | Halvor G. Melom |
| Dean of Instruction—Analyses and Reports | |
| Dean of Instruction—Curriculum | |
| Coordinator, Curriculum | Boyd A. Davis |
| Dean of Instruction—Extended Services | J. Wesley Bratton |
| Coordinator, Audio-Visual Services | James E. Cockrum |
| Coordinator of Research | Hiden T. Cox |
| Coordinator of International Programs | M. Robert Rutherford |
| Coordinator, Summer Session | Roderick B. Peck |
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| Associate Dean—Student Affairs | Lois J. Swanson |
| Associate Dean—Admissions and Records | Clarence R. Bergland |
| Admissions Officer | George LaDue |
| Registrar | William Lee |
| Associate Dean—Counseling and Testing | George D. Demos |
| Health Officer | Donald L. Martinson, M.D. |
| Placement Officer | H. Edward Babbush |
| Test Officer and Coordinator, Institutional Research | Robert T. Littrell |
| College Librarian | Charles J. Boorkman |
| Assistant College Librarians | Arnulfo D. Trejo, Callie D. Becker |
| Business Manager | Bernard R. Carman |
| Non-Academic Personnel Officer | Art W. Baars |
| Chief of Maintenance | Clifford L. Stapp |
| Accounting Officer | George H. Hackney |
| Purchasing Officer | Fred Kruger |

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| | |
|---|---|
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| Home Economics Department | Beulah V. Gillaspie |
| Industrial Arts Department | Floyd M. Grainge |
| Industrial Technology Department | Paul L. Kleintjes |
| Nursing Department | Dorothy L. Walsh |
| Police Science Department | C. Robert Guthrie |
| Division of Business Administration | S. Austen Reep |
| Accounting Department | Herbert L. Stone |

| | |
|---|---|
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| Business Finance Department | Michael L. Kearney |
| Marketing Department | Edmund A. Cotta |
| Production Management Department | Arthur C. Laufer |
| Division of Education | Henry R. Sehmann |
| Audio-Visual Department | F. Alan Timmons |
| Educational Administration Department | Stanley W. Williams |
| Educational Psychology and Social Foundations Department | Gordon Warner |
| Elementary Education Department | Leland M. Perry |
| Secondary Education Department | Daniel C. McNaughton |
| Division of Engineering | Robert E. Vivian |
| Civil Engineering Department | Carl A. Neidengard |
| Electrical Engineering Department | Rodney C. Lewis |
| Mechanical Engineering Department | Herluf P. Nielsen |
| Division of Fine Arts | Lawrence L. Peterson |
| Art Department | James S. Crafts |
| Drama Department | John H. Green |
| Music Department | Russel N. Squire |
| Division of Health, Physical Education and Recreation | Jack E. Montgomery |
| Health Education and Safety Department | John A. Torney |
| Men's Physical Education Department | John J. McConnell |
| Women's Physical Education Department | C. Patricia Reid |
| Division of Humanities | Samuel E. Wiley |
| English Department | Roscoe L. Buckland |
| Foreign Languages Department | James H. Noguer |
| Journalism Department | Wilfred P. James |
| Philosophy Department | Gerald B. Strickler |
| Speech Department | Earl R. Cain |
| Division of Natural Sciences | Kenneth L. Johnson |
| Biology Department | John J. Baird |
| Chemistry Department | Donald H. Simonsen |
| Geology Department | Bert L. Conrey |
| Mathematics Department | Anthony Mardellis |
| Microbiology Department | Frank E. Swatek |
| Physics-Astronomy Department | Charles A. Roberts, Jr. |
| Psychology Department | Leonard W. Towner, Jr. |
| Divison of Social Sciences | Robert A. Kennelly |
| Anthropology Department | William J. Wallace |
| Economics Department | J. Richard Powell |
| Geography Department | Sheldon E. Ericksen |
| History Department | Nicholas P. Hardeman |
| Political Science Department | John T. Amendt |
| Sociology and Social Welfare Department | Paul S. Ullman |

# COUNCILS AND COMMITTEES

Academic Senate
Administrative Council
Admissions and Scholastic Standards
Athletic
Budget
Campus Affairs Liaison
College Planning
Commencement and Ceremonies
Committee on Committees
Credentials and Teacher Education
Curriculum
Elementary Teacher Education
Graduate Studies
Library
Privilege and Tenure
Publications
Research
Retention, Tenure Appointment and Promotion
Sabbatical Leave
Scholarships and Loans
Secondary Teacher Education
Student Affairs
Student Conduct
Student Housing
Television

## THE CALIFORNIA STATE COLLEGES

The California State Colleges are a unique development of the democratic concept of tax-supported public higher education for all qualified students.

Spanning the state from Humboldt County in the north to San Diego in the south, the 16 campuses of the California State Colleges (with two additional campuses in the planning stage) represent the largest system of public higher education in the Western Hemisphere and one of the largest in the world. Current enrollment is more than 135,000 full and part-time students. The faculty and administrative staff numbers some 7,000.

The individual colleges, each with a geographic, curricular and academic character of its own, offer a solid basic program in the liberal arts. Beyond this, each college is noted for its individuality in academic emphasis which makes for a diversified system. Course offerings leading to the bachelor's and master's degree are designed to satisfy existing student interests and to serve the technical and professional manpower requirements of the state.

The California State Colleges are dedicated to rigorous academic standards. Constant striving for academic excellence is at the heart of the system. Each faculty within the system is a "teaching faculty" whose primary responsibility is the instructional process on the teacher-student level, with appropriate recognition of the necessary and constructive role of research in any institution of higher education.

Responsibility for the California State Colleges is vested in the Board of Trustees, which is appointed by the Governor, and the Board's administrative arm, the Chancellor. The Trustees and the Chancellor set broad policy for the colleges while delegating considerable independent responsibility for implementation at the college level.

Although the oldest of the colleges, San Jose State College, dates back a century, the California State College system under an independent Board of Trustees was created by the Donahoe Act of 1960. Formerly, the colleges were under the jurisdiction of the State Board of Education.

Today, the California State Colleges are in a particularly dynamic period of their development. Prior to World War II, there were seven State Colleges with a peak total enrollment of some 13,000. Since 1947, nine new campuses have been developed and two more are scheduled to begin operation within the next two years. Enrollment in the system is expected to reach 180,000 by 1970.

## THE COLLEGES

California State College at Hayward
25800 Hillary Road, Hayward
Dr. Fred F. Harcleroad, President

California State Polytechnic College, San Luis Obispo and Pomona
Dr. Julian A. McPhee, President

Chico State College, 1st and Normal Sts., Chico
Dr. Glenn Kendall, President

Fresno State College, Shaw and Cedar Aves., Fresno 26
Dr. Arnold E. Joyal, President

Humboldt State College, Arcata
Dr. Cornelius H. Siemens, President

California State College at Long Beach
6101 E. Seventh St., Long Beach 4
Dr. Carl W. McIntosh, President

California State College at Los Angeles
5151 State College Dr., Los Angeles 32
Dr. Franklin A. Johnson, President

California State College at Fullerton, 800 State College Blvd., Fullerton
Dr. William B. Langsdorf, President

Sacramento State College, 6000 Jay St., Sacramento 19
Dr. Guy A. West, President

California State College at San Bernardino (Being developed)
Mailing address: 532 Mountain View Ave., San Bernardino
Dr. John M. Pfau, President

San Diego State College, 5402 College Ave., San Diego 15
Dr. Malcolm A. Love, President

San Fernando Valley State College, 18111 Nordhoff Ave., Northridge
Dr. Ralph Prator, President

San Francisco State College, 1600 Holloway Ave., San Francisco 27
Dr. Paul A. Dodd, President

San Jose State College, San Jose 14
Dr. John T. Wahlquist, President

Sonoma State College, 265 College View Drive, Cotati
Dr. Ambrose R. Nichols, Jr., President

California State College at Palos Verdes (Being developed)
Mailing address: 2930 W. Imperial Hwy., Inglewood
Dr. Leo F. Cain, President

Stanislaus State College, P.O. Box 1000, Turlock
Dr. Alexander Capurso, President

# THE COLLEGE

## HISTORY AND PURPOSE

The College was established January 27, 1949, to serve the area of Orange County and southeastern Los Angeles County. The College began instruction September 28, 1949, under the name of Los Angeles-Orange County State College in temporary, rented facilities in Long Beach with a faculty of 13 and a student body of 160 juniors, seniors and graduate students.

The College was renamed Long Beach State College in 1950, and in 1964 to California State College at Long Beach. In 1951 the College moved to its present 320-acre campus, donated by the City of Long Beach, on Highway 22 (Garden Grove Blvd.) on the eastern outskirts of Long Beach. Two years later, the first freshmen and sophomores enrolled. The same year, 1953, construction of the first permanent facilities was begun.

Today, 15 years after its founding, it has grown to a College with a teaching faculty in excess of 500, a student body of approximately 15,000 and 30 permanent facilities costing more than $30,000,000.

The College provides instruction "for undergraduate students and graduate students through the master's degree, in the liberal arts and sciences, in applied fields and in the professions, including the teaching profession." The purpose, which is defined by legislation, is shared by the other California State Colleges.

## ACCREDITATION

The College is accredited by the Western Association of Schools and Colleges, by the California State Department of Education, by the National Council on Accreditation of Teacher Education, by the Engineers' Council for Professional Development and is approved by the American Association of University Women.

The College holds membership in the following:

American Association of Colleges
American Association of Colleges of Teacher Education
American Association of Collegiate Registrars and Admissions Officers
American Association of School Administrators
American Association of University Women
American College Health Association
American College Public Relations Association
American Councils of Education
American Mathematical Society
American Personnel and Guidance Association
American Society for Engineering Education

American Studies Association
Association of College Unions
Association of College and University Housing Officers
Association of State Colleges and Universities
Association for Education in Journalism
California Association of College and University Housing Officers
California Association of Public Purchasing Officers
California Association of School Personnel Administrators
California Association of Secondary School Administrators
California Association for Supervision and Curriculum Development
California Association of Women Deans and Vice Principals
California Council on Teacher Education
College and University Personnel Association
Council of Graduate Schools in the United States
Journalism Association of California Junior Colleges
Inter-University Committee on the Superior Student
Mathematical Association of America
Modern Language Association
National Association of Accountants
National Association of Foreign Student Affairs
National Association of Student Personnel Administrators
National Association of Women Deans and Counselors
National Commission on Accrediting
National Committee on Accreditation of Teacher Education
National Council of College Publications Advisers
National Institutional Teacher Placement Association
National League for Nursing
National Machine Accounts Association
National Office Management Association
Northwest Association of Secondary and Higher Schools
Pacific Coast Association of Collegiate Registrars and Admissions Officers
Pacific Coast College Health Association
Personnel and Industrial Relations Association
Southern California Association of School Personnel Administrators
Western Association of College and University Business Officers
Western Association of Graduate Schools
Western College Association
Western College Placement Association
Western Deans Association
Western Institutional Placement Association
Western Personnel Institute

## INSTRUCTIONAL PROGRAM

The College offers courses in the following instructional areas:

Accounting
Anatomy and Physiology
Anthropology
Art
Astronomy
Biology
Botany
Business Education
Business Finance
Business Relations
Chemistry
Civil Engineering
Drama
Economics
Education
Electrical Engineering
Engineering
English
Entomology
Finance
French
Geography
Geology
German
Health Education
History
Home Economics
Industrial Arts
Industrial Relations
Industrial Technology
Journalism
Latin
Mathematics
Marketing
Mechanical Engineering
Microbiology
Music
Nursing
Philosophy
Photography
Physical Education
Physical Science
Physics
Police Science and Administration
Political Science
Production Management
Psychology
Recreation
Russian
Safety Education
Social Science
Sociology
Spanish
Speech
Statistics
Zoology

## DEGREE PROGRAMS

The College offers the bachelor of arts degree in the following areas: anthropology, art, biology, business administration, drama, economics, English, French, geography, German, health education, history, home economics, industrial arts, mathematics, music, philosophy, physical education, physical science, political science, psychology, recreation, social sciences, sociology, social welfare, Spanish and speech.

For the bachelor of science degree, the College offers the following major fields: art, botany, business administration, business education, chemistry, engineering, geology, industrial arts, industrial technology, mathematics, microbiology, music, nursing, physics, police science and administration and zoology.

Also offered is the bachelor of vocational education degree.

For graduate degree areas and programs, see the Graduate section of this catalog.

## REGULAR SESSIONS

The College is organized on the semester system with two regular sessions, spring and fall. Classes are offered on weekdays as early as 7 a.m. and continue through 10 p.m.

## SUMMER SESSIONS

The College offers two summer sessions each year, one of six weeks followed by one of four weeks. The programs are comparable to those of regular sessions except that many special clinics, conferences, seminars and field studies are offered.

Prospective summer session students should request copies of the *Summer Session Bulletin* from the Coordinator of Summer Session.

# OVERSEAS STUDY PROGRAMS

## THE CALIFORNIA STATE COLLEGES

State college students who qualify may participate in overseas study programs of the California State Colleges. Upper division and graduate students may undertake a full academic year at major institutions of higher learning in Asia, Europe and Latin America.

Academic work successfully completed at the cooperating universities abroad may be applied toward the degree requirements of the state colleges with the approval of the students' major advisers and in accordance with college regulations.

Detailed information may be obtained at the office of the Dean of Students or by writing to the Office of International Programs, 1600 Holloway Ave., San Francisco 32, California.

# INTERNATIONAL SUMMER SESSIONS

## CALIFORNIA STATE COLLEGE

## LONG BEACH

The College, in cooperation with Uppsala University, has established the International Summer Session at Uppsala, Sweden. This program of studies abroad was initiated in the summer of 1963.

Students from the United States and Canada are invited to enroll for six weeks of study in residence at Uppsala University during June and July. Six semester units of credit may be earned through courses in education, literature or drama, history, sociology, and the Swedish language. Specific course descriptions are available upon request.

Exclusive of transportation and personal expenses, the total cost to the student is approximately $300, including board, room, and tuition for the six-week period of instruction. While the College assumes no responsibility for transportation, appropriate referrals to selected travel agencies are arranged.

Each participant must (1) have completed the freshman year at an accredited college or university, (2) present two letters of recommendation, one from a professor and one from a clergyman, attorney, or other professional person who can attest to the applicant's good character and seriousness of purpose, (3) receive the approval of the Uppsala Committee.

For additional information write: The Uppsala Committee, c/o Summer Session Office, California State College at Long Beach.

## BUILDINGS AND FACILITIES

In addition to administration and office buildings, the Little Theater, the dormitories and health center, the College has many other buildings and facilities.

*Instructional.* Instructional buildings include five general classroom-laboratory buildings, a three-building science complex, three fine arts buildings, a music building, a language arts building, a physical education gymnasium-classroom facility, a home economics building, a health center, and engineering and industrial arts buildings.

*The Library.* The College Library, housed in a modern, three-story building, has in excess of 188,000 accessioned items and 1,650 current periodical subscriptions including 25 newspapers. Its book collection is supplemented by a wide assortment of audio-visual aids such as phono-records, microtexts, filmstrips and maps. The Library is divided into four major areas. Science and Technology and the Education and Curriculum library are on the first floor. The second floor is devoted to the Social Sciences; the third floor to the Humanities. Current, unbound periodicals are found in the Periodical Room, also on the first floor.

*The Soroptimist House.* This building, a gift of the Soroptimist Club of Long Beach, provides a facility for parties, receptions and informal meetings.

*The Bookstore and Cafeteria.* The Bookstore provides for the supply and sale to students of prescribed textbooks, reference and popular books, stationery supplies and miscellaneous items for personal use.

The College Cafeteria, composed of a main dining facility, a faculty dining room and two snack bars, provides food service for the entire College.

Both facilities are operated as a nonprofit corporation, the Forty-Niner Shops, Inc. Faculty, students and administrators are represented on its board of directors.

## COLLEGE FOUNDATION

The Long Beach State College Foundation is a non-profit corporation organized to administer grants from governmental and private agencies for research and other activities related to the College program.

# STUDENT SERVICES AND ACTIVITIES

## STUDENT HOUSING

*Parietal Rule.* The College requires unmarried minor (under 21) students not living with a parent or guardian to live in the College residence halls or in the off-campus residence halls which have been approved by the Student Housing Office. (This regulation does not apply to graduate students, to those enrolled in six or fewer units, or to those who are 21 years of age or over.)

Students seeking exceptions to the parietal rule should petition the Student Housing Committee before September 1 for the fall semester and before January 15 for the spring semester. Exceptions will usually be made for students from outside the United States who arrange to live with sponsoring families, for those requiring special arrangements because of health or physical handicap and for those provided with residence in connection with employment.

*College Residence Halls.* The two on-campus halls house 200 students each. Each room accommodates two students and is furnished with a single bed, chest of drawers, study desk, desk chair and closet for each occupant.

Residence hall application forms and additional information may be obtained from the Director of Housing, A $20 deposit is required with the application although receipt of the deposit does not guarantee a reservation. The cost of room and board in the College residence halls is approximately $430 each semester.

College housing rules give priority to students who are residents of California, to students under 21 years of age, to students living outside a 20-mile commuting zone, to those who lived in the halls during the preceding semester and to entering freshmen.

*Off-Campus Residence Halls.* There are two off-campus residence halls which have been approved by the College. These halls are co-educational with a capacity of 300 each. Further information about these off-campus halls is available in the Student Housing Office.

*Other Off-Campus Housing.* A card file of rental listings is maintained in the Student Housing Office for the use of married students and students who are at least 21 years of age. These listings include rooms, rooms with board, rentals to share, and furnished or unfurnished apartments and houses. It is suggested that prospective students visit Long Beach to make these living arrangements, as information about these listings cannot be mailed. The Student Housing Office also maintains a card file of work-opportunity listings for students who are interested in working for their room and board, or room rent.

*Fraternity and Sorority Housing.* Most of the Greek organizations that have recognized campus chapters maintain houses open to their members and pledges.

## HEALTH SERVICES

The Student Health Service maintains physicians, nurses, technicians and receptionists on duty 8-5 p.m., Monday through Friday, and functions on an appointment basis. However, emergencies of any kind are given priority.

Services include physical examinations, health and psychiatric counseling, emergency care and first-aid, out-patient care for illness or injury, immunizations, physical therapy, X-ray, laboratory work and consultation in most medical specialties.

Prescriptions for costly drugs must be filled in community pharmacies, but some routine medications will be available in the Health Service. The Health Service does not issue excuses from class for injury or illness except for physical education activity classes. The decision to excuse a student from class is made by the instructor.

College medical services do not extend to major, complicated or severe illness or injury which are the responsibility of the individual student and/or his family. It is strongly recommended that students secure supplementary group health, accident and hospital insurance available in the Associated Students office at low premium. Generally, these policies must be purchased during or shortly following registration for classes.

During summer sessions, periods between semesters and all weekdays when classes are not in session, the Health Service provides emergency care only and is open from 8-5 p.m. *No off-campus calls are made at any time.*

A registered nurse is available from 5-10 p.m., Monday through Thursday, for emergencies arising during evening classes. She will be on call at the Health Service offices or can be contacted through the College switchboard or the Security Office to provide emergency first-aid care only. She also will act in an advisory capacity to facilitate further disposition of patients who must assume the responsibility for their further treatment. In case of a serious emergency, the nurse is authorized to call a doctor to the campus. Medical emergencies arising at any time the Health Service is closed will be directed to the Security Office.

## COUNSELING

*Personal Counseling.* Counselors assist students on matters such as social adjustment, emotional growth, educational handicaps, study problems and long-term vocational choices. A student who wishes assistance may make an appointment in the Office of Counseling in the Administration Building.

*Academic Advising.* Students receive academic program planning and advisement from the instructional departments of their major field. However, counselors will advise students who have no declared major.

*Admissions Counseling.* Students seeking admission to the College should consult the Office of Admissions and Records for information.

## FINANCIAL ASSISTANCE

The College offers financial assistance to students in several forms.

*Student Assistantships.* A number of student assistantships are available through the library, academic departments and divisions, the administrative offices and non-academic functions of the College.

*Loans.* The College administers a number of short-term loans, participates in the National Defense Education Act Loan Program and the United Student Aid Fund Loan Program. Applications are available in the Office of Financial Aid. National Defense Education Act Loan applications should be completed and returned to the Office of Financial Aid by May 1 of each year for the following academic year.

*Scholarships.* Scholarships ranging from $50 to $500 are granted to outstanding students by the College Committee of Scholarships and Loans. Applications for scholarships may be secured in the Office of Financial Aid after January 1 and must be returned by April 15. Each applicant is considered for every scholarship for which he is eligible. Recipients are selected on basis of scholarship, financial need, and promise of success in their chosen fields or in terms of such criteria as are established by the several donor organizations. All students receiving scholarships must enroll for 12 or more units of credit during each regular semester. Awards are paid in two equal installments, one at the beginning of each semester. Students may apply directly for scholarships and grants-in-aid offered through foundations and governmental agencies, rather than through the College itself. A file of information on such fellowships, scholarships and other grants is maintained in the Office of Financial Aid.

*Veterans.* The College participates in the several provisions for aiding veterans in securing an education: Public Laws 550 (Korean "GI Bill") and 894 (Federal Vocational Rehabilitation–Korean veterans), the California Veterans Educational Institute Act and P.L. 634 ("War Orphans" Education Act). Veterans must clear with the Veterans' Desk during registration if they wish to use their benefits.

The College urges all veterans to contact the appropriate state or federal agency well before they expect to enroll. Veterans can receive information at the Office of Admissions and Records in the Administration Building.

## TESTING

The Office of Testing and Institutional Research provides individual testing services to help students with problems of an educational, personal, or vocational nature. However, the student seeking help should first contact the Office of Counseling for an individual interview so that appropriate tests may be assigned.

All entering undergraduate students are required to complete the American College Testing Program examinations for admission to the College. Information and applications for the ACT examinations can

be obtained from high school counselors; the Office of Testing, California State College at Long Beach; or ACT, Box 168, Iowa City, Iowa.

Students who miss the regularly scheduled examinations should notify the Office of Testing and Institutional Research immediately.

The Mathematics Placement Tests are required of all students who must satisfy departmental mathematics requirements. Exceptions: students who plan to enter Mathematics 1 or who have satisfactorily completed a college course in calculus within the past four years.

Graduate testing requirements vary for each department. General and specific requirements may be found in the Graduate section of this catalog.

The College reserves the right to administer additional tests to all undergraduate and graduate students whenever it is deemed appropriate for the improvement of the instructional program.

## PLACEMENT SERVICES

Occupational counseling and assistance in finding suitable employment opportunities for graduates and alumni and part-time work for students is provided by the Office of Placement Services in the Administration Building. There is no fee for these services.

Students and graduates seeking full-time career placement must have completed or be in the process of completing the residence requirement of the College, culminating in a degree and/or credential, in order to be eligible. Registration with the office is a definite requirement for all applicants taking student teaching in order to receive final credit for the course.

Students seeking part-time employment must be currently enrolled in 12 semester units and have established a 2.0 grade point average or better.

## STUDENT ACTIVITIES

Each student enrolled at the College automatically becomes a member of the Associated Students. The government of the Associated Students is organized into executive, legislative and judicial branches, with offices in the Forty-Niner Shops Building. Elected and appointed Associated Students officers legislate, execute and adjudicate regulations governing student affairs and maintain a wide variety of campus activities.

The College and the Associated Students grant recognition to campus organizations including honor societies, professional fraternities and recognition societies, service organizations, religious organizations and departmental and special interest groups. Twelve national and two local Greek organizations have chapters on campus. Twenty-eight of the professional fraternities and recognition societies have national affiliations.

Further information about student government, organizations and affiliation procedures is available in the student handbook, *The Nugget,* and from the Office of Student Affairs.

The Associated Students currently sponsors a wide range of student publications, drama productions, forensic tournaments, intercollegiate and intramural athletics, musical events, dances and recreational programs, lectures, forums and other cultural events.

Athletic teams of the College compete under rules of the National Collegiate Athletic Association and the California Collegiate Athletic Association and hold membership in both organizations.

An Alumni Association gives graduates an opportunity to maintain contact with their former classmates and to receive information regarding the various activities of the College.

# ADMISSION TO THE COLLEGE

## MATRICULATION

All students planning to attend the California State College at Long Beach must establish eligibility for admission. Admissions standards in the California State Colleges are prescribed by the Board of Trustees of the California State Colleges and are stated in the *California Administrative Code*, Title 5, Education, which provides uniform admissions regulations for all the colleges.

NOTE: (The California State Colleges will change admission requirements for entering freshmen in the Fall of 1965. High school students who are planning to apply for admission to a state college at that time should consult with the admissions office of the state college they plan to enter or with their high school counselors about the new freshmen admission standards during the 1964-65 academic year. Counselors will be informed of these new requirements and all developments concerning them as the year progresses.)

## ADMISSION STANDARDS

### THE ADMISSION OF HIGH SCHOOL GRADUATES

A graduate of an accredited high school must meet one of the following requirements (a or b):

(a) Have earned 14 or more semester grades of A or B in subjects other than physical education, military science, and remedial courses taken during the last three years of high school. Six of the 14 grades must be in college preparatory subjects from among one or more of the following fields (no specific course pattern is required):
   (1) English, including speech, drama, and journalism, other than activity courses.
   (2) Foreign languages.
   (3) Mathematics.
   (4) Natural sciences.
   (5) Social sciences.

(b) Have earned 10 or more grades of A or B in subjects other than physical education, military science, and remedial courses, and have achieved a score at or above the thirtieth percentile on national college freshmen norms of a standard college aptitude test. The College requires students to submit the results of the ACT examination.

## THE ADMISSION OF UNDERGRADUATE TRANSFERS

An applicant who meets the requirements for admission with freshman standing as listed above, but who has earned credit in one or more accredited junior colleges, colleges, or universities may be admitted if he has a grade point average of 2.0 (grade C on a five-point scale) or better in all courses attempted at such colleges or universities and is in good standing at the last degree-granting college or university attended.

An applicant who does not meet the requirements for admission with freshman standing, as listed above, must as a condition for admission have earned 60 or more units of college credit with a grade point average of 2.0 (grade C on a five-point scale) or better in all courses attempted.

## ADMISSION OF ADULTS TO SPECIAL STATUS

Adult Special Students. An applicant who has attained the age of 21 years and is not a high school graduate may be admitted to the College as an adult special student provided that he demonstrates to the proper college authorities, ability to profit from college work.

## ADMISSION AS AUDITORS

Persons who wish to audit courses may request permission to do so only after the close of registration. Applicants must first present written authorization from the instructor(s) showing course(s) to be audited to the Office of Admissions and Records for a Permit to Register. Auditors are required to pay the usual fees. *Students registered as auditors may not later apply for credit in such courses.*

## ADMISSION OF FOREIGN STUDENTS

Special application forms are required of foreign student applicants. Such forms and directions for their use may be obtained from the Office of Admissions and Records. A foreign student is required to submit with his application evidence of competence in the English language, a medical certificate of health, and evidence of financial resources adequate to provide for all expenses (approximately $175 United States currency per month) during the period that he expects to be registered as a student in the College.

## ADMISSION TO SUMMER SESSION

Students who do not intend to become candidates for degrees or credentials at the College need not file an application for admission nor transcripts of record. Registration for credit in the summer session is limited to graduates of accredited high schools and to persons of sufficient maturity to profit by enrollment in courses offered. Adults who do not wish to enroll for credit may register as auditors with the approval of the instructor. *Registration in the summer session does not insure the privilege of enrolling in the fall semester.* Students entering

the College during the summer session who wish to re-enroll in the fall semester must file application and the necessary official transcripts of record at the Office of Admissions and Records and receive a registration permit before the opening of the fall semester.

### ADMISSION AS UNCLASSIFIED UNDERGRADUATE STUDENTS

Applicants subject to provisional admission by transfer from other accredited collegiate institutions who do not meet all of the standard requirements for admission may be accepted as unclassified students upon presentation of evidence warranting such action. Such applicants must usually apply in person in the Office of Admissions and Records. Unclassified students usually are not permitted to carry full programs of college work and are not eligible as candidates for degrees until all entrance requirements have been met. Courses satisfactorily completed, however, carry full college credit except that a student who has a scholastic deficiency at time of entrance must complete a minimum of 24 semester units for a baccalaureate degree after he has attained degree status (a C average on all college work attempted). Unclassified students are subject to the rules and regulations which govern all students in matters of attendance, scholarship and conduct.

### ADMISSION WITH GRADUATE STANDING

Refer to Graduate Section of this catalog.

### TRANSFER OF UNDERGRADUATE CREDIT

#### From Accredited Junior Colleges

Seventy semester units may be allowed for credit earned in a junior college. No upper-division credit may be allowed for courses taken in a junior college, nor may any credit be allowed for professional courses in education taken in a junior college. No unit credit may be earned in a junior college for degree purposes after a student has completed 70 units of college work in any accredited collegiate institution.

#### From Accredited Four-Year Colleges

Refer to Residence under Degree Requirements in this catalog.

## EXTENSION AND MILITARY CREDIT

A maximum of 12 semester units of extension and correspondence credit may be accepted toward the baccalaureate degree. Such credit must be accepted for degree purposes by the institution in which the work was taken.

Credit for military service is allowed in accordance with credit recommendations of the American Council on Education. To receive credit, the student must file a photostatic copy of his discharge record with the Office of Admissions and Records.

## CREDIT OR WAIVER BY EXAMINATION

A student may apply for either a waiver of specific course requirements or a limited amount of course credit by examination. Students currently in attendance or those transferring from other institutions may apply. Applications for either a waiver or credit by examination must be made on a form provided by the Office of Admissions and Records. Final approval to establish credit by examination will be made by the appropriate academic department. Credit is not allowed for work experience.

Students who have completed advanced placement examinations may also apply for credit through the Office of Admissions and Records.

### CLASSIFICATION OF STUDENTS

The class standing of undergraduate students at the time of admission is based on the number of units accepted. Undergraduate students who have completed fewer than 30 units are classified as freshmen; fewer than 60 units, sophomores; fewer than 90 units, juniors; 90 or more, seniors.

## ADMISSION PROCEDURES

Permission to register in the College requires authorization from the Office of Admissions and Records. No student may attend any class without written verification of acceptance by the College and without registering.

*Inquiries Concerning Admission Are to Be Directed to the Office of Admissions and Records*

### UNDERGRADUATE STUDENTS

#### New Students

New applicants must file an application for admission and official transcripts of high school and college work with the Office of Admissions and Records by *September 1* for the fall semester and by *January 15* for the spring semester. The applicant must request the registrar of all schools attended to forward official transcripts direct to the Office of Admissions and Records. *Transcripts presented by students are not acceptable.*

#### Students Previously But Not Currently Enrolled

a. Any student who was previously enrolled at the College and completed work in either of the two immediately preceding semesters, and has not attended another institution or has not been disqualified, is entitled to register without prior permission. If a student has not been enrolled within the prior calendar year in a regular semester, he must file with the Office of Admissions and Records only an *application for readmission.* A student should file the application for readmission *as early as possible,* but in no case later than *September 1* for the fall semester and *January 15* for the spring semester.

b. Former students who were enrolled in previous summer sessions and/or evening classes and who have not been accepted in degree status, must follow the procedure for new students as outlined above.

Students are urged to request the registrars of all schools attended to forward official transcripts well before deadline dates to the Office of Admission and Records.

## GRADUATE STUDENTS

Refer to Graduate Section of this catalog.

*Inquiries Concerning Admission Are to Be Directed to the Office of Admissions and Records*

## ADDITIONAL REQUIREMENTS

In addition to the timely submission of the application for admission and all transcripts or verification of work taken, the student seeking admission to the College must:

1. Complete a medical history for a health clearance and return it to the College with the application.
2. Complete all tests including the American College Testing Program battery and other appropriate tests specified in the section of the catalog, Testing.
3. Have received from the Office of Admissions and Records a "Notice of Acceptance for Admission."

## REGISTRATION PROCEDURES

When admission requirements have been satisfied, the student is ready to register for classes at the College. Generally, registration requires a full day and involves getting the Permit to Register, the filing of a Statement of Residence, the approval of a class program (at this step, the student should consult faculty advisers), final health clearance and chest x-ray and payment of fees.

Students who have been accepted for admission should purchase the *Schedule of Classes* in the College Bookstore before registration. Registration dates, time and detailed instructions are included in the *Schedule of Classes*.

No student may register concurrently for credit at this and any other collegiate institution without advance permission from the Office of Admissions and Records.



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# GENERAL REGULATIONS AND PROCEDURES

## GRADES

The student's work in each course is recorded in the Office of Admissions and Records in one of six grades. Five are passing: A, excellent; B, above average; C, average; D, below average. Failure is indicated by F. A grade of P is assigned to indicate successful completion of such courses as student teaching and field work for the administration and supervision credentials. Units assigned this grade will not be used in computing grade point average for graduation honors or other purposes.

An "incomplete" (I) may be assigned during the last four weeks of a semester under the following conditions:

1. A student is unable to complete all assignments for a course including the final examination because of illness or other satisfactory reason.
2. A student who has completed all other assignments is unable, because of illness or other satisfactory reason, to write the final examination.

The requirements of a course in which a mark of I has been assigned must be fulfilled within the next two succeeding semesters for the student to receive credit. Otherwise, the I automatically becomes an F.

Grades reported to the Office of Admissions and Records are official. Correction of grades can be made only by the instructor on the basis of clerical error.

## MID-TERM AND FINAL GRADE REPORTS

A student doing unsatisfactory work will be so notified by the Office of Admissions and Records following the 10th week of the semester. Students receiving such reports should consult the instructors involved immediately. Reports of final grades are mailed to each student at the end of each session.

## WITHDRAWALS

1. During the first three weeks of classes in a semester a student may withdraw without prejudice and receive a mark of W. A *Complete Withdrawal Application* to drop all classes or a *Change of Program* form must be completed by the student at the Office of Admissions and Records, or at the Information Desk in the evenings, in the Administration Building, and at this time the student will be given *Request to Drop* cards which he must present to each instructor of classes he is dropping.

2. After the first three weeks of classes in a semester a student may withdraw with a mark of W if his work has been satisfactory, as defined in item (3) below, or a grade of F if his work has been unsatisfactory. The procedure for withdrawing is the same as (1) above. The student will be notified of the mark assigned when grade reports are mailed at the end of the semester.

3. Satisfactory work is defined as C or better for undergraduate students, and B or better for graduate students.

4. Medical Withdrawals. A student who becomes seriously ill or is hospitalized and is unable to complete the semester may withdraw by submitting a written request for withdrawal to the Office of Admissions and Records, and at the same time submitting to the Health Services Center a doctor's statement giving a complete diagnosis of the illness or reason for hospitalization and the beginning date of illness or hospitalization. Whether or not the withdrawal may be made without penalty after the third week of classes is based upon the College Physician's recommendation after receipt of the above statement. The student will be notified of the mark assigned when grade reports are mailed at the end of the semester.

5. Military Withdrawals. A student who is called to active military duty or who is on active duty at a local military installation and receives orders for transfer to a new military installation may either:

(a) Withdraw with a mark of W by completing a withdrawal application and presenting military orders to the Office of Admissions and Records which show that he must report for duty before completion of the courses in which enrolled (if withdrawal is made during the first 14 weeks of instruction, student may apply for a full refund of fees paid except the non-resident fee, if paid, which is not refundable; no refunds are made for withdrawals after the 14th week); *or:*

(b) Arrange with instructors, after the 14th week, to complete the course work prior to the end of the semester and receive credit, in which case no withdrawal application should be filed with the Office of Admissions and Records.

6. Instructor Drops. An instructor may drop a student whose name appears without a W after it on the official class listings issued by the Office of Admissions and Records if the student has never appeared in class or has attended but has failed to notify instructor of drop, by assigning a mark of W or F and recording this mark on the *Semester Grade Report* form which goes to the Office of Admissions and Records at the end of the semester. (1) and (2) above may be used as guides in determining whether an F or W will be assigned.

## GRADE POINTS

The scholarship average is obtained by dividing the total number of grade points by the total number of units for which the student registered. Grade points are determined on the following basis:

A receives 4 points a unit;
B receives 3 points a unit;
C receives 2 points a unit;
D receives 1 point a unit;
F receives 0 points a unit;
Incomplete receives 0 points a unit.

Grades earned at another institution may not offset grade point deficiencies in courses taken at this College.

## REPETITION OF COURSES

A student who has received a grade below C may repeat the course and receive the grade assigned by the instructor under whom the course is repeated. The extra units so earned may not be counted toward graduation, but such units will be counted in the total units attempted in computing the student's overall grade point average.

## PROBATION AND DISQUALIFICATION

A student who fails to maintain a cumulative grade point average of 2.0 (C) on all units attempted and on all units attempted at the College will be placed on probation.

A student on probation who, prior to the beginning of the next fall term, fails to attain a cumulative grade point average of 2.0 (C) on all units attempted and on all units attempted at the College will be disqualified. A student who at any time is reported to the Admissions and Scholastic Standards Committee as deficient in his scholastic achievement is subject to disqualification.

After an absence of two semesters, or successful completion of a summer session program which removes the grade point deficiency, a student disqualified for scholastic deficiency may petition the Admissions and Scholastic Standards Committee for readmission. The petition must indicate the reason for requesting re-enrollment, including a statement of the type of employment or activity in which the applicant has been engaged during the period of disqualification. The application for readmission, as well as the petition, must be submitted to the Office of Admissions and Records prior to September 1 for the fall semester and prior to January 15 for the spring semester.

## STUDENT LOAD

Entering freshmen may register for no more than 16½ units in their first semester. Undergraduate students other than freshmen and students on academic probation may carry a maximum of 17½ units in a fall or

spring semester without petition. Students other than freshmen and those on probation who wish to register for more than 17½ units must file a petition with the Committee on Admissions and Scholastic Standards prior to registration.

A student whose outside employment could be expected to interfere with the normal unit load should reduce his academic program accordingly.

In general, students enrolled in teacher education should not register for more than 14 units of course work during the semester of student teaching, including the units for student teaching.

Students subject to Selective Service regulations should inquire about current rules governing the unit load required for postponement of induction. Veterans should inquire about unit load requirements for state and federal benefits.

In a summer session, a student may earn one hour of credit for each week in attendance. Thus, the student may take a maximum of six hours in the six-week session and a maximum of four in the four-week session. Upon approval of the appropriate faculty adviser, the student may be allowed to take seven hours during the six-week session only.

For graduate student load, see Graduate Section of this catalog.

## FINAL EXAMINATIONS

It is the policy in most courses to have several examinations during the semester and a comprehensive final examination. The general supervision of examinations, and the scheduling and control of final examinations, is the responsibility of the Dean of the College.

Permission to take a final examination at a time other than that regularly scheduled must be secured at least one week in advance of any change. The instructor may not change the schedule without authorization from the Dean of the College.

## CHANGE OF OBJECTIVE

The evaluation of credits transferred to the College is based in part upon the objective indicated on the application for admission. A student who wishes to change his degree or credential objective must file a change of objective form with the Office of Admissions and Records. (See Election of Regulations.)

## GRADUATE RECORDS CHECK

Senior and graduate students who expect to receive degrees and/or credentials at the end of any session must complete the *Graduation Application* card and/or *Credential Application* card. The appropriate application for June candidates must be filed by the preceding October 15; for February and summer session graduates, by the preceding March 15.

## CREDENTIAL PROGRAMS FOR PUBLIC SCHOOL SERVICE

Candidates for public school service credentials at the College are advised to familiarize themselves with the requirements for these programs. These requirements are outlined in the Credentials Section of this catalog. Application for student teaching, for field work in administration and supervision, and for field work in pupil personnel services must be made during the semester preceding that in which the student expects to enroll for these programs.

## STUDENT CONDUCT

As members of the campus community and as citizens of the community at large, students are expected to conduct themselves in a manner which reflects credit on themselves and the College.

In accordance with the provisions of the *California Administrative Code*, Title 5, a student may be placed on probation, suspended or expelled for the following causes:

1. Disorderly, unethical, vicious or immoral conduct.
2. Misuse, abuse, theft or destruction of state property.

A College regulation states:

"No alcoholic or malt beverages shall be served at any college function. The officers of the organization are responsible for seeing that this policy is enforced."

# FEES AND EXPENSES

## REGISTRATION FEES

| | |
|---|---|
| Regular students | |
| Materials and service fee | $38.00 |
| Associated student body fee | 9.50 |
| Total per semester | $47.50 |
| Limited students (1-6 units) | |
| Materials and service fee | 19.50 |
| Associated student body fee | 3.00 |
| Total per semester | $22.50 |
| Nonresident tuition fee (maximum $250 a semester) per unit | $17.00 |
| *(In addition to other fees listed above)* | |
| Foreign student tuition fee (maximum $127.50 a semester) per unit | $8.50 |
| *(In addition to other fees listed above)* | |
| Late registration fee | $5.00 |

## OTHER FEES OR CHARGES

| | |
|---|---|
| Application (and reapplication) fee | $5.00 |
| Parking fee per semester—regular students | 13.00 |
| Parking fee per semester—limited students | 6.00 |
| Parking fee per semester for two-wheel self-propelled vehicles—one-fourth the fees shown above. | |
| Residence hall room rental fee per semester | 162.00 |
| Residence hall board, required, per semester (approx.) | 263.00 |
| Check returned for any cause | 2.00 |
| Change of program | 1.00 |
| Complete transcript (no charge for first copy) | 1.00 |
| Diploma fee | 3.50 |
| Studio instruction, fee per lesson | 1.00-6.00 |
| Organ practice (per semester) | 10.00 |
| Failure to meet administratively required appointment or time limit (special aptitude examinations, failure to keep appointments for health examinations, special final examinations) | 2.00 |

***Auditors Pay the Same Fees as Others***

***Fees are Subject to Change Upon Approval by the Trustees of the California State Colleges***

***Full Payment of Registration and Activity Fees must be Made at Time of Registration***

## REFUNDS OF FEES

### *Materials and Service Fee*

Upon withdrawal from the College, the materials and service fee may be refunded if written application for refund is submitted to the Registrar not later than 14 days following the day of the term that instruction begins, provided that the amount of $2 shall be retained to cover the cost of registration. Late registration fees and late change of program fees are not refundable.

The entire fee may be refunded in the event a student is unable to continue his registration because of a College regulation or because of compulsory military service. Application for refund under such circumstances may be made at any time prior to the date when the student receives any academic credit for the courses for which he is registered.

The difference between the applicable material and service fee, less $2, may be refunded if the unit load of the student is reduced to a lower materials and service fee category within the 14 days following the day of the term that instruction begins.

Upon withdrawal from the College, or upon a drop in unit load, nonresident tuition fees may be refunded if the application for refund is received within the following time limits:

| *Time limit* | *Amount of refund* |
|---|---|
| (1) Before or during the first week of the semester | 100% |
| (2) During the second week of the semester | 90% |
| (3) During the third week of the semester | 70% |
| (4) During the fourth week of the semester | 50% |
| (5) During the fifth week of the semester | 30% |
| (6) During the sixth week of the semester | 20% |

### *Associated Students Fees*

Upon withdrawal from the College during the 14 days following the day of the term that instruction begins, the Associated Students fee is refundable in full; after that date, no portion of this fee is refundable.

No refund of Associated Students fee shall be allowed because of a reduction in unit load from more than six units to six or less units.

## ESTIMATED EXPENSES FOR BOOKS AND SUPPLIES

The average expense for textbooks and other prescribed items for class use approximates $40-$45 per semester. The student should be prepared to meet these expenses at the time of registration.

# BACCALAUREATE DEGREES

## (General Information)

## BACHELOR OF ARTS DEGREE

The College is authorized to grant the bachelor of arts degree with majors in the following fields of study: anthropology art, biology, business administration, drama, economics, English, French, geography, German, health education, history, home economics, industrial arts, mathematics, music, philosophy, physical education, physical science, political science, psychology, recreation, social science, social welfare, sociology Spanish, and speech.

## BACHELOR OF SCIENCE DEGREE

The College is authorized to grant the bachelor of science degree with majors in the following fields of study: art, botany, business education, business administration, chemistry, engineering, geology, industrial arts, industrial technology, mathematics, microbiology, music, nursing, physics, police science and administration, and zoology.

## BACHELOR OF VOCATIONAL EDUCATION DEGREE

The bachelor of vocational education degree is designed for vocational teachers recommended by the Board of Examiners for Vocational Teachers who meet the requirements established in the Education Code. Additional information concerning this degree may be obtained from the Office of Admissions and Records.

## DEGREE REQUIREMENTS

1. *General Education Requirement*

Students in all major fields of study will complete the same pattern of general education requirements for the bachelor's degree. Those students transferring from another college who have not yet completed the pattern should enroll in the appropriate courses.

A list of courses offered by the College which satisfy the general education requirements appears in this section below:

2. *Major*

The total number of units and individual subjects required to satisfy specific majors are outlined in detail for the various areas of study. See page 51 for a list of majors.

3. *Minor*

A minor for the bachelor's degree is not required.

## COURSES SATISFYING GENERAL EDUCATION REQUIREMENTS

| REQUIREMENTS | LOWER DIVISION | UPPER DIVISION |
|---|---|---|
| I. Social Science (*9 units*)<br>A. U.S. History | History 7A or B, or 8AB | Any upper division U.S. History course except California history. |
| B. U.S. Government and Constitution | Political Science 50 (includes Federal and State and Local Government.) | Political Science 132 (includes Federal and State and Local Government.) P.S. 108 (for those needing *only* State and Local Government.) |
| C. Electives | Select lower and upper division courses in anthropology, economics, geography, history, political science or sociology. | |
| II. Natural Science (*9 units*, which *must include* at least one biological science course and one physical science course. *Two semesters of laboratory science are required.*) | BIOLOGICAL SCIENCE<br>Courses requiring no prerequisites: Biology 10, 50; Botany 1, 1AB; Zoology 1AB. Students having had a year of high school biology may select their lower division biological science from the courses listed below: Anatomy and Physiology 50; Botany 62; Biology 45, 52, 56; Entomology 55; Microbiology 50, 55, 60, Zoology 50, 54. | Select upper division courses for which prerequisites have been met in: anatomy and physiology; microbiology; biology; botany; entomology and zoology. |

| | |
|---|---|
| | PHYSICAL SCIENCE<br>Courses requiring no prerequisite: Physical Science 12; Geology 50; Astronomy 55. Students having had the appropriate high school background as listed in the catalog may select their lower division physical science from the courses listed below: Chemistry 2, 1AB; Geology 3, 5; Physics 2AB, 10.<br>Select upper division courses for which prerequisites have been met in: chemistry, geology, physics. |
| III. Literature, Philosophy, or the Arts (*6 units*, 3 of which must be in literature or philosophy.) | LITERATURE<br>Any literature course, except English 49, 112 and 179. |
| | PHILOSOPHY<br>Any philosophy course. |
| | ARTS<br>Any course in art, drama, music, industrial arts, or home economics. (Special methods courses are not applicable.) |
| IV. English (*3 units*) | English 1 |
| V. Speech (*3 units*) | Speech 30, 41, 50, 52 |
| VI. Psychology (*3 units*) | Psychology 51 |
| VII. Physical Education (*2 units*) | Four successive semesters of Physical Education 1, 2, 3 and 4. |
| VIII. Health Education and Safety (*2 units*) | Health Education 20 |
| IX. Electives (*8 units*) | Select from any of the above fields, including journalism and mathematics. Six units of foreign languages may be applied as electives. |

*4. Requirements in United States History, Constitution and American Ideals*

To qualify for graduation, all undergraduate students shall demonstrate competence in the Constitution of the United States; in American history, including the study of American institutions and ideals; and of the principles of State and local government established under the Constitution of this State. These requirements may be satisfied by passing a comprehensive examination on these fields prepared and administered by the College or by completing appropriate courses. Students should contact the Chairman of the Department of Political Science or the Chairman of the Department of History.

*5. Units*

The total of 124 units for the bachelor of arts and the bachelor of vocational education degrees must include a minimum of 40 units of upper division work (courses numbered 100 or above) completed after attaining upper division standing.

The bachelor of science degree, 124 to 132 units, is designed for curricula where a more intensive major field of study is considered a requisite background for vocational competence. The total number of units and individual subjects required to satisfy specific majors in those areas where this degree is offered are outlined in detail for the offerings of the academic divisions. Otherwise, all requirements for the bachelor of science degree are identical with those for the bachelor of arts degree.

*6. Activity Units*

Activity courses are those which provide practice in such areas as journalism, music, speech, drama, and physical education. Within the 124-unit requirement, a student may earn credit of not more than eight units in activity courses in any one area, nor more than 20 units in activity courses in all areas.

*7. Scholarship*

The scholarship requirement for the bachelor's degree is a grade point average of 2.0 (C) in all units attempted at the College, as well as a 2.0 (C) average on the student's entire college record. For graduation, a student shall attain a 2.0 (C) average in all courses required in the degree major completed at the College, as well as a 2.0 (C) average in all courses required in the degree major. Students who plan to pursue teacher education programs should recognize that the academic scholarship requirement for certain credentials is a minimum grade of C or better in specified courses and an overall grade point average of 2.5 (C+). Students on academic probation at the College are not permitted to enroll in education classes.

*8. Residence*

A minimum of 24 semester units shall be earned in residence in the College. At least one-half of these units shall be completed among the last 20 semester units counted toward the degree. This requirement may be reduced for active military duty and for attendance at other California state colleges. Credit in summer sessions may be substituted for regular session unit requirements on a unit for unit basis.

*9. Faculty Approval*

Proficiency of a student in any and all parts of a curriculum is properly ascertained by the faculty of the College. A favorable vote of the faculty shall be required to make a student eligible to receive a degree.

*10. Election of Regulations for Degree Requirements*

A student remaining in continuous attendance and continuing in the same curriculum in the College may elect to meet the graduation requirements in effect either at the time of his entering the College or at the time of his graduation therefrom, except that substitutions for discontinued courses may be authorized or required by the proper College authorities.

Continuous attendance may be claimed by any student whose registration record does not indicate a lapse of more than twelve months; however, enrolling and completing work in corresponding terms in consecutive calendar years will qualify as continuous attendance. The summer sessions as well as the fall term and spring term are included in this definition of "corresponding terms."

Failure to remain in continuous attendance will mean that the student must meet the regulations current at the time of resuming the degree program, or those applicable at the time of graduation. A change in the major for the degree automatically carries with such a change the acceptance of the current regulations pertaining to the new course of studies.

### GRADUATION WITH HONORS

*Cum Laude*—A student eligible for a bachelor's degree who has attained an overall grade point average of 3.0 on all college units attempted may be graduated *Cum Laude* provided that he has also completed a minimum of 60 units at this College with a 3.0 average or higher.

*Magna Cum Laude*—A student eligible for a bachelor's degree who has attained an overall grade point average of 3.5 on all college units attempted may be graduated *Magna Cum Laude* provided that he has also completed a minimum of 60 units at this College with a 3.0 average or higher.

*Summa Cum Laude*—A student eligible for a bachelor's degree who has attained an overall grade point average of 3.75 on all college units attempted may be graduated *Summa Cum Laude* provided that he has also completed a minimum of 60 units at this College with a 3.0 average or higher.

## HONORS PROGRAM

The Honors Program is designed to give an intellectual challenge to the academically superior undergraduate by offering him intensive and, when possible, interdisciplinary courses in the liberal arts. In colloquia, tutorials and independent research particularly, students admitted to the

program will find an opportunity to study and appreciate relationships between fields, ideas, and issues transcending disciplinary limits. The Honors Program is continuous and cumulative. Each semester, honors students will enroll in honors courses which, on the lower division level, will fulfill general education requirements in appropriate areas.

Students who are eligible for the Honors Program will be informed of that fact by the administration of the College as soon as possible after they have made application for admission to the College, submitted their transcripts, and taken the American College Testing Program. They will at that time be asked to file application for the Honors Program if they are interested. Their selection as Honors students will be based on such applications. The yearly deadline for the return of the application form is August 1. Students seeking admission to either the College or the program past that deadline cannot be considered for selection to the Honors Program.

Students not admitted to the program as entering freshmen may petition the Honors Faculty for entrance at any time after their first semester at the College but not later than the end of their sophomore year.

**Additional information concerning the Honors Program may be obtained from the Dean of the College.**

*Honors Courses:*

The following courses are required of all honor students:

A. *Lower Division*

**Honors 1A: Matter and Energy (3) F**
An examination of modern ideas concerning matter and energy from a historical perspective and from a consideration of recent research. (Lecture 2 hours, laboratory 3 hours.)

**Honors 1B: Earth Science and Cosmology (2) S**
The history of the earth and its place in the solar system and the origin and evolution of earth's features and fossil life. (Lecture 2 hours.)

**Honors 1C: Biological Functions of Cells and Organisms (3) F**
An introduction to the principles illustrating the unity of all biological systems including their structural organization and major cellular processes. (Lecture 2 hours, laboratory 3 hours.)

**Honors 1D: The Diversity of Life (2) S**
An introduction to the diversity of animal and plant life and their ecological organization. (Lecture 2 hours.)

**Honors 2A,B: Freshman Colloquium I-II (3,3) F, S**
Western man's interpretation of himself in major philosophical and aesthetic productions including works of art, music, drama, and literature. Work will be carried on largely through small discussion groups and extensive outside research. Approximately one-third of the work of the course will be in the fine arts and music; another third in literature (fiction, poetry, drama); and the remainder in philosophy. The course aims at facility in dealing with both the formal and thematic aspects of the arts.

**Honors 50A,B: Sophomore Colloquium I-II (3,3) F, S**
Readings in the conceptional foundations of western culture. An examination of selected great works of literature, philosophy, and the social sciences that have significantly contributed to the intellectual orientation of the 20th Century, and that continue to influence man's thought about himself, society, and the universe.

B. *Upper Division*

**Honors 110: Junior Colloquium (3) S**
An interdisciplinary investigation of problems in the humanities, social sciences, and natural sciences, the topic area to be determined yearly by the Honors Faculty.

**Honors 185: Senior Colloquium (3) S**
An interdisciplinary investigation of a topic area to be determined yearly by the Honors Faculty.

**Honors 190: Honors Tutorial (3) F**
An individual research project generally of an interdisciplinary nature to be carried on by the student under the supervision of a faculty member chosen by the student and approved by the Honors Faculty.

**Honors 198: Honors Thesis (3) F**
An individual research project generally of an interdisciplinary nature to be carried on by the student under the supervision of a faculty member and to culminate in a paper acceptable to a committee designated by the Honors Faculty. The substance and methodology of the student's paper will be considered fit material for inclusion in the senior comprehensive.

C. *Other Course Requirements:*

**History 4A, B: Western Civilization (3,3) F, S**
(To be taken in the Freshman Year)

*Exemption by Examination*

The honors student should avail himself of the privilege of exemption by examination in the following courses:

United States History
United States Government
English Composition
Health Education and Hygiene

If the student passes the United States History exemption examination, he will elect three units from the list of approved social science courses outside history and political science; if he passes the United States Government exemption examination, he may elect three units approved by the Political Science Department.

*Good Standing in the Program*

In order to maintain good standing for continuing enrollment in the Honors Program a student must maintain an overall B (3.0) average and also maintain this same overall average in honors work.

*Comprehensive Examinations*

A. Sophomore Comprehensive Examination. In the program a certain level of attainment is expected of the student by the end of his sophomore year. Every Honors Program student will be required to take a comprehensive examination at the end of his sophomore year over matters which the Honors Faculty proposes as suitable for examination. The sophomore comprehensive examination will also be required of transfer and foreign students, as well as certain other students, who may wish to enter the program as juniors.

B. Senior Comprehensive Examination. A student in the Honors Program will be required to pass a senior comprehensive examination as early as is feasible in the final semester preceding his graduation. This examination will be given and administered entirely by the Honors Faculty and may be oral or written or both.

# CLASSIFICATION AND DESIGNATION OF COURSES

## UNIT OF CREDIT

The unit of credit is the semester unit and the value for each course is indicated in parentheses following the title. In typical lecture and discussion courses, the number of units indicates the number of class hours per week. Activity courses, laboratory courses, and some lecture and discussion courses require class hours weekly in excess of the number of units of credit specified, as indicated in the schedule of classes published for each session. Summer session classes normally require the same number of class hours of instruction per session as are required in regular semester terms for courses having the same unit value.

## COURSE NUMBERS AND CLASSIFICATION

*Lower division* courses carry numbers 1-99. Such courses are open to freshmen and sophomores and are primarily designed to provide much of that breadth of understanding known as general education as well as the foundations for the generally more specialized work of the third and fourth years. All such courses are open to upper division and graduate students, but do not count as upper division or graduate work in any curriculum.

Certain courses carrying identifying letters in place of numbers carry no unit credit.

*Upper division* courses carry numbers 100-199. Such a course in any area is open to those students who have completed a lower division course, or courses, in the area; except in those cases in which the subject is of such nature that an elementary course demands the maturity of the upper division student, in which case upper division status becomes the prerequisite.

Enrollment of a lower division student in an upper division course requires the approval of petition to the Admissions and Scholastic Standards Committee, except where prerequisites have been satisfied and enrollment in upper division courses is necessary to complete the pattern and sequence of the degree major. Upper division courses taken by a student who has not attained upper division standing may not be included in the 40 units of upper division work required for the bachelor's degree.

Many upper division courses serve the purpose of extending and confirming the scholarly background of a graduate student in his chosen field.

*Graduate* courses numbered in the 200-299 series, present advanced aspects of subjects which have already been intensively explored in the

upper division and are open only to students who have already attained an acceptable bachelor's degree. Adequate preparation for a graduate course will consist normally of at least 12 units of upper division work basic to the subject. The fact that a student holds a bachelor's degree does not in itself entitle him to enroll in graduate courses; neither is the graduate student required to confine his selection of courses to the 200-299 series.

## COURSE LISTINGS

Courses are listed as follows: number, title, semester units (in parentheses), and session offered. F indicates Fall Session; S indicates Spring Session; and SS indicates Summer Session. Courses offered only in alternate years are so designated. The College reserves the right to make changes in course offerings without notice.

## ORGANIZATION OF COURSE OFFERINGS

Courses are listed in alphabetical sequence in the Courses of Instruction section.

# DEGREE REQUIREMENTS

for

## BACCALAUREATE DEGREE PROGRAM

*Major*


Anthropology ..... Page 53
Art ..... Page 53
Biology ..... Page 56
Botany ..... Page 58
Business Administration ..... Page 58
Business Education ..... Page 62
Chemistry ..... Page 63
Civil Engineering ..... Page 66
Drama ..... Page 63
Economics ..... Page 64
Electrical Engineering ..... Page 67
Elementary Education ..... Page 64
Engineering ..... Page 65
English ..... Page 68
French ..... Page 69
Geography ..... Page 69
Geology ..... Page 70
German ..... Page 70
Health Education ..... Page 71
History ..... Page 71
Home Economics ..... Page 72
Industrial Arts ..... Page 73
Industrial Technology ..... Page 73
Mathematics ..... Page 76
Mechanical Engineering ..... Page 67
Microbiology ..... Page 76
Music ..... Page 77
Nursing ..... Page 79
Philosophy ..... Page 81
Physical Education ..... Page 81
Physical Science ..... Page 82
Physics ..... Page 83
Police Science and Administration ..... Page 83
Political Science ..... Page 84
Psychology ..... Page 85
Recreation ..... Page 86
Social Sciences ..... Page 86
Sociology ..... Page 87
Social Welfare ..... Page 87
Spanish ..... Page 88
Speech ..... Page 89
Vocational Education ..... Page 41
Zoology ..... Page 90

# BACCALAUREATE DEGREE REQUIREMENTS

ACCOUNTING (See Business Administration)

ANATOMY (See Biological Sciences)

## ANTHROPOLOGY

Anthropology courses are designed to provide an understanding of the various peoples of the world through knowledge of their cultures or ways of living. The curriculum will include the processes of change within various cultures, and the scientific methods by which the anthropologist observes and analyzes various cultures from the simple to the complex.

Instruction is planned to meet the interests and goals of students in general, prospective teachers, and of students majoring in anthropology.

### MAJOR IN ANTHROPOLOGY FOR THE BACHELOR OF ARTS DEGREE

*Lower Division:* Anthropology 50, 60; Sociology 50.

*Upper Division:* A minimum of 24 units in anthropology as follows: 9 units of topical courses including Anthropology 164 and 178 and 3 units selected from Anthropology 165, 170, 176, 190; 6 units of ethnographical courses including Anthropology 142 and 3 units selected from Anthropology 180, 182, 186, 187; 3 units in methodology courses selected from Anthropology 130, 166, 179; 3 units of archaeological courses selected from Anthropology 181, 183, 188; 3 additional anthropology units.

## ART

The art curricula are designed to meet the needs of the following groups: (1) students who feel that an understanding and appreciation of the arts are essential for realizing a richer pattern of individual and social living; (2) students seeking vocational competence in art; (3) students who plan to enter the teaching profession on the elementary or secondary level and wish either a teaching major or minor art; (4) students who wish to meet the art requirements for the general elementary credential.

Course offerings in art have been planned for each group of students. For students in the first group, programs have been planned leading to the bachelor of arts degree with a major in art. Special courses have also been planned for students majoring in other fields who wish to become acquainted with the arts as an integral part of contemporary living.

For students in the second group who are specializing in art with the intention of entering one of the art fields such as advertising design, industrial design, ceramics or museum work, various courses are being offered which lead to either the bachelor of arts or the bachelor of science degree.

For students planning to enter the teaching profession, special courses related to the teaching level with which the student will be most concerned are being offered. For students planning to teach art in the secondary school, programs have been planned in relation to the requirements leading to the bachelor of arts degree with a special secondary credential in art, and to the general secondary credential with a teaching major or minor in art. The aim of these course patterns is the development of teachers who understand the relationship between creative activity and child growth, the role of arts in daily and community life, the relationship of art activities to the other experiences in the curriculum, and the potentialities of art expression as a basis for individual and group activities within the classroom, the school and the community.

As is customary in most schools, the Art Department reserves the right to keep any work or projects completed by a student for class credit for a period of three years after the student graduates.

### MAJOR IN ART FOR THE BACHELOR OF ARTS DEGREE

Three course programs have been planned for students working for the bachelor of arts degree with a major in art. Plan I is for those students who feel that an understanding and appreciation of the arts are essential for realizing a richer pattern of individual and social living. Plan II is for those students who are specializing in art with the intention of entering one of the professional art fields.

Plan III is for those students specializing in art with the objective of a credential with a major or minor in art. (See Credentials Section.) All students majoring in art will be required to take the foundation course in art or its equivalent.

#### *Plan I. Bachelor of Arts (Nonprofessional)*

The following courses are required for the bachelor of arts degree with a major in art (nonprofessional). Students are expected to complete a minimum of 24 upper division units in art and to select an area of major interest from the following: (1) art appreciation and art history; (2) crafts; (3) design; (4) drawing, painting and printmaking, or (5) sculpture.

***Required Courses for Areas of Major Interest***

Art history and appreciation: 12 units selected from:
Art 102, 111, 131, 132, 141, 151, 152, 159, 161, 171, 172, and 191.

Crafts: 12 units selected from:
Art 106, 125AB, 135AB, 145, 146, 155ABCD, 165AB, 175AB, 176, 181.

Design: 12 units selected from:
Art 113, 114, 123, 124, 129AB, 133, 134, 143, 144, 153ABCDEFGH, 154AB, 163AB, 173, 174, 183AB, 193AB, 194AB.

Drawing, painting, and printmaking: 12 units selected from:
Art 107, 108, 117, 118, 127AB, 128AB, 137AB, 147AB, 157ABCD, 167AB, 177AB.

Sculpture: 12 units selected from:
Art 165AB, 155D.

*Lower Division:* Art 9ABC, 11, 17ABCD, 59AB, Art elective in area of of major interest, Industrial Arts 60, 61; Electives.

*Upper Division:* 12 units of art in area of major interest, 10 units of art outside area of major interest, 2 units of upper division art electives; Electives to make 124 units.

*Plan II. Bachelor of Arts (Preprofessional)*

The following courses are required for the bachelor of arts degree with a major in art (preprofessional).

Students are expected to complete a minimum of 24 upper division units in art.

*Lower Division:* Art 9ABC, 11, 17ABCD, 59AB, 8 units of art in area of major interest, 2 units of art outside area of major interest, Industrial Arts 60, 61; Electives.

*Upper Division:* 16 units of art in area of major interest, 4 units of art outside area of major interest, Art 151, 183AB, 4 units art history or art appreciation, 6 units of art electives; Electives.

Listed below are the specific Art Department requirements for students wishing an emphasis in the following: (1) advertising design; (2) ceramics; (3) industrial design; (4) interior design; (5) magazine illustration; and (6) theater design:

**ADVERTISING DESIGN**

*Lower Division:* Art 7AB, 9ABC, 11, 17ABCD, 23AB, 53, 54, 57, 59AB, 67, Industrial Arts 60, 61.

*Upper Division:* Art 107 *or* 117, 108 *or* 118, 123, 124, 129AB, 151, 163AB, 183AB, 4 units art history or art appreciation, 6 units of art electives; Electives to make 124 units.

**CERAMICS**

*Lower Division:* Art 7AB, 9ABC, 11, 15, 16, 17ABCD, 35AB, 59AB, Industrial Arts 60, 61; Electives.

*Upper Division:* Art 133, 135AB, 145, 146, 151, 134 *or* 165A, 152, 175AB, 176, 181, 183AB, art history, 2 units art elective; Electives to make 124 units.

**INDUSTRIAL DESIGN**

*Lower Division:* Art 9ABC, 11, 15, 17ABCD, 23AB, 54, 57, 59AB, Industrial Arts 60, 61, Mathematics 1, 2, Mechanical Engineering 12, Physics 2A.

*Upper Division:* Art 113, 114, 123, 133, 134, 151, 153E, 183AB, 193AB, art history, 2 units art elective in craft area (Art 165A, 106, or 155C); Industrial Arts 106, 131, 134, Industrial Technology 167, Physics 2B, Chemistry 2; Art electives.

#### INTERIOR DESIGN

*Lower Division:* Art 7AB, 9ABC, 11, 17ABCD, 23A, 54, 57, 59AB, Industrial Arts 30, 60, 61; Electives.

*Upper Division:* Art 113, 114, 123, 133, 141, 151, 153F, 154A, 173, 183AB, 194AB, Industrial Arts 105, 106, 131, 134, Home Economics 140, 141, 153; Electives to make 124 units.

#### MAGAZINE ILLUSTRATION

*Lower Division:* Art 7AB, 9ABC, 11, 17ABCD, 53, 57, 59AB, 67, Industrial Arts 60, 61; Electives.

*Upper Division:* Art 117, 118, 123, 127AB, 129A, 151, 167AB, 183AB, 4 units art history, 6 units art elective; Electives to make 124 units.

#### THEATER DESIGN

*Lower Division:* Art 7AB, 9ABC, 11, 17ABCD, 54, Industrial Arts 60, 61, Drama 47, 55, 56, 77.

*Upper Division:* Art 111, 113, 114, 131, 132, 141, 143, 144, 151, 153B, 173, 174, Industrial Arts 131, Drama 122, 124AB, 152, 175, 176, 177; * Electives to make 124 units.

### *Plan III. Bachelor of Arts (Teaching Credential)*

See Credential Section.

#### MAJOR IN ART FOR THE BACHELOR OF SCIENCE DEGREE

This program is designed especially for students concerned with developing vocational competence in a specific art field.

*Lower Division:* Same as that for Plan II, bachelor of arts degree.

*Upper Division:* A minimum of 36 units planned in consultation with the major adviser to provide concentration in a particular field of art.

### *Teaching Credentials:*

See Credentials Section.

## BIOLOGY

Programs in biology are offered to provide adequate preparation for advanced study at the graduate level, to lead to vocational competence in occupational fields, to afford training to those who plan to enter the profession of teaching, and to contribute to the general education of students with majors in other fields of study.

Wherever applicable, laboratory and field experience are afforded the student in basic courses, this practice being founded on the conviction that individual and participative experience provides the most rewarding avenue to understanding and appreciation in science. This is equally

* (Those students who wish a secondary teaching credential with an emphasis in Theater Design should consult their adviser as to the substitution of required courses in professional education for the electives.)

desirable for the prospective elementary school teacher and for the student training for a career in one of the fields of science.

Considerable emphasis is placed on field work in many courses. The variety of seashore, mountain, coastal and desert environments, together with the rich manmade resources afforded by nearby parks, zoological gardens, museums, observatories and libraries, provides an unrivaled opportunity for this field work.

Students interested in preparing for work in the areas of wildlife management, biological survey, state and federal fisheries, and state and national parks will find courses designed to give adequate background for these occupational fields. Field courses, of one to several weeks duration, are periodically offered during vacation and summer sessions to qualified students who wish to participate in intensive study of various natural history or conservation subjects at desert, mountain or seashore locations.

Among the primary responsibilities of the division is the provision of a well-balanced background and point of view for prospective teachers. Courses for those entering elementary education stress the content and presentation of worthwhile subjects in nature study, elementary science and conservation for elementary school students.

Those preparing to teach in the secondary school areas are required to acquire reasonable breadth, and are afforded opportunity to enrich their background through elective courses.

#### MAJOR IN BIOLOGY FOR THE BACHELOR OF ARTS DEGREE

*Lower Division:* Botany 1 (or 1A and 1B); Zoology 1AB; Chemistry 1AB; Physics 2AB; Mathematics 7 (unless waived by placement examination); Microbiology 60; and Anatomy and Physiology 60 (or one upper division physiology course).

*Upper Division:* Chemistry 108; English 117*; and a minimum of 24 units in biological sciences including the following: Biology 126; Botany (two courses); Entomology 103 or Zoology 100; Zoology 135 or 140; Physiology (one course), unless fulfilled by Anatomy and Physiology 60. Remaining electives to be selected in consultation with the major adviser.

*Major in Botany for the Bachelor of Science Degree:*

See Botany.

*Major in Microbiology for the Bachelor of Science Degree:*

See Microbiology.

*Major in Zoology for the Bachelor of Science Degree:*

See Zoology.

*Teaching Credentials:*

See Credentials Section.

* May be waived by the department for a transfer student with six or more units in English composition and who demonstrates high proficiency in grammar as shown by the English Proficiency Test.

## BOTANY

**MAJOR IN BOTANY FOR THE BACHELOR OF SCIENCE DEGREE**

*Lower Division:* Mathematics 7 (unless waived by placement examination); Chemistry 1AB; Physics 2AB. Courses in the major to include Botany 1; Microbiology 60; Zoology 1AB.

*Upper Division:* English 117*, a minimum of 33 units of upper division courses to include: Botany 116, 120, 126, 130, 180; Biology 126; Chemistry 108; Entomology 103; a minimum of six units selected from the following: Botany 106, 110, 115, 176; Microbiology 110.

## BUSINESS ADMINISTRATION

The purpose of the Division of Business Administration is to provide the education and training for a business career at the management level.

Each student should receive the education and training which, when combined with appropriate experience, will properly prepare him for the professional and administrative responsibilities he may expect to face some years after college graduation. He should be well grounded in principles rather than in practices and procedures, for in our dynamic community, progress is exemplified by change in all but the most basic ideas and concepts. He must understand and appreciate the environment in which he lives so that he may be an effective person and a useful citizen. While enrolled at the College, a student can lay only a foundation for a successful career. After graduation, a period of apprenticeship inevitably must be served during which the particular methods, techniques, and personnel practices of the enterprise are mastered. This knowledge can be best learned on the job. But the broad education, the sense of interrelationships, the professional skills, and the mental discipline gained during the period of formal education in the division should materially shorten the apprenticeship of those who, possessing the personal and intellectual elements of executive ability, will eventually make a contribution to enlightened business leadership. The curricula are not intended to produce a highly specialized proficiency in technical business tasks.

To attain this goal we recommend:

1. A rigorous and broad education in the liberal arts and sciences. This education should include:
   a. A strong background of depth and breadth in the behavioral and natural sciences.
   b. A working knowledge of the tools of learning such as mathematics, philosophy, and the scientific method.
   c. The skills of communications—reading, writing, speaking, listening.
2. A general core of knowledge in business and economics. The courses of the core are designed to afford the student an opportunity to acquire a broad understanding of the major business func-

* May be waived by the department for a transfer student with six or more units in English Composition and who demonstrates high proficiency in grammar as shown by the English Proficiency Test

tions and of the major techniques employed in solving business problems. The core group aims to equip the student with sound foundations upon which he may develop executive and administrative abilities through advanced study and job experience. It is not the purpose of the core to train specialists in any of the functions and techniques of business enterprise.

3. A field of specialization. The design of this requirement is to afford the student an opportunity to explore a business functional area more intensively. The field of emphasis requirement is imposed primarily for the purpose of developing in the student a specialist's attitude toward business problems and policies as distinguished from training him in the performance of a particular task.

To achieve the above purpose the Division of Business Administration offers both undergraduate and graduate courses of study. The undergraduate curriculum leads to the bachelor of arts degree, or to the bachelor of science degree with a field of specialization in accounting, finance, industrial relations, production management, marketing, statistics and operations analysis or business education. The graduate curriculum leads to a master of science degree. The specific requirements for the above-listed degrees are to be found under the appropriate academic area in this section of the catalog.

### *Business Administration Advisory Council*

The Advisory Council for the Division of Business Administration is composed of outstanding executives in middle and top management of finance and industry in the division's service area of Los Angeles and Orange Counties. The role of this council is to afford an effective liaison between the Division of Business Administration and the business community, and to keep the administration and faculty informed of modern business practices and procedures. This will insure that the curricula of the Division of Business Administration are abreast of the times. The council will advise on student placement opportunities before and after graduation. The council is composed of the following members:

Mr. William E. Brady, C.P.C.U., Vice President, Gilbert C. Van Camp Insurance Agency, Inc.

Mr. Alan Harris, Plant Manager, Johns-Manville Products Corp.

Mr. Paul D. McClaughry, C.P.A., partner, Windes, McClaughry & Co.

Mr. E. Tennyson Moore, President, Moore Realty

Mr. M. L. Myrick, Division Manager, East Long Beach Division of General Telephone Company

Mr. James Simmons, Harbor Area Representative, L.A. County Federation of Labor AFL-CIO

Mr. Edwin L. Stanton, Oil Producer

Mr. John B. Wells, Jr., Resident Manager, Dean-Witter and Company

Mr. W. W. Wright, Executive Vice-President, Finance, Beckman Instruments, Inc.

### BACHELOR OF SCIENCE AND BACHELOR OF ARTS DEGREES IN BUSINESS ADMINISTRATION

*Lower Division:* Business 53AB (Business 53H may be substituted for 53AB provided a grade of C or higher is earned); Business 55, Mathematics 3A, Economics 1AB; either Business 56 or Geography 18; either English 2 or 36.*

*Upper Division:* Business Administration "Core" courses including Business 110, 111, 118, 125, 130A or 132, 151, 170, 175; Economics 112, 113; courses in the field of specialization; at least 9 additional upper division units.

### BACHELOR OF SCIENCE DEGREE IN BUSINESS ADMINISTRATION

#### *Field of Specialization in Accounting*

The accounting curriculum offers training in the nature, theory, and central problems of business accounting. It is designed to provide (1) an understanding of the problems relating to the verification, valuation, presentation, and interpretation of financial information, with emphasis on periodic income measurement; and (2) an understanding of the functions of cost allocations, budgeting, planning and control, which provide management with effective data for decision-making. The study of accounting provides a background for students who (1) plan to enter the field of professional public accounting and to become Certified Public Accountants or who (2) plan to broaden their understanding of accounting for careers in business or government. The following sequence of courses is required for this specialization:

Business 130B, 132, 134, 164, 165.

#### *Field of Specialization in Finance*

The finance curriculum offers training in the administration, techniques, and regulations applicable to business finance, investments, insurance and risk management and real estate. The study of the institutions of American finance, their customs, practices, and legal framework gives a basis from which the student builds an understanding of the demand function of finance. The supply function is studied through offerings in investments including analysis of securities and commodities coupled with analysis of their price trends and turning points. Special emphasis is given to the study of acquisition, administration, and distribution of funds for the individual business firm as well as the supplying of funds by individuals and institutions for investment in private enterprise. The finance major may direct his emphasis toward business finance, investments or insurance. The following sequence of courses is required for this specialization:

*Investment emphasis:* Business 121, 153, 154, 178, 190, and 191.

*Insurance emphasis:* Business 121, 122, 123, 153, 178, and 190.

* Students specializing in Business Education should substitute English 116 for English 2 or 36.

### *Field of Specialization in Industrial Relations*

The industrial relations curriculum offers training in the areas of manpower management and manpower marketing. The study of economics, legislation, economic security, and collective bargaining affords a foundation for understanding the elements in the demand for and the supply of labor as well as the tripartite relationship of unions, management, and government in labor relations. Effective selection, direction, and utilization of employees are studied as elements of personnel management. Analytical techniques are emphasized. The industrial relations major may direct his efforts toward either labor relations or personnel management. The following sequence of courses is required for this specialization:

*Labor relations emphasis:* Business 162, 163; Economics 165, 167; one of Business 172, 173, or Psychology 149.

*Personnel management emphasis:* Business 162, 173; Economics 165, Psychology 149, 184.

### *Field of Specialization in Marketing*

The marketing curriculum offers training in effective distribution of consumer and industrial goods and services in our economy. It is designed to acquaint students with marketing principles and policies, and the numerous dynamic marketing problems that have an influence on all types of business enterprise, and to provide preparation for a business career in commercial, governmental, and service organizations. The program combines a broad background of training in retailing, wholesaling, advertising, credits and collection, foreign trade, marketing management, and marketing research. The following sequence of courses is required for this specialization:

Business 126, 157, 180, 182, and one of the following: Business 127, 128, 140, 155, 159, 160, 161.

### *Field of Specialization in Production Management*

The production management curriculum offers training in the production functions of the business enterprise; economic plant operations and high living standards are largely dependent upon the effectiveness with which these functions are administered. Direction of production activities is concerned with the efficient use and control of men, materials, machines, and industrial plants. Emphasis is placed on developing students' knowledge and understanding of the techniques of decision-making, policy formulation and evaluation, organization theory, and the analytical techniques appropriate to production management. Students who elect the production management major should be cognizant of the increasing application of science and technology in the solution of management problems. The following sequence of courses is required for this specialization:

Business 162 or 163; Business 171, 172; Engineering 52, 92.

*Field of Specialization in Statistics and Operations Analysis*

The statistics and operations analysis curriculum offers training in the nature, theory, and use of statistics, mathematics, and data processing in management decision-making and in associated research activities which are needed to formulate problems and to verify that the formulations are valid. The study of data processing includes the role of the computer in solving these statistics and operations research problems as well as the processing of business information for record keeping, planning, and control purposes. The study of statistics and operations research provides background useful in research organizations, management consulting firms, government agencies, and research and data processing departments of almost every industry. The following sequence of courses is required for this specialization:

Business 112, 115, 116, 117; and one of the following: Business 130B, 171, 180, 182, 190; or an approved upper division mathematics course.

### BACHELOR OF ARTS DEGREE IN BUSINESS ADMINISTRATION

The curriculum for the bachelor of arts degree offers more breadth than that leading to the bachelor of science degree since the student is not required to specialize in any particular functional area of business. This curriculum is especially recommended to those who intend to work toward a graduate degree in the future. The following sequence of courses is required for this specialization:

Philosophy 180 or Mathematics 102; Mathematics 3B; Speech 106 or 141; Economics 120 or 137 or 147; it is suggested that the student who plans to go on to graduate work include among his electives 6 units of a foreign language.

### BACHELOR OF SCIENCE DEGREE IN BUSINESS EDUCATION

The major in business education for the bachelor of science degree is designed to provide courses fulfilling the degree requirements for credential candidates and to provide training in the fields of office administration and secretarial science.

Basic courses for the business education major:

Business 1B, 51, 53AB, 55, 102, 110, 118, 125, 130A, 151; Economics 1AB, 112; English 116.

Fields of Concentration—One of the following fields of concentration must be completed in addition to the above basic courses:

*Office Administration:* Mathematics 3A, Business 117, 132, 175, 189.

*Secretarial Science:* Mathematics 1 or 7; Business 103, 183, 184, 188, 189.

*Teaching Credentials:*

See Credentials Section.

## CHEMISTRY

### MAJOR IN CHEMISTRY FOR THE BACHELOR OF SCIENCE DEGREE

*Lower Division:* Chemistry 1AB, 5, 5L; courses to support the major to include Physics 1ABCD and Mathematics 3ABCD. A reading knowledge of scientific German is required.

*Upper Division:* Chemistry 112AB, 155, 170AB, 171 and an additional six units of chemistry including not more than three units of Chemistry 169. Courses to support the major to include a minimum of three additional upper division units in physics, mathematics, botany, microbiology or zoology as approved by the adviser. English 110 or 117 is required.* (A student who has a "B" or better in both Chemistry 108 and 109 may be admitted to Chemistry 112B without having had Chemistry 112A. It is recommended, however, that he audit Chemistry 112A before taking Chemistry 112B.)

*Transfer Students:* A student who transfers to the College must take at least 16 units of upper division chemistry courses here including either Chemistry 112B or Chemistry 170AB. In addition, to receive credit toward the major for Chemistry 112A and 112B, which have been taken elsewhere, the consent of the department chairman is required.

## DRAMA

Curricula in drama leading to the bachelor of arts degree, the general secondary credential, and the master of arts degree have been organized to serve student needs in four principal areas: (1) enrichment of the student's liberal arts background through the development of appreciations and insights derived from drama courses taken as general education electives; (2) preparation for the teaching profession on the secondary, junior college, or college level for which an academic major is required. Special courses also complement the elementary and junior high school teacher's preparation. Students may elect a teaching major or minor in drama; (3) development of interests and skills that will offer the student life-long satisfactions as an avocational outlet; (4) preparation for the professions of director, technical director, scene designer, and performer in the community theater, recreational theater, children's theater, educational theater, and television.

### MAJOR IN DRAMA FOR THE BACHELOR OF ARTS DEGREE

*Lower Division:* Drama 10 (Crew), 35, 47, 55, 56, 77, and Speech 3. (Speech 52 is to be taken in fulfillment of the general education speech requirements.)

*Upper Division:* A minimum of 24 units in drama including Drama 122, 124A, 126, 135A, 136, 152, 174, 176, plus 3 units of drama approved by adviser and English 140, 151, and 181.

* May be waived by the department for a transfer student with six or more units in English Composition and who demonstrates high proficiency in grammar as shown by the English Proficiency Test.

## ECONOMICS

Economics is a system of formal logic, based on observed regularities in the experience of men, as they associate together in the process of earning a living. The purpose of economics, like that of any science, is prediction—in this case, prediction of the *economic* behavior that may be expected within the framework of existing or proposed social institutions.

The study of economics is an essential part of the process by which one becomes an educated person. It enables one to think for himself about the economic issues and problems that preoccupy the minds of men, in personal and public life, as well as in the business world. Training in economics is required of all students preparing for careers in business. It is recommended for those preparing to teach the social studies in the public schools.

**MAJOR IN ECONOMICS FOR THE BACHELOR OF ARTS DEGREE**

*Lower Division:* Economics 1AB.

*Upper Division:* Economics 108, 112, 113, 130, 145, and two of the following: Economics 120, 122, 137, 141, 147, 151, 165 and 192.

Required Courses in Supporting Subjects:

*Lower Division:* Business 53A and any two of the following: Anthropology 60**, Geography 10**, and Sociology 50**.

*Upper Division:* Business 110*** and three units of English chosen with consent of the major adviser.

## EDUCATION

The new Certification of School Personnel law, enacted in 1961, and the State Board of Education requirements, adopted in May 1963, have changed the required preparation for the profession of teaching. Students who were not juniors in clear standing and were not enrolled in an approved teacher education curriculum on or before November 1, 1963 must follow the new credential requirements. The basic legal requirements for the new credentials are available in pamphlet form and may be purchased in the College Bookstore. Students should acquire copies of College recommended programs for the new credentials from the Division of Education office and from departments of their majors and minors.

Credentials under the former law will be issued until September 1966 to students who qualify. Students who are eligible and who wish to receive their credentials under this law are referred to the Credentials Section of this catalog. Consultation with advisers in subject areas and in the Education Division is recommended.

** Upper division courses may be substituted as follows: Anthropology 190 for Anthropology 60, Geography 100 for Geography 10, and Sociology 115 or Psychology 115 for Sociology 50.

*** Sociology 65 may be substituted for Business 110 by students who do not plan graduate study in economics.

### MAJOR IN ELEMENTARY EDUCATION FOR THE BACHELOR OF ARTS DEGREE

The major in elementary education is not available to students who will be under the new credential regulations. The elementary education curriculum described in this catalog is designed for students under the old law.

Students who wish to take the program of studies leading to the Kindergarten-Primary and/or General Elementary Credential and the baccalaureate degree with a major in elementary education must be admitted to the "four year" program by the Elementary Teacher Education Committee. Two basic plans for undergraduate students are as follows:

*Plan I* is for students who wish to fulfill the student teaching requirements at this College. These students must follow the procedures for admission to elementary teacher education and to student teaching listed in the Credentials Section of this catalog.

*Plan II* is for upper division students who hold a California provisional teaching credential for full time service who will have completed a minimum of two full years of satisfactory teaching experience in the public schools with at least one year at the elementary level. These students must follow the Plan II program listed in the Credentials Section of this catalog.

## ENGINEERING

The Division of Engineering includes Departments of Civil Engineering, Electrical Engineering, and Mechanical Engineering. The four-year curriculum leads to the degree of bachelor of science in engineering and provides a broad training for a professional career in engineering, or for continuing academic work towards an advanced degree. The total program includes a minimum of 132 semester units and provides opportunity in the upper division to specialize by options in the areas of civil, mechanical, or electrical engineering. Many of the engineering courses are available in evening or Saturday classes primarily for those employed in local industries.

The high school student planning to enter engineering is advised to pursue a strong program in pre-engineering subjects. These subjects should include biology, physics, chemistry, advanced algebra, trigonometry and one year of mechanical drawing in addition to the general requirements for admission to the College. A deficiency in any of the above areas will result in an extension of the time required to complete the program in engineering.

The curriculum is also designed to accommodate students transferring with pre-engineering training from other colleges such as the junior colleges and liberal arts colleges. Transfer students should note and follow where possible, the appropriate curriculum as outlined in later sections.



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#### *Engineering Advisory Council*

The Advisory Council for the Engineering Division consists of outstanding engineers and executives from industry and government in the Long Beach area. Its function is to afford a liaison between the College and industry and to keep the administration and faculty informed of modern engineering practices. This will insure that the curricula are kept abreast of the times. It will also advise on placement opportunities before and after graduation. The council consists of the following members:

Mr. Donald Erb, Structural Engineer

Mr. Philip Finkelstein, Chief Design Engineer, Long Beach Naval Shipyard

Professor Homer H. Grant, Associate Dean, School of Engineering, University of Southern California

Mr. Mills Hodge, Personnel Manager, Proctor and Gamble Manufacturing Company

Mr. Henry Jordan, Chief Engineer, Bureau of Franchises and Public Utilities, Long Beach

Mr. Glen W. Miller, Consulting Engineer

Mr. Charles R. Strang, Deputy Director, Engineering and Product Development, Douglas Aircraft Company, Long Beach

Dr. R. D. Teasdale, Aeronutronics Company

Dr. Edward R. Van Driest, Chief Scientist, Aero Space Labs, North American Aviation

Mr. Charles L. Vickers, General Manager, Long Beach Harbor Department

### ENGINEERING FACILITIES

A new Engineering Building, completed in January 1962, now houses the Division of Engineering, and for the first time permits all engineering laboratory and design facilities, division and department offices, and faculty offices to be grouped in a central location. The new Engineering Building includes new laboratory facilities in each of the instructional areas described in the following paragraphs:

#### *Civil Engineering Department*

The Department of Civil Engineering offers an option designed to give the students a broad educational background essential to modern civil engineering practice. The program is built around a basic core of mathematics, natural and engineering sciences common to the other option areas, and is planned to give a basic training that will enable the graduate to begin a career in any of the various fields of practice in civil engineering. It makes possible a systematic and integrated foundation in the principles of structural design and analysis, transportation facilities, water supply and sewerage disposal facilities, soils and foundations, construction materials and municipal engineering. Opportunity

to explore further a particular area of interest is offered in the fourth year during which the student devotes seven units to a sequence of courses related to the area of his choice.

The new Engineering Building houses laboratory facilities in fluid mechanics, surveying, soils and foundations, concrete, cement, structures, construction materials, and photogrammetry.

### *Electrical Engineering Department*

The option in electrical engineering is designed to prepare graduates for responsible engineering positions in design, development, research, sales, and operation in the field of electronics and electromagnetics. The curriculum is built around a strong basic core of mathematics, physics, and engineering science. This is followed by basic courses in electronics and electromagnetics. Opportunity to explore a particular area of interest and to provide a wide background in the field of engineering electronics is provided in the senior year by a choice of nine elective units.

Laboratory facilities in the field of electrical engineering are available in the new Engineering Building and include basic as well as more advanced electronic laboratory instruction, servo-mechanisms laboratory and electric machinery laboratory.

### *Mechanical Engineering Department*

The realm of mechanical engineering is so extensive that training must be broad and basic, providing grounding in fundamentals which an engineer requires in order to gain competence in any specialized field. In view of this, the curriculum in mechanical engineering includes ample foundation courses in mathematics, physics, chemistry, and graphics. These are followed by courses in energy conversion, thermodynamics, fluid mechanics, mechanics and strength of materials, metallurgy, and design. Opportunity to explore further a particular area of interest is provided by elective units in the senior year.

The laboratories of the department are provided with modern equipment for undergraduate instruction in the following areas: instruments and measurements, fuels and lubricants, materials and metallurgy, thermodynamics and heat power, vibration and design.

## MAJOR IN ENGINEERING FOR THE BACHELOR OF SCIENCE IN ENGINEERING DEGREE

### CIVIL ENGINEERING OPTION

*Lower Division:* Engineering 1; C.E. 52, 80, 85; M.E. 12; Physics 1ABCD; Mathematics 3BCD; Chemistry 1AB.

*Upper Division:* Economics 100; Engineering 101AB, 199; M.E. 105, 120, 121, 125, 126; E.E. 110, 111; C.E. 127, 140, 148, 155, 156, 157, 159, 168, 185, 186, 187, 189, 198; C.E. electives selected from the following: 145, 154, 167, 169AB, 180, 188, 191, 194, and 197; Also available is Engineering 190.

#### ELECTRICAL ENGINEERING OPTION

*Lower Division:* Engineering 1; M.E. 12; C.E. 80; Physics 1ABCD; Mathematics 3BCD; Chemistry 1AB. Students are advised to take E.E. 110 in the sophomore year.

*Upper Division:* Economics 100; Engineering 101AB, 199; M.E. 105, 120, 121, 123; E.E. 111, 130, 131, 132, 142, 160, 161, 162, 163, 164, 166, 183, 184; C.E. 198; Mathematics 110A; Approved electives to total 132 units.

#### MECHANICAL ENGINEERING OPTION

*Lower Division:* Engineering 1; M.E. 12, 22, 92; C.E. 80; Physics 1ABCD; Mathematics 3BCD; Chemistry 1AB.

*Upper Division:* Economics 100; Engineering 101AB, 199; M.E. 105, 120, 121, 124, 125, 126, 170, 171, 172, 173, 177, 178, 179; E.E. 110, 111, 130, 131, 162, 183; C.E. 140, 198; Mathematics 110A; M.E. electives.

## ENGLISH

The English curriculum is designed to serve all students in the College by offering them training in written expression and experience in literature and literary criticism.

The courses of study for the English major are designed to enlarge the literary background of the student and to prepare him for business and professional life, for teaching, or for graduate work.

For all degrees and credential patterns, work in a foreign language is highly recommended, preferably to begin (or continue from high school) in the lower division and to continue in the upper division.

Recommended course sequences, advisement sheets, and other information are available in the English Department office.

#### MAJOR IN ENGLISH FOR THE BACHELOR OF ARTS DEGREE

A total of 39 units in English:

*Lower Division:* 9-12 units distributed as follows: English 2, 50, 51; Elective: any lower division literature course except English 40; English 49 is recommended.

*Upper Division:* 27-30 units distributed as follows: English 124, 125, 140; at least two of the following: English 120, 139, 145, 164, 165, 166, 188 or 189, 190; English 192 or 194; Electives, 9-12 units: any upper division English courses except English 107, 111, 113, 116, 117; students may elect either 112 or 179 but not both in satisfying this requirement.

#### MAJOR IN ENGLISH (TEACHING EMPHASIS) FOR THE BACHELOR OF ARTS DEGREE

See Credentials Section.

#### CREATIVE WRITING OPTION

A total of 39 units as follows:

*Lower Division:* 12 units distributed as follows: English 2*, 35 or 60, 50*, 51*.

*Upper Division:* 27 units distributed as follows: General principles, 3-6 units selected from English 198, Philosophy 140, Drama 172, Speech 157; Genre and authors, 6-9 units selected from English 135, 137, 138, 140*, 141, 151, 156, 174, 181, 192* or 194*; Creative writing, 6-9 units selected from English 160*, 161*, Speech 154, Drama 180; Literary history; 9 units; 3 from each group (1) English 139*, 190*, 195* (2) English 120*, 164, 165, 166* (3) English 125*, 145*, 188*, 189*.

ENTOMOLOGY (See Biology)

FOREIGN LANGUAGES (See specific language)

## FRENCH

The program in French is designed to meet the needs of (1) prospective teachers; (2) students preparing for executive secretarial positions where knowledge of modern languages is essential; (3) students who plan to enter the consular service, and majors in international relations; (4) those who desire to enlarge their background of experience in the field of communication and share in the aesthetic and cultural contributions of the peoples of the world; and (5) those preparing for professional and graduate work.

#### MAJOR IN FRENCH FOR THE BACHELOR OF ARTS DEGREE

*Lower Division:* 14 units of first and second year French. Students who have completed sufficient high school French may take upper division courses as soon as lower division requirements have been met. Required courses include: French 1AB, 60AB, electives.

*Upper Division:* A minimum of 24 units of upper division courses which must include French 102, 103, 111, 120A or B; a minimum of one year, or its equivalent, of a second foreign language.

*Teaching Credentials:*

See Credentials Section.

## GEOGRAPHY

The major aims of the geography curriculum are: to assist in the training of students planning to enter elementary or secondary school teaching; to supplement the training of students preparing for business; to prepare students for graduate work in geography; and to provide courses for students majoring in the social sciences and in geography. To ac-

* The student who wishes to satisfy the requirements for the secondary credential should choose his courses in each option from among those starred. See Credentials Section of this catalog.

complish these aims the Department of Geography offers several programs designed to meet the specific needs of differing groups of students. Those planning to follow majors or minors in this subject should consult with the departmental adviser.

#### MAJOR IN GEOGRAPHY FOR THE BACHELOR OF ARTS DEGREE

*Lower Division:* Geography 10, 11, and 18 or equivalents.

*Upper Division:* A minimum of 24 units including Geography 124, 141 and either Geography 125, 126, 143, and 197, plus 6 units chosen from 118, 153, and 156; or Geography 111, 185, plus 9 units chosen from 118, 125, 126, 143, 153, 156, and 197.

## GEOLOGY

#### MAJOR IN GEOLOGY FOR THE BACHELOR OF SCIENCE DEGREE

*Lower Division:* Geology 3, 5, 6; Chemistry 1A B; Civil Engineering 85; Mathematics 3ABC; Physics 2AB or Physics 1ABD; Zoology 1A. Students planning courses in specialized fields of geology emphasizing chemistry, engineering, mathematics or physics (i.e. geochemistry, mineralogy, engineering geology, geophysics, oceanography, et cetera) should complete mathematics through 3D and take the Physics 1ABD sequence. Students planning a career in paleontology may substitute Zoology 1B for Mathematics 3C.

*Upper Division:* Geology 102, 103, 104, 106, 111, 112, 116 and 118; courses to support major to include *** English 110 or 117 and 10 units of additional upper division course work selected in consultation with major adviser. Students planning a career in engineering geology may substitute upper division engineering courses totaling equal unit value for Geology 104 and 111.

## GERMAN

The program in German is designed to meet the needs of (1) prospective teachers; (2) students preparing for executive secretarial positions where knowledge of modern languages is essential; (3) students who plan to enter the consular service and majors in international relations; (4) those who desire to enlarge their background of experience in the field of communication and share in the aesthetic and cultural contributions of the peoples of the world; and (5) those preparing for professional and graduate work.

#### MAJOR IN GERMAN FOR THE BACHELOR OF ARTS DEGREE

*Lower Division:* 14 units of first and second year German. Students who have completed sufficient high school German may take upper division courses as soon as lower division requirements have been met. Required courses include: German 1AB, 60AB, electives.

*** May be waived by department for a transfer student with six or more units in English composition and who has demonstrated high proficiency in grammar as shown by the English Proficiency Test.

*Upper Division:* A minimum of 24 units of upper division courses in German which must include German 102, 103, 111, 120A or B; a minimum of one year, or its equivalent, of a second foreign language.

*Teaching Credential:*

See Credentials Section.

## HEALTH EDUCATION

Courses are offered which are designed to satisfy health education requirements for (1) general education, (2) the physical education major, (3) the health and development credential for school nurses, (4) the baccalaureate degree major, (5) the teaching major and minor in health education for the general secondary credential.

### MAJOR IN HEALTH EDUCATION FOR THE BACHELOR OF ARTS DEGREE

*Lower Division:* Physical Education 13 and Microbiology 55; Prerequisite preparation, Anatomy and Physiology 52, 53.

*Upper Division:* A minimum of 24 units including the following: Health Education 125, 126, 127, 128, 130; Home Economics 151, 165; Education 132; Safety Education 149.

*Teaching Credentials:*

See Credentials Section.

## HISTORY

The study of history is intended to serve as a cultural background, as a preparation for graduate work in history and the other social sciences, or as a foundation for those planning to enter teaching, law, librarianship, government, foreign service, and related fields.

### GENERAL EDUCATION REQUIREMENT OF UNITED STATES HISTORY

Candidates may satisfy the requirement as follows: *Lower Division Students*—History 7A or B or 8AB. *Upper Division Students*—Any upper division U.S. history course except California history.

### MAJOR IN HISTORY FOR THE BACHELOR OF ARTS DEGREE

*Lower Division:* A minimum of 12 units including History 4AB or 5AB and 7AB or 8AB.

*Upper Division:* History 199 and a minimum of 24 additional units, which must include at least 6 units in each of three of the following areas: (1) Ancient and Medieval, (2) Modern European, (3) British, (4) United States, (5) Latin American, (6) Far Eastern, (7) Russian History.

## HOME ECONOMICS

The Department of Home Economics offers programs of study leading to the bachelor of arts and master of arts degrees. Programs of study also meet the requirements for the teaching credential.

Home economics curricula are designed to provide a liberal education which will enable students to meet the needs of family and community living and at the same time to prepare students for professional careers in the various areas of the field—child development and family relations, food and nutrition, textiles and clothing, housing and home furnishings, and family finance and management.

The curricula also serve the needs of students who find that certain areas of home economics are important to their professional objectives, and to those who wish to study certain aspects of home economics as a matter of personal interest.

With departmental approval, students may select courses, *in addition to the core*, for a major in home economics with specific objectives such as:

*Home Economics Education.* Requirements for teaching credentials must be met. These requirements include specific courses in education and student teaching.

*Dietetics and Institutional Management.* Requirements for membership in the American Dietetic Association must be met. These requirements include special courses in quantity food preparation, institutional management, diet and disease, chemistry, bacteriology and economics. For the hospital dietitian, a year of internship in an approved institution is required.

*Home Economics in Agricultural Extension.* Additional courses in two or more areas of home economics are needed. Courses in areas such as business, speech, drama, journalism, radio and television are desirable.

*Home Economics in Business.* This emphasis prepares for representative types of business opportunities such as equipment, food, nutrition, housing, journalism, textiles, clothing, and merchandising. Selected areas within the major are combined with those in other departments in terms of the student's specific objectives.

### MAJOR IN HOME ECONOMICS FOR THE BACHELOR OF ARTS DEGREE

*Lower Division:* Home Economics 50, 62, 66, 70, 75*, 78; Art 11, 53 or equivalents; Psychology 51 or equivalent; Sociology 50, 52 or equivalent; Economics 1A or 100, or equivalent; English 1 and 2, or equivalent; Chemistry 1A or 2 or equivalent; Anatomy and Physiology 50 or equivalent; Microbiology or Physics (4 units).

*Upper Division:* Home Economics 105, 107, 110*, 140, 141, 144, 147, 190, 195; Chemistry 108 or equivalent; Economics 100 or equivalent (if 1A was not taken).

*Teaching Credentials:*

See Credentials Section.

* May be waived by passing a comprehensive examination in the subject.

## INDUSTRIAL ARTS

The industrial arts curriculum is designed to meet the needs of the following groups of students: (1) those preparing to enter the teaching profession in the field of industrial arts who need the Special Secondary or General Secondary Credential; (2) those who are teaching industrial arts and who desire work to further their professional growth; (3) those who desire to broaden their experiences, but who do not plan on entering the teaching profession; and (4) those who are vocationally qualified and who desire to qualify to teach industrial arts subjects in their special areas.

Courses in industrial arts also are designed for students completing majors in other subject fields and wishing to take elective units in this area.

Course offerings in industrial arts have been selected so that the student can qualify for (1) technical training leading to the baccalaureate degree; (2) a teaching major or minor in industrial arts for the General Secondary Credential; (3) the Special Secondary Credential in Industrial Arts; and (4) the master of arts degree with a major in industrial arts.

### MAJOR IN INDUSTRIAL ARTS FOR THE BACHELOR OF ARTS DEGREE

*Lower Division:* Industrial Arts 1, 11, 21, 30, 41, 56, 70, 80; Art 53; Photography 10.

*Upper Division:* 24 units of technical industrial arts courses planned in consultation with a major adviser, which must include Industrial Arts 136. Also required are Education 163, English 117, and Industrial Arts 180, 181, 182 and 190. (IA190 must be taken concurrently with student teaching.)

### MAJOR IN INDUSTRIAL ARTS FOR THE BACHELOR OF SCIENCE DEGREE

This program is designed specifically for students concerned with developing greater competence in a selected area of industrial arts.

*Lower Division:* Same as that for the bachelor of arts degree.

*Upper Division:* A minimum of 36 units planned in consultation with the major adviser to provide for concentration in a particular area of industrial arts.

*Teaching Credentials:*

See Credentials Section.

## INDUSTRIAL TECHNOLOGY

The program in industrial technology is designed for the student who, through screening based upon evaluation of previous college work, job experience, testing and counseling, clearly demonstrates his aptitude and

promise for high level technical work with related administrative responsibility. The following student groups are served by this program:

1. Transfer students from the junior colleges who desire to earn the bachelor of science degree in their area of specialization.
2. Students who desire a change of objective from other occupational curricula.
3. Personnel currently employed who desire additional training and/or the bachelor's degree.

It should be noted that this curriculum, for degree purposes, is open only to students who are able to transfer technical course credits earned at two- or four-year colleges or approved military service schools. Prospective students are required to counsel with a member of the industrial technology staff prior to submission of an application for admission to the program.

At the present time there are three specialization options in industrial technology.

*Building Construction Technology.* Persons completing the prescribed program will be qualified to serve in expediting, coordination, inspection, detailing, aide to architects, specification writing, and associated work in the construction or manufacturing industries.

*Electronics Technology.* Persons completing the prescribed program will be qualified to serve in methods, planning, facilities, development, production and quality control, specification and technical writing, and maintenance areas of electronic and control industries.

*Manufacturing Technology.* Persons completing the prescribed program will be qualified to serve in tooling, methods, facilities planning and development, specification and technical writing, quality, liaison and maintenance aspects of production in manufacturing industries.

### *Industrial Technology Advisory Council*

The advisory council, composed of leaders actively engaged in areas of technology with which the program is concerned, continually provides information and guidance about industrial developments in methods, materials and techniques so that the program reflects the best of current practices. In reference to the above, they examine various aspects of the program and make recommendations for changes in course content, methods and/or facilities. Membership is as follows:

Mr. Jack Creason, Supervisor, Manufacturing Methods, North American Aviation.

Mr. Ray E. Gariss, Supervisor, Tool and Manufacturing Engineering, Douglas Aircraft.

Mr. Fred A. Hassouna, AIA, East Los Angeles College.

Mr. Dale D. Koepke, Technical Training Coordinator, Beckman Instruments.

Mr. Christy Lembesis, Material Handling, North American Aviation.

Mr. William M. McCune, Diversified Builders, Inc.
Mr. Ivan Munson, Bendix Computer Corporation.
Mr. Cedrick Sanders, Cedrick Sanders Company.
Mr. J. E. Tapp, Consulting Electronic Engineer, T & T Measurement.
Dr. J. W. Trego, Personnel Department, Hughes Aircraft Company.

#### MAJOR IN INDUSTRIAL TECHNOLOGY FOR THE BACHELOR OF SCIENCE DEGREE

Specific requirements for each option are indicated below:

*Building Construction Technology.* Art 53, 54, 138AB, 164AB; Business 53A, 55, 141, 155; Chemistry 2; Economics 100; English 2, 117; Mathematics 3AB; Philosophy 75; Physics 2AB; Psychology 149; Industrial Arts 107, 130, 131, 132, 133, 134; Industrial Technology 107B, 130, 131, 132, 133, 134, 168, 169, 170. Field work, and general education requirements and electives selected in consultation with adviser, to total 128 units.

*Electronics Technology.* Art 164A; Business 53A, 125, 162; Chemistry 2, Economics 100; English 2, 117; Mathematics 3AB; Philosophy 75; Physics 2AB; Psychology 149; Industrial Arts 30, 111, 132; Industrial Technology 120, 121, 122, 123, 124, 125, 137, 167, 168, 169, 171, 172. Twenty-four units of transfer technical courses, field work, general education requirements and electives selected in consultation with adviser, to total 128 units.

*Manufacturing Technology.* Art 164AB; Business 53A, 125, 162; Chemistry 2; Economics 100; English 2, 117; Mathematics 3AB; Philosophy 75; Physics 2AB; Psychology 149; Industrial Arts 21, 30, 111, 112, 132, 135; Industrial Technology 112, 113, 114, 115, 116, 117, 130, 137, 139, 167, 168, 169, 170, 171, 172. Field work, general education requirements and electives selected in consultation with adviser to total 128 units.

Field work consists of approved, certified, practical work experience in industry. This work must be in an area allied with the student's option.

## JOURNALISM

Courses in journalism are offered with the following objectives in view: (1) to develop a better understanding of the newspaper as a medium of mass communication; (2) to prepare teachers for school publication assignments; (3) to serve as an outlet for extracurricular interests by participation in campus publications.

The College does not offer a major in journalism at this time.

## LATIN

The College does not offer a major in Latin.

MARKETING (See Business Administration)

## MATHEMATICS

### MAJOR IN MATHEMATICS FOR THE BACHELOR OF ARTS DEGREE

*Lower Division:* Mathematics 3ABCD; courses in physical science to support the major to include at least one year of chemistry and either Physics 1ABCD or Physics 2AB.

*Upper Division:* A minimum of 24 units to include Mathematics 100, 114, 122AB. *English 110 or 117 is required.

### MAJOR IN MATHEMATICS FOR THE BACHELOR OF SCIENCE DEGREE

*Lower Division:* Mathematics 3ABCD; courses in physical sciences to support the major to include Physics 1ABCD and Chemistry 1AB.

*Upper Division:* A minimum of 24 units of approved upper division courses to include Mathematics 114, 119, 122AB, 126 and either 124 or 130. * English 110 or 117 is required.

*Teaching Credentials:*

See Credentials Section.

## MICROBIOLOGY

The curricula in microbiology leading to a bachelor of science degree are designed to satisfy the needs of four basic groups: (1) Laboratory Technology—to give the student background and specific instruction in this area. This study is designed to qualify the student for field work and State license. This type of career is open to both men and women in hospitals, city, county, state and national public health and private laboratories; (2) the general microbiology degree is of a broader nature and is designed to fit the needs of a student wishing to go into medical or industrial research, industry or graduate study; (3) the pre-professional option is one designed to prepare the student for medical, dental, osteopathic or veterinary school; and (4) a major in microbiology can also be utilized for a junior college credential when taken in conjunction with the proper education courses.

All four patterns have basic courses in common. A program desired in any of the four can be arranged through counselling by advisers in the department.

### MAJOR IN MICROBIOLOGY FOR THE BACHELOR OF SCIENCE DEGREE

*General Microbiology Option*

*Lower Division:* Chemistry 1AB; and 5, 5L; Mathematics 7 or 8; Physics 2AB; Microbiology 60; Zoology 1AB.

*Upper Division:* English 117 *; and a minimum of 36 units including the following: Microbiology 101, 107, 110, 115AB; Chemistry 108, 145A; nine units from Microbiology 130 or 140; Chemistry 140 or 145B;

* Waived for any student who scores above 52 percentile on the English Proficiency Test.

Microbiology 168; and a minimum of 6 units to be selected in consultation with the major adviser from either lower or upper division courses.

*Medical Microbiology Option (Laboratory Technology)*

*Lower Division:* Chemistry 1AB; and 5L; Mathematics 7 or 8; Physics 2AB, Microbiology 60, Zoology 1AB. (One anatomy and physiology course may be substituted for Zoology 1B.)

*Upper Division:* English 117 *; and a minimum of 36 units including the following: Microbiology 101, 107, 110, 115AB, 130; Chemistry 108, 140, 145A; Microbiology 168; and a minimum of 6 units to be selected in consultation with the major adviser from either lower or upper division courses.

*Preprofessional Microbiology Option (pre-medical, pre-dental, pre-veterinary):*

The preprofessional option follows either the general microbiology or the medical microbiology options.

The elective units are selected (in consultation with the major adviser) to satisfy the specific course requirements of the professional school to which the student seeks admission.

## MUSIC

The curricula in music are organized to meet the needs of four groups: (1) students who wish to enter the music field as performers, directors, composers, arrangers or private teachers; (2) students who choose to study music because of its avocational value or interest; (3) students who plan to enter the teaching profession on the secondary level and wish either a teaching major or teaching minor in music; and (4) students who wish to meet the music requirements for the general elementary credential.

For students specializing in music with the intention of entering the field of professional music, various courses are offered which lead either to the bachelor of arts or to the bachelor of science degree and which will serve as a basis for future specialization or graduate study at a professional school of music. The program leading to a bachelor of science degree with a major in music is designed for those concerned with developing a high level of vocational competence in a specific area of music.

Students not intending to teach and not seeking vocational competence have available to them music curricula to meet their individual needs. Such programs will lead to the bachelor of arts degree with a major in music. Many of the courses in music are designed to be of interest and value to students majoring in other fields.

For those planning to teach music in the secondary schools, curricula have been developed fulfilling the requirements for the general

* May be waived by the department for a transfer student with 6 or more units in English composition and who demonstrates high proficiency in grammar as shown by the English Proficiency Test.

secondary credential with a teaching major or a teaching minor in music. For counsel concerning these requirements, students should consult the Music Department Chairman.

Each student who elects to major in music must declare a principal interest in some area of the performance field (voice, piano or other instrument), develop his performance ability in this area, and appear in student recitals.

Competence in the area of applied music is required of all who major in music. In view of the importance of keyboard facility as a basis for upper division and graduate work, each student is strongly urged to take four semesters of piano in the lower division program. The study of voice and instruments is also recommended.

Participation in one of the following is required of each music major each semester with or without credit: A Cappella Choir (Music 1 or 101); Symphony Orchestra (Music 7 or 107), or Band (Music 9 or 109; 10 or 110). Upon receiving permission of the Music Department, the student may substitute Music 2 or 102 (College Chorus) for one of the above courses.

Elementary education majors are provided with opportunities for study in the several areas of music. Those with special interests in music may elect the elementary credential with a music concentration. Students are urged to participate in music activities as part of their preparation for teaching.

Candidates for the kindergarten-primary credential are required to play the piano and must pass a proficiency examination. Two semesters of piano (Music 22AB, or 15) will meet these requirements.

#### MAJOR IN MUSIC FOR THE BACHELOR OF ARTS DEGREE

*Lower Division:* Musicianship, 6 units; harmony, 9 units; counterpoint, 3 units; piano, 4 units. The lower division program also should include study on the principal instrument and participation in music activity.

*Upper Division:* A minimum of 24 units of upper division music courses, distributed as follows: theory and composition, 6 units—Music 104, 144, 174; music history, 6 units—Music 163, 164; applied music, 4 units; music electives, 8 units. Music activity and semester recital must be included in the program each semester. A satisfactory senior recital is required as a prerequisite to graduation.

*Lower Division:* Music R (4 semesters); Music 41, 42, 43, 44, 80, 81, 83; Music activity (4 semesters); Piano (4 semesters); Electives, 3 units.

*Upper Division:* Music R (3 semesters); Music 104, 144, 163, 164, 174, 198; Applied music (4 units ); Music activity (4 semesters); Music electives, 8 units; Electives to make 124 units.

#### MAJOR IN MUSIC FOR THE BACHELOR OF SCIENCE DEGREE

This program is designed especially for students concerned with developing vocational competence in a specific music field.

*Lower Division:* Musicianship, 6 units; harmony, 9 units; counterpoint, 3 units; piano, 4 units; music electives, 5 units. Students whose principal instrument is piano must include Music 92, Piano Accompanying. The lower division program also must include participation in a music activity.

*Upper Division:* A minimum of 39 units in music, 24 of which must be in upper division courses, distributed as follows: theory and composition, 6 units—Music 104, 144, 174; music history, 6 units—Music 163, 164; conducting, 2 units; music electives, 25 units.

Music activity and semester recital must be included in the program each semester. A satisfactory senior recital is required as a prerequisite to graduation.

The recommended courses are substantially the same as those listed for the bachelor of arts degree.

#### CONCENTRATION IN MUSIC WITH THE GENERAL ELEMENTARY CREDENTIAL

This program is designed for elementary classroom teachers who desire to develop a special competence in elementary music teaching or for those who expect to work in music consultant or supervisory positions. The program, in addition to the requirements for the General Elementary Credential, requires a minimum of 34 units in music distributed as follows: Music 21C, Music 21D, Music 36, Music 38, Education 123, Education 124, Music 134, Music 147, Music 150 or 160, Music 164 or 180, 2 units in Voice, 4 units in music activities (Choir, Chorus, Band, Orchestra, or other) and 7 units of electives chosen with advice of counselor, and 2 units in Piano (selected from Music 15, 92, 115, 170).

*Teaching Credentials:*

See Credentials Section.

## NURSING

*Basic Degree Program in Nursing:*

The basic program began in 1961-62. The program will increase in the extent of course offerings and the complete program will be offered in 1964-65. Graduates of the program are eligible for the examination for licensure as a registered nurse.

Application should be made directly to the Office of Admissions and Records. The freshman year is spent at the campus taking regular college courses for the prescribed nursing program. These courses are also applicable to several degree objectives other than nursing. Eligibility for continuation in the curriculum in the sophomore year will be determined by aptitude tests, recommendations, interviews, physical examinations, and scholastic attainment. To remain in the nursing program, the student must achieve a grade of C or better in each nursing clinical course and attain a cumulative grade point average of 2.0 (C) on all units attempted. A car is necessary for transportation to extended campus areas.

The curriculum in nursing consists of 132 semester units as outlined in the requirements for the degree. Hospitals and health agencies in the nearby community will be used for clinical instruction and laboratory practice. Transfer students are required to complete the prescribed program. The program has received initial accreditation by the Board of Nursing Education and Registration of California.

Transfer students and registered nurses must file official records in the Nursing Department office in addition to records filed in the Office of Admissions and Records.

*Advisory Committee for Nursing:*

The responsibilities of the Advisory Committee for Nursing are to interpret the nursing program in the community, to evaluate progress reports and to recommend policies pertinent to the nursing program. Membership in the committee is as follows:

Dr. George Y. Abbe, Metropolitan Hospital
Mrs. Mary Jane Durnin, Women's Medical Auxiliary
Dr. Harriman Jones, Harriman-Jones Clinic
Mr. David Laurence, Long Beach Pacific Hospital
Miss Eleanor Leckner, Long Beach Department of Health
Mr. Walter Oliver, Long Beach Community Hospital
Dr. Leonard West, Long Beach General Hospital
Sister Mary Malachy, St. Mary's Hospital
Dr. Maurice Rosenbaum, Memorial Hospital

Registered nurses who hold a diploma or an Associate of Arts degree will complete the same course requirements as the basic degree student. The National League Graduate Nurse examination and ACT Program are required to determine the amount of advanced standing credit.

*Philosophy of the Program:* As an integral part of the College, the Department of Nursing offers a four-year program leading to a bachelor of science degree in nursing. Learning experiences in general and professional education are designed to provide the student with a background essential for professional nursing service and graduate education. Emphasis is placed upon individual development in order that the student may realize his fullest potential for responsible citizenship and professional competence.

The curriculum is formulated to help the student develop understanding of self and others, intellectual curiosity, and ability to work with others in identifying and resolving the health problems of a changing society.

*Purpose and Aim in Establishing the Program:* The purpose of the bachelor of science program in nursing is to prepare students to function, under supervision, as staff nurses in any field of nursing including public health.

**MAJOR IN NURSING FOR THE BACHELOR OF SCIENCE DEGREE**

*Lower Division:* Nursing 10, 50, 53, 55; Chemistry 2 or equivalent; Anatomy and Physiology 40AB; Physics 10 or equivalent; Biology 10 or equivalent; Microbiology 60; Psychology 51; Home Economics 52; English 2; Electives.

*Upper Division:* Nursing 126, 140, 141, 160, 165, 179, 180, 185, 186; Chemistry 108; Education 105, 107; Electives.

## PHILOSOPHY

The philosophy curriculum is designed for two purposes: (1) To make available to students the opportunity of meeting the general education requirements. To this end, generic lower division and upper division courses are designed to contribute to the general education of the student. They are intended to give practice in reflective thinking and aid the student in formulating his own philosophy of life. The student is introduced to the basic problems of philosophy, and opportunity is given for his understanding of representative approaches to their solution. Appropriate emphasis is placed upon practical and current problems. And, (2) To make available to students the opportunity of meeting the requirements for a major in philosophy. To this end, in addition to generic courses, specialized courses are designed to acquaint the student with the history of philosophy and related areas. These courses are intended for those who are seeking a liberal arts degree and/or those who plan to teach philosophy, for pre-professional students in such areas as theology and law, and as a foundation for graduate studies in the areas of library science, social science, diplomacy, theoretical physical science, and specialized historical studies.

**MAJOR IN PHILOSOPHY FOR BACHELOR OF ARTS DEGREE**

A minimum of 36 units in philosophy divided as follows:

*Lower Division:* At least 9 units in philosophy and no more than 12 units in philosophy including Philosophy 51 and 75. Other units to be selected from Philosophy 65 and 90.

*Upper Division:* At least 24 units in philosophy including Philosophy 101 and 102. Other units to be selected from Philosophy 110, 120, 131, 140, 145, 150, 155, 158, 160, 165, 168, 170, 175, 180, 184, 185, 195.

## PHYSICAL EDUCATION

The Division of Health, Physical Education and Recreation offers a program designed to meet the professional needs of prospective physical education teachers and students whose vocational goals lie in the area of health education and recreation. Courses are offered which satisfy the following requirements: (1) physical education for the General Elementary Credential; the Special Secondary Credential in physical education; the Special Secondary Credential in Driver Education; and the

General Secondary Credential with a teaching major or minor in both physical education and health education; (2) the bachelor of arts degree with majors in health, physical education or recreation; (3) the master of arts in physical education; (4) health and physical education courses for all lower division students, to satisfy the general education requirement.

The Division of Health, Physical Education, and Recreation requires all physical education major and minor students to possess proficiency in and knowledge of a variety of activities, the level of proficiency and knowledge to be determined by the physical education faculty.

The division also assumes the responsibility for meeting the needs and interests of the general student body in sports, dance, and other recreational activities for participants and spectators. These needs are met through extensive offerings of activity courses, an intramural program for men and women, and intercollegiate competition in all sports.

All students participating in any physical education activity must have a medical clearance from the college health officer.

#### MAJOR IN PHYSICAL EDUCATION FOR THE BACHELOR OF ARTS DEGREE

*Lower Division:* Physical Education 30, 50, 51 (W), 56, 58 (M), 59 (M), 60 (M), 61 (M), 62 (M), 63 (M), 65 (W), 66 (W), 67, 70 (W), 71 (W), 72 (W), 73 (W), or acceptable equivalents.

*Upper Division:* A minimum of 24 units including Physical Education 106, 130 (if 30 not taken), 150; Health Education 125; Recreation 108 and

*Men:* Physical Education 158, 159, 160, 161, 162, 163.
*Women:* Physical Education 149, 151, 165, 166, 167, 170, 171.

*Teaching Credentials:*

See Credentials Section.

## PHYSICAL SCIENCE

#### MAJOR IN PHYSICAL SCIENCES FOR THE BACHELOR OF ARTS DEGREE

*Lower Division:* Physics 1ABCD, and Chemistry 1AB and Mathematics 3ABCD and a choice of one course among the following: Biology 50, Zoology 1A, Botany 1A, Botany 1, and Microbiology 60.

*Upper Division:* A minimum of 24 units of courses selected in consultation with major adviser. At least 12 units of this work must be in the field of physics and chemistry. English 110 is required.*

*Teaching Credentials:*

See Credentials Section.

* May be waived by the department for a transfer student with six or more units in English Composition and who demonstrates high proficiency in grammar as shown by the English Proficiency Test.

## PHYSICS

**MAJOR IN PHYSICS FOR THE BACHELOR OF SCIENCE DEGREE**

*Lower Division:* Physics 1ABCD; courses to support the major to include Mathematics 3ABCD and Chemistry 1AB, and a choice of one course among the following: Zoology 1A, Botany 1A, Botany 1, Microbiology 60 and Biology 50.

*Upper Division:* English 110 *. Mathematics 110AB. Physics 105AB, 109, 112, 118, 120AB, 121AB, 131AB, 125 and either 123AB or 6 selected upper division units of mathematics and/or physics.

PHYSIOLOGY (See Biology)

## POLICE SCIENCE AND ADMINISTRATION

The program in police science and administration offers the bachelor of science degree to the man or woman seeking comprehensive training for a professional career in law enforcement or its allied fields. Recognizing that many presently interested in such training are employed in police work and may have taken advantage of course work offered in local community colleges, the pattern for the major provides for a relatively extensive base of fundamental work in the lower division. The upper division requirements include subjects of a more advanced, specialized, and administrative nature.

A minimum of 44 units of study in police science constitutes the major. The total program for the degree must include a minimum of 124 semester units. For information concerning general regulations and degree requirements, refer to Baccalaureate Degrees.

The student seeking the bachelor of science degree in police science and administration will be strongly advised to supplement his major with courses selected from police science, English, speech, journalism, business, political science, sociology, psychology, physical education, biology, and physical science, according to his occupational objective.

*Note: Identical and Interchangeable Courses.* The police science program offers certain courses on an identical and interchangeable basis, whereby such courses are scheduled with a day section and an extended-day section. The employed police officer whose work shift changes monthly may change his hours of college work accordingly, attending either section at his convenience.

*Note: Students Intending to Transfer from City or Junior College.* Students intending to transfer from city or junior colleges to this College to continue work for a bachelor of science degree in police science and administration are advised to concentrate upon general education requirements while in lower division status at a city or junior college

* May be waived by the department for a transfer student with six or more units in English Composition and who demonstrates high proficiency in grammar as shown by the English Proficiency Test.

since only a limited number of lower division police courses will be accepted for transfer credit. No lower division police course should be taken at a city or junior college which is duplicated in the upper division curriculum of this College.

### POLICE SCIENCE ADVISORY COUNCIL

The Advisory Council for the Department of Police Science and Administration consists of outstanding administrators in the police, correctional, and training fields. Its function is to afford a liaison between the College and the practitioner, and to recommend policies pertinent to the police science program.

The Council consists of the following members:

Edward Allen, Chief of Police, Santa Ana Police Department
Bradford M. Crittenden, Commissioner, California Highway Patrol
Clyde H. Jeffery, President, California Probation, Parole and Correctional Association
Dan Kelsay, President, California State Peace Officers Association
William J. Mooney, Chief, Long Beach Police Department
Gene S. Muehleisen, Executive Officer, Commission on Peace Officers Standards and Training
James A. Musick, Sheriff, Orange County Sheriffs Department
Alex Pantaleoni, President, Police Science Section, S. W. Region California Junior College Association
Peter J. Pitchess, Sheriff, Los Angeles County Sheriffs Department

### MAJOR IN POLICE SCIENCE AND ADMINISTRATION FOR THE BACHELOR OF SCIENCE DEGREE

*Lower Division:* A minimum of 20 units of which PSA 11, 51, 56, 61, 66, 71, and 76 are required. Courses not satisfied in lower division status may be taken after the student has attained upper division status.

*Upper Division:* A minimum of 24 units of which PSA 111, 112, 116, 121, 126, 131, 136, and 141 are required. Deviations from the normal pattern of lower and upper division requirements may be approved by the adviser, but in no case may the total number of units be reduced. In general, 20 units of lower division courses in PSA are considered prerequisite to any upper division course.

## POLITICAL SCIENCE

The political science major is designed to provide the student with a systematic knowledge of the nature and scope of political science. A student may elect to major in political science as a preparation for such fields as: (1) college or university teaching, (2) law, (3) government career service, (4) foreign career service, and (5) politics. In addition, a political science major is preparation for general education, good citizenship and participation in political life. Students interested in the fields mentioned above should consult with an adviser to secure aid in planning their programs.

#### GENERAL EDUCATION REQUIREMENT IN GOVERNMENT

The Education Code requires each college graduate to meet (1) a federal government requirement and (2) a California state and local government requirement. Both of these requirements can be met by Political Science 50 (for lower division students) or Political Science 132 (for upper division students).

If the student has completed the federal government requirement, but not the California state and local government requirement, the student should take Political Science 108. Students who have taken American federal, state or local government at another institution should check with the political science faculty before enrolling.

#### MAJOR IN POLITICAL SCIENCE FOR THE BACHELOR OF ARTS DEGREE

*Lower Division:* Political Science 50, 60AB. Political Science 51 is highly recommended.

*Upper Division:* A minimum of 24 units distributed as follows: 3 units, public law, Pol. Sci. 130; 3 units, political thought, Pol. Sci. 160 or 161; 9 units selected from international politics, Pol. Sci. 110, comparative government, Pol. Sci. 120, politics, Pol. Sci. 140, or public administration, Pol. Sci. 170; 9 units of recommended political science electives.

#### MAJOR IN POLITICAL SCIENCE FOR THE BACHELOR OF ARTS DEGREE WITH A CONCENTRATION IN PUBLIC ADMINISTRATION

*Lower Division:* Political science, 6 units.

*Upper Division:* A minimum of 30 units distributed as follows: 3 units, public law, Pol. Sci. 130; 3 units, political thought, Pol. Sci. 160, or 161 or 162; 12 units, public administration, Pol. Sci. 170AB and 6 units from Pol. Sci. 171, 172, 173, 174; 6 units, chosen in consultation with adviser; 6 units, intern training.

PRODUCTION MANAGEMENT (See Business Administration)

## PSYCHOLOGY

The psychology curriculum is designed to provide the student with: (1) a broad background in the principles of modern psychology, (2) a knowledge of the applications of psychology in special fields and (3) skills and various techniques of psychological measurement and investigation.

Students electing a major in the field of psychology may concentrate their studies in general, learning, experimental, physiological, child, clinical and social psychology. The psychology program also provides preparation for further graduate study.

Psychology 51 or an equivalent three-unit course in introductory general psychology is required for the bachelor's degree and is prerequisite for all other courses in the psychology curriculum.

Particular attention should be paid to the prerequisites for each course. Enrollment in a course for which the prerequisite has not been completed requires special permission from the instructor.

**MAJOR IN PSYCHOLOGY FOR THE BACHELOR OF ARTS DEGREE**

*Lower Division:* Psychology 51, 52, 53; Mathematics 3A or 8.

*Upper Division:* A minimum of 24 units in psychology including the following: Psychology 135; 186 or 187; Two courses selected from Psychology 111, 112, 114, 154; Two courses selected from Psychology 113, 148, 155, 164; One course selected from Psychology 115, 130.

*Recommended Electives:* Anatomy and Physiology 50 or 40AB or Zoology 1AB (3-8 units); Chemistry 1AB or 2 (4-10 units); Physics 2AB or 10 (4-10 units); foreign language (6 units); sociology or cultural anthropology (6 units); English 2 or 117 (3 units).

PUBLIC ADMINISTRATION (See Political Science)

## RECREATION

The program emphasizes a broad background including the special areas of art, dramatics, music, and physical education which comprise the content of most recreation programs. Furthermore, the major program includes courses in education, psychology, and sociology, primarily designed to develop methods and background materials.

Leadership experiences in camping, playground, scouting, YMCA, YWCA, and other youth-serving and group work agencies are recommended for the recreation major during the freshman, sophomore and junior years and during summer vacations. Leadership experience is planned in the program as field work in the senior year.

**MAJOR IN RECREATION FOR THE BACHELOR OF ARTS DEGREE**

*Lower Division:* Arts and crafts, including Art 10A, drama, dance, games of low organization, individual and dual sports, and music, including Music 86, English 2.

*Upper Division:* A minimum of 40 units including the following, or equivalent subject area: Recreation 108, 111, 112, 131, 141, 145, 146, 174, 175; Physical Education 150; Art 106; Psychology 115; Sociology 184; Education 105; Speech 118. Elective units should be selected from art, drama, music, journalism, psychology, sociology, or physical education in consultation with major adviser.

## SOCIAL SCIENCES

The social sciences include anthropology, economics, geography, history, political science, social science and sociology and social welfare. The programs in the social sciences are designed to provide: (1) professional training for teaching; (2) an understanding of social concepts,

institutions and processes; (3) preprofessional training for the law, ministry and specialized fields of public and private service, including public administration, foreign service, and social welfare.

The Division of Social Science offers course work leading to the following degrees:

(1) Bachelor of arts degree with a major in anthropology, economics, geography, history, political science, social welfare, sociology, and a general major in social science.
(2) Master of arts degree in history.
(3) Master of arts degree in political science.
(4) Master of arts degree in the social sciences.

Specific requirements for the above-listed degrees are listed under the appropriate academic area in this catalog.

#### MAJOR IN THE SOCIAL SCIENCES FOR THE BACHELOR OF ARTS DEGREE

*1. Major in one of the Social Sciences.*

Requirements for a major in the specific fields will be found with degree requirements for each area: anthropology, economics, geography, history, political science, social welfare, or sociology.

*2. Major in three of the Social Sciences.*

A major program combining work in anthropology, economics, geography, history, political science or sociology, with courses selected in consultation with an adviser from the social science of greatest concentration, as follows:

*Lower Division:* A minimum of 12 units with not more than 6 units in any one social science.

*Upper Division:* A minimum of 30 units with (a) a concentration of at least 15 units in one social science, (b) a concentration of at least 9 units in a second social science, (c) a concentration of at least 6 units in a third social science.

*Teaching Credentials:*

See Credentials Section.

## SOCIOLOGY AND SOCIAL WELFARE

The courses in sociology are designed for those who wish a knowledge of the scope and methods of sociology, either for general cultural background or as an integral part of preprofessional training.

The social welfare major is designed for those who, with a bachelor's degree, expect to enter such fields as public assistance, correctional services and certain group work activities; or who plan to enter graduate schools of social work to prepare for such fields as family counseling, medical and psychiatric social work, school social work, child welfare services, community welfare organizations and others requiring the master's degree in social work.

**MAJOR IN SOCIOLOGY FOR THE BACHELOR OF ARTS DEGREE**

*Lower Division:* All majors are required to have credit for Sociology 50 and 65. Anthropology 60 and Economics 1A are recommended.

*Upper Division:* All majors are required to have a minimum of 24 units including credit for Sociology 115 and 155; and they must also complete one of the following concentrations: (1) general sociology; (2) social interaction; (3) social organization; or (4) theory and methodology.

(1) *General Sociology:* This concentration is intended for students who seek a liberal arts degree with a general major in sociology. Required courses for this concentration include Sociology 109 or 186, 110, 121 or 125, 130.

(2) *Social Interaction:* This concentration is intended for students planning careers in such occupations as teaching, counseling, the ministry, law, public relations, or consumer research. Required courses for this concentration include Sociology 110, 121 or 125, 130, 135 or 145.

(3) *Social Organization:* This concentration is intended for students planning careers in occupations such as teaching, administration, industry, business, city planning, or government. Four of the five following courses are required for this concentration: Sociology 109, 120, 150, 160, 170.

(4) *Theory and Methodology:* This concentration is intended for students planning to undertake post-graduate training and careers in occupations such as social research or college teaching. Required courses for this concentration include Sociology 120, 121 or 150, 130, 166.

**MAJOR IN SOCIAL WELFARE FOR THE BACHELOR OF ARTS DEGREE**

*Lower Division:* Anthropology 60; Anatomy and Physiology 50 or Biology 10; Sociology 50, 65 and 80.

*Upper Division:* Education 105; Psychology 130; Economics 100; Sociology 110, 155, 175, 182, 185, 188, 190AB.

## SPANISH

The program in Spanish is designed to meet the needs of (1) prospective teachers; (2) students preparing for executive secretarial positions where knowledge of modern languages is essential; (3) students who plan to enter the consular service, and majors in international relations; (4) those who desire to enlarge their background of experience in the field of communication and share in the aesthetic and cultural contributions of the peoples of the world; and (5) those preparing for professional and graduate work.

#### MAJOR IN SPANISH FOR THE BACHELOR OF ARTS DEGREE

*Lower Division:* 14 units of first and second-year Spanish. Students who have completed sufficient high school Spanish may take upper division courses as soon as lower division requirements have been met. Required courses include: Spanish 1AB, 60AB, electives.

*Upper Division:* A minimum of 24 units of upper division courses, which must include Spanish 102, 103, 111, 120A or B; a minimum of one year, or its equivalent, of a second foreign language.

*Teaching Credentials:*

See Credentials Section.

## SPEECH

The Department of Speech serves two general functions. First, a program for the major is provided to accommodate those students who plan a career based upon a thorough knowledge of speech theory and practice. Second, a variety of general education courses is provided to serve as an integral part of the curriculum designed to give all students experience in the liberal arts.

To fulfill its first function, specialized curricula are offered to prepare (1) prospective teachers of speech at the secondary or higher educational levels; (2) speech clinicians; (3) individuals who plan to utilize a comprehensive background of speech training in business or professional fields; (4) students preparing to enter the field of professional or educational radio and television. To fulfill its second function, courses are offered to satisfy both the general education requirement in effective oral communication and the need for additional general education electives for cultural enrichment.

#### GENERAL EDUCATION REQUIREMENT IN SPEECH

The general education requirement in speech can be fulfilled by the following courses: Speech 30, 41, 50, or 52. Although satisfactory completion of one of those courses meets the general education requirement, it does not necessarily satisfy the requirement in speech proficiency for student teaching. The instructor will report to the Office of Testing the degree of adequacy of each student who plans to enroll for student teaching.

#### MAJOR IN SPEECH FOR THE BACHELOR OF ARTS DEGREE

The department offers the bachelor of arts degree in four areas of concentration: public address, speech pathology, radio-television and the general speech option. The specific requirements and the recommended pattern and course sequence for each are as follows:

*Radio-Television Concentration*

*Lower Division:* (15 units) Speech 30, 46, 49, Drama 35, 47.

*Upper Division:* (24 units) Speech 149, 151, 155, 156, 196, and 9 units of speech and drama courses approved by the adviser.

*Public Address Concentration*

*Lower Division:* Speech 3, 27, 30, 41 or Speech 50, 42, 52.

*Upper Division:* Applied Rhetoric: Elect 6 units from the following: Speech 106, 108, 134, 140, 141.

History of Public Address: Elect 6 units from the following: Speech 137AB; 143, 146, 148.

Rhetorical Theory (required): Speech 139.

Elect 9 units from the following: Speech 142, 144, 156, 162, 190.

*Speech Pathology Concentration:*

*Lower Division:* Speech 3, and 6 units selected from Speech 30 or 41; Speech 50, 52.

*Upper Division*: Speech 144, 156, 158, 159, 160 (3 units); Speech 162, 163, and 190; plus 4 units selected from Speech 160, 164, 170. Students desiring American Speech and Hearing Association Certification should consult with an adviser regarding additional course work necessary.

*General Speech Option:*

*Lower Division:* Speech 3; 6 units from Speech 30, 41, 50, 52; Speech 49.

*Upper Division:* Speech 107, 139, 142, 156, 162, 190; 10 units upper division speech electives.

## ZOOLOGY

**MAJOR IN ZOOLOGY FOR THE BACHELOR OF SCIENCE DEGREE**

**(Including the emphasis for pre-medical, pre-dental and other pre-professional programs.)**

*Lower Division:* Botany 1 (or 1AB); Zoology 1AB; Chemistry 1AB; Physics 2AB; Mathematics 7 (unless waived by placement examination); and Anatomy and Physiology 60 (or one upper division physiology course listed below).

*Upper Division:* Chemistry 108; English 117*; and a minimum of 34 units in biological sciences including the following: Biology 126; Entomology 103** or Zoology 100; Zoology 135*** or 140; Anatomy and Physiology 180****, unless fulfilled by Anatomy and Physiology 60. Remaining electives to be selected in consultation with the major adviser.

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* May be waived by the department for a transfer student with six or more units of English Composition and who demonstrates high proficiency in grammar as shown by the English Proficiency Test.

** Students planning to enter medical, dental or veterinary schools should substitute Entomology 110 for Entomology 103.

*** Students with an emphasis in Entomology will substitute Entomology 108 for Zoology 135.

**** Students with an emphasis in Entomology will substitute Entomology 138.

## PREPROFESSIONAL PROGRAMS

Professional schools in many universities either require or recommend that applicants complete four-year programs for admission. Although the professional schools do not always require a bachelor's degree, they generally encourage basic preparation and a broad general education leading to that degree before beginning specialization.

The College offers preprofessional programs in dentistry, law and medicine. Following are recommendations and requirements of universities and professional schools in this vicinity.

The student who intends to apply for admission to a professional school should select a major field of concentration. If a degree is to be completed, the requirements for the selected major shall be completed in addition to the courses specifically required for admission to a professional school.

### *Pre-Dental*

Pre-dental students most frequently select a major in zoology, chemistry or microbiology. However, any major academic field of concentration may be selected if the basic preprofessional requirements are incorporated in the preparation. The requirements for a degree will meet most of the recommendations for general education. Students are encouraged to secure further information from the Office of the Division of Natural Sciences where they may consult the pre-dental committee and the Dental Students Register.

Each pre-dental student shall confer with a member of the pre-dental committee each semester for advice as to courses which may be required only by specific dental schools. The basic requirements for entrance into most dental schools include those in the following paragraph.

General Zoology (including laboratory), General and Organic Chemistry (including laboratories), General Physics (including laboratory), courses in English and Social Sciences, and in Mathematics as required for courses in chemistry and physics. Certain additional courses in general education, science and a foreign language are recommended.

### *Pre-Legal*

Students planning to enter law school may elect any one of several majors. However, the major chosen and the courses selected outside the major field should demand a high level of performance in reading difficult material, writing clearly and understanding abstract concepts. Prelegal students are advised to take the minimum program to meet the requirements of their chosen major and courses beyond the introductory survey level in other selected fields. A distribution of course sequences between the social sciences, the natural sciences and the humanities is desirable. Students should consult with designated pre-law advisers in the Office of the Division of Business Administration or the Office of the Division of Social Sciences concerning entrance requirements of specific law schools.

### Pre-Medical

Each pre-medical student shall confer with a member of the pre-medical committee each semester for advice as to courses which may be required only by specific medical schools. Pre-medical students most frequently select a major in zoology, chemistry or microbiology. Other major academic fields may be selected if the basic preprofessional requirements are incorporated in the preparation. The requirements for a degree will meet most of the recommendations for general education.

Students are encouraged to secure further information from the Admissions Requirements of American Medical Colleges Including Canada, available in the Office of the Division of Natural Science.

The basic requirements for entrance into most medical schools include General Zoology (including laboratory); Vertebrate Embryology (including laboratory); General Chemistry, Quantitative Analysis, Organic Chemistry, and General Physics (all including laboratories); mathematics as required for courses in chemistry and physics, social science courses and English. Certain additional courses in general education, science, and a foreign language are recommended.

# GRADUATE DEGREE PROGRAM


| | Page |
|---|---|
| Degrees Offered | 95 |
| General Procedures and Regulations | 96 |
| Admission to Graduate Standing | 98 |
| Graduate Program | 99 |
| Advancement to Candidacy | 100 |
| General Requirements for Graduation | 100 |
| Departmental Requirements | |
| Art | 101 |
| Biology | 101 |
| Business Administration | 102 |
| Chemistry | 103 |
| Civil Engineering | 105 |
| Drama | 104 |
| Education | 105 |
| Electrical Engineering | 106 |
| English | 107 |
| History | 108 |
| Home Economics | 108 |
| Industrial Arts | 109 |
| Mathematics | 110 |
| Mechanical Engineering | 107 |
| Music | 110 |
| Physical Education | 111 |
| Physics | 111 |
| Physical Science | 112 |
| Political Science | 112 |
| Psychology | 113 |
| Social Sciences | 114 |
| Speech | 115 |

# THE GRADUATE DEGREE PROGRAM

## DEGREES OFFERED

### *Master of Arts Degrees*

Opportunities are provided for graduate study leading to the degree of Master of Arts in the following fields of concentration:

Art
Biology
Chemistry
Drama
Education
English
History
Home Economics
Industrial Arts
Mathematics
Music
Physical Education
Physical Science
Physics
Political Science
Psychology
Social Sciences
Speech

The purpose of the programs in these areas is to provide for further advanced study in a discipline. Any courses included in the degree program which are outside the major field of concentration must be approved by the faculty adviser from upper division or graduate courses approved for graduate programs.

### *Master of Science Degrees*

The Master of Science degree is offered in the following fields of concentration:

Business Administration
Civil Engineering
Electrical Engineering
Mechanical Engineering

The purpose of the master of science degree in business administration is to add to the student's competency in his field of concentration. The program is designed to prepare students who complete the prescribed course of study for positions in business enterprises at the management and administrative level as well as for further advanced study. Students who do not hold a bachelor's degree in business from an accredited college or university will be expected to complete undergraduate prerequisites before being advanced to candidacy for the degree.

The master of science degrees in engineering make available study in advanced scientific engineering courses. Those who wish to enter any one of the three graduate fields offered but who do not have an accredited engineering degree in that field can be counseled and can make up the undergraduate prerequisites for the advanced work.

Curricula leading to these engineering degrees provide opportunities for engineers with bachelor's degrees from accredited engineering institutions to stay abreast of developments in modern engineering through

advanced study. Industry is served by providing courses for regularly employed engineers and scientists to study new techniques and theories in their fields.

## GENERAL PROCEDURES AND REGULATIONS

### *Application and Transcripts for Admission*

Applicants who hold a baccalaureate degree from an accredited institution who plan to enroll must file an application for admission and official transcripts by September 1 for the fall semester and by January 15 for the spring semester. Graduate students seeking a degree or the College certification for a public school service credential must request the registrar of all schools attended to forward official transcripts to the Office of Admissions and Records. *Transcripts presented by students are not acceptable.* Applicants who are not seeking a degree or the College certification for a public school service credential, need file a verification of degree only. The college which conferred the degree must send a written statement to the Office of Admissions and Records verifying the degree and date awarded.

### *Registration*

All new graduate students must file an application for admission and obtain a permit to register from the Office of Admissions and Records. No student is permitted to attend any class for which he has not officially registered. Further, no graduate student may register concurrently at this and any other collegiate institution. An exception may be made for the purpose of removing undergraduate deficiencies if permission is recommended by a student's adviser or division chairman, and approved by the Dean of Graduate Studies and the Admission and Scholastic Standards Committee. If such permission is granted, the student must reduce his student load at the College accordingly. Regularly employed students will be counseled to reduce their student load.

All graduate students who have previously enrolled at the College and completed work in either of the two immediately preceding semesters, and have not attended another institution, or have not been disqualified, are entitled to register without prior permission. If a student has not been enrolled within the prior calendar year in a regular semester, he must file with the Office of Admissions and Records only an application for readmission. He should file the application for readmission *as early as possible*, but in no case later than September 1 for the fall semester and January 15 for the spring semester.

Details of the registration procedure are contained in the official schedule of classes published in advance of each session of the College. Inquiries concerning general graduate admission policies should be directed to the Office of Admissions and Records. In the case of special graduate problems, the Office of the Dean of Graduate Studies is available.

### *Admission to Summer Session*

Students who have graduate degree objectives and who plan to attend only during summer sessions must file a regular Application for Admission and must file official transcripts of record with the Office of Admissions and Records. This is also true of those students who seek College certification for a public school service credential.

Registration in the summer session does not insure the privilege of enrolling in the fall semester. Students entering the College during the summer session who wish to re-enroll in the fall semester must file an application and the necessary official transcripts of record at the Office of Admissions and Records by September 1 for the fall semester and January 15 for the spring semester.

### *Graduate Aptitude Test Battery*

Each semester a battery of tests is given for students before admission to graduate standing. The date for the administration of this test battery is shown in the catalog and the schedules of classes. Appointments need to be made at the Testing Office by the student at least two weeks prior to the scheduled date for the test battery. An English proficiency test is an integral part of this test battery.

### *Student Load*

The maximum graduate student load is 16 units in any one semester.

### *Graduate Credit in Senior Year*

Graduate credit may not normally be earned in advance of the baccalaureate degree. However, a second semester senior, with a grade point average of 2.75 over-all and a 3.0 (B) in the major, may earn, with the approval of the Committee on Admissions and Scholastic Standards, a maximum of six units of graduate credit, provided he is within eight units of the bachelor's degree. A petition to do so must be filed prior to the beginning of the last semester of the senior year and any courses taken for graduate credit must be in addition to those needed to satisfy bachelor's degree requirements. *In no case will "200" level courses be included in the six units so allowed.*

### *Transfer Credit*

A maximum of six units of graduate credit from another accredited institution may be applied toward the master's degree, if accepted by the faculty of the discipline involved. This may not include more than six units of student teaching or transfer graduate credit, or a combination of the two, not to exceed six units.

After a student has been admitted to graduate standing at the College, courses taken at any other institution cannot be transferred for credit without advance permission from the Admissions and Scholastic Standards Committee.

### *Residence*

The last 24 semester units shall be earned in residence at the College.

### *Continuous Attendance*

Continuous attendance for the purpose of determining degree requirements may be claimed by any student whose registration record does not indicate a lapse of more than 12 months; however, enrolling for and completing work in corresponding terms in consecutive years will qualify as continuous attendance. The summer sessions as well as the fall term and spring term are included in this definition of "corresponding terms."

### *Seven-year Rule*

A period of seven years is allowed for the completion of all requirements for the degree. A student whose program has been interrupted by military service should consult his adviser about provisions for military extensions.

### *Thesis*

Theses, when required and accepted by a particular discipline, must be deposited in duplicate in the Library. These theses must conform to the regulations specified in the document "Regulations for Format of Theses, Part I" and must be accepted by the Library before clearance for the degree can be obtained.

## ADMISSION TO GRADUATE STANDING

For admission to graduate standing, a student must have completed a four-year college course with an acceptable baccalaureate degree from an accredited institution or must have completed equivalent training as determined by the appropriate academic department or area.

The admission of a student to graduate standing does not necessarily imply the acceptance of that student as a candidate for an advanced degree.

### *Application for Admission to a Graduate Degree Program*

An applicant for admission to a graduate degree program must file a completed application with the Office of Admissions and Records. At the same time he must request the registrar of the college from which he received his baccalaureate degree to forward an official transcript directly to the Office of Admissions and Records. The applicant shall also request transcripts, similarly addressed, from the registrar of each of the colleges and universities attended after the baccalaureate degree was conferred.

An applicant for admission to a graduate program for whom complete transcripts are not available at the time of registration, may be accepted as an unclassified graduate student upon presentation of evidence warranting such action by the Office of Admissions and Records.

### *Admission as Unclassified Graduate Student*

An individual who is not a candidate for an advanced degree must complete the standard application for admission form and request the college which conferred the baccalaureate degree to send a written statement to the Office of Admissions and Records verifying the degree and date awarded. Unclassified graduate students who later wish to become graduate degree candidates shall follow the procedure outlined for graduate degree status.

### *Admission as Auditors*

Graduate students who wish to audit courses must apply for admission in the same manner as an unclassified graduate student. If accepted, auditors are required to pay the usual fees. Students registered as auditors may not later apply for credit in such courses.

## THE GRADUATE PROGRAM

Prior to advancement to candidacy, a graduate student shall have prepared a program listing all the courses to be taken and other requirements which must be met before the degree will be granted. The graduate program should be drawn up early in the first semester and must be prepared with and approved by a faculty adviser, the departmental chairman and/or division chairman and the Dean of Graduate Studies. This program shall list: (1) courses required for removal of undergraduate deficiences, if any, (2) all courses taken prior to admission to candidacy which are to apply toward the 30-unit minimum and (3) the additional courses required for obtaining the degree. This program then serves as a basis for the graduation check required for the degree.

Any graduate program may be revised as a student progresses toward the degree. Such revisions must be recommended by the adviser and approved by the department chairman and the Dean of Graduate Studies.

An approved graduate program remains in effect as long as the candidate is making normal progress. Normal progress automatically ceases whenever a candidate (1) changes his graduate major; (2) fails to remain in continuous attendance; or (3) cannot meet the seven year rule for completing the requirements for the degree.

### *Change of Objective*

A candidate who wishes to change his objective from that indicated on his original application for graduate standing must follow these procedures: (1) obtain a Petition to Change Objective form in the Office of Admissions and Records; (2) obtain the signatures of the faculty adviser of the particular discipline and the chairman of the department and/or division in which he plans to register; and (3) submit a new graduate program following the accepted procedures for initiating work in the new discipline.

## ADVANCEMENT TO CANDIDACY

When a graduate program has received its final approval by the Dean of Graduate Studies, the student will have been officially advanced to candidacy for the degree. A copy of the completed program will be mailed by the Graduate Office to the candidate at such time as this occurs. Before such approval, the following requirements must have been met:

1. Completed the graduate aptitude test battery.
2. Completed qualifying examinations or other requirements, if any, specified by the area of his major concentration.
3. Removed all undergraduate deficiencies.
4. Has a 3.0 (B) average in all graduate work completed at this College or transferred to meet degree requirements.

## GENERAL REQUIREMENTS FOR THE MASTER'S DEGREE

The requirements for graduation depend upon the master's program undertaken and upon the major area of concentration. Specific departmental requirements follow in this section. The following requirements apply to all graduate degrees offered by the College:

1. A candidate for the master's degree must earn a 3.0 (B) average in all graduate work taken at this College. Exceptions to this regulation may be made only on the recommendation of the departmental faculty offering the degree and the subsequent approval by the Graduate Studies Committee.
2. A 3.0 (B) average must be maintained in the major.
3. No course with a grade less than C may apply toward the fulfillment of degree requirements.
4. The program for the master's degree shall consist of not less than 30 units in upper division and graduate courses with a minimum of 12 units in the 200-level series completed at the College and consistent with departmental requirements.
5. In case of failure to pass satisfactorily the English proficiency test a department may require the candidate to submit evidence that he has removed the deficiency.
6. A thesis or a project and/or a comprehensive examination.
7. Graduate students who expect to receive degrees at the end of any session must complete the Graduation Application Card.
8. A favorable vote of the faculty is required before the degree is conferred.

## DEPARTMENTAL REQUIREMENTS

In addition to the general requirements for the master's degree listed earlier, each department requires specific courses or procedures which are as follows:

## MASTER OF ARTS IN ART

The Art Department master of arts degree program provides specialization in the following: (1) art education; (2) art history; (3) crafts (areas of: ceramics; metalsmithing; or textiles); (4) design (areas of: advertising; display; industrial; interior; or theater); (5) drawing, painting, and printmaking; (6) sculpture.

### *Prerequisites*

1. Acceptable baccalaureate degree in art from an accredited institution or a baccalaureate degree with a minimum of 24 units of upper division courses in art.
2. Complete 8 units minimum of upper division work in the area of specialization for the master of arts degree program.
3. Presentation of a portfolio of representative work where appropriate.

### *Advancement to Candidacy*

1. Approval of the graduate program by the student's graduate advisory committee.
2. Complete the graduate English examination satisfactorily.

### *Requirements for the Master of Arts*

Complete all requirements as established by the graduate advisory committee to include:

1. A minimum of 30 units of approved upper division and graduate courses with a minimum of 18 units in the area of specialization and at least 12 units in 200-level courses at this College.
2. No more than eight units of approved upper division work outside the area of art.
3. A project or thesis.

## MASTER OF ARTS IN BIOLOGY

### *Prerequisites*

1. A bachelor's degree with a major in biology, *or:*
2. A bachelor's degree with 24 units of upper division courses in biology. These courses must be comparable to those required for a major in biology at this College. (Deficiencies will be determined by a departmental graduate advisory committee after consultation with the student and review of his transcript records.)

*Advancement to Candidacy*

1. The Department of Biology must accept a prospective candidate before he can be programmed for the degree.
2. A departmental graduate advisory committee will be established to determine a graduate program for each student.

*Requirements for the Master of Arts*

1. A master of arts degree in biology must include a minimum of 24 units in biology to be taken at this College and approved by the student's graduate committee. The remaining six units may be accepted from transfer credit and/or allied fields of study.
2. Completion of all requirements as established by the graduate advisory committee.
3. A minimum of three semesters of a foreign language taken at the college level with grades of C or better, or demonstration of a reading knowledge of a foreign language.
4. A thesis.
5. A final comprehensive examination.

## MASTER OF SCIENCE IN BUSINESS ADMINISTRATION

There are two programs leading to the master of science degree offered by the Division of Business Administration.

One program (consisting of both Part I and Part II described below) is designed for students having a bachelor's degree from an accredited institution in a discipline other than business administration. Its purpose is to provide the student an opportunity to develop foundations in the functional fields of business activity and in the tool subjects utilized in business analysis. Graduate students undertaking Part I may obtain permission from the Division of Business Administration to satisfy portions thereof by special examination. After satisfactory completion of a majority of these requirements, the student may request approval from the Division to begin Part II concurrent with the completion of Part I.

Another program (consisting of only Part II described below) is designed for students having a bachelor's degree from an accredited institution in business administration. Its purpose is to provide the student an opportunity to explore more fully the various areas of business administration and to acquire greater academic depth in a selected functional field of major concentration. With the approval of his adviser, the graduate student may take selected courses outside business administration.

### PART I

(For Graduate Students with a Nonbusiness Bachelor's Degree)

Each of the following: Business 110, 118, 125, 130A or 132, 151, 170, 175. One of the following: Business 178, Economics 112, 113, 141.

**PART II**

(For All Graduate Students Seeking the Master of Science Degree in Business Administration)

1. A program of study (approved by an adviser in the student's area of specialization) with a minimum of 30 units which must include:
   a. Completion at this College of 15 units of business courses numbered in the 200 series, including Business 275 and either Business 297 or Business 298. (Business 299, if required, may not be included among these 15 units.)
   b. Completion of 9 to 15 units in the field of specialization.
2. Passing of comprehensive examinations in the tool subjects: accounting, economics, and statistics.
3. Completion of six units of field experience or field study (Business 299), unless the candidate furnishes evidence of its equivalent in approved experience in the occupational field. These units are in addition to the 30-unit requirement of item 1, above.
4. Passing of a comprehensive final examination.
5. General Information:
   a. General requirements of the College: See other portions of the graduate section of this catalog, especially sections entitled "Advancement to Candidacy" and "General Requirements for the Master's Degree."
   b. The following undergraduate business administration courses are acceptable for graduate credit: Business 107, 111, 112, 115, 116, 117, 121, 122, 123, 127, 130B, 134, 140, 141, 142, 143, 144, 153, 154, 155, 159, 160, 161, 162, 163, 164, 165, 169, 171, 172, 173, 178, 180, 182, 190, 191.
   c. Available in the Division Office is the *Graduate Students' Manual for the Master of Science Degree in Business Administration.*

## MASTER OF ARTS IN CHEMISTRY

### Prerequisites

1. A bachelor's degree with major in chemistry, *or:*
2. Undergraduate preparation in chemistry, physics and mathematics equivalent to that required for the bachelor of science degree with a major in chemistry at this College.

Students deficient in undergraduate preparation must take courses to remove these deficiencies with or without credit toward the degree at the discretion of the departmental graduate studies committee.

### Advancement to Candidacy

1. The successful passing of four comprehensive, written examinations covering the basic material included in the usual undergraduate chemistry courses. Each examination may be repeated only once. The examinations will be administered and graded by the chemistry

faculty and will be scheduled each semester one to two weeks before classes begin.

All entering chemistry graduate students must complete all four examinations prior to registration. Entering students should correspond with the Chemistry Department Chairman before arrival to arrange to take these examinations.

2. A reading knowledge of scientific German or Russian.

*Requirements for the Master of Arts*

Completed all requirements in the graduate program as established by the student's graduate committee.

The graduate program must include:

1. A minimum of 15 units of chemistry courses in the 200 series taken at this College including Chemistry 269, Chemistry 295 and Chemistry 298.
2. At least nine of the above 15 units must be in courses other than Chemistry 269, Chemistry 295 and Chemistry 298.
3. Not more than 10 units in allied fields such as physics, mathematics, chemical engineering, etc.
4. Only the following undergraduate chemistry courses may be included in the program: 115, 130, 131, 136, 137, 145AB, 146, 155, 161, 176.

## MASTER OF ARTS IN DRAMA

*Prerequisites*

1. A bachelor's degree with a major in drama, *or:*
2. Twenty-four units of upper division work in drama, including courses comparable to those required at the College.

*Advancement to Candidacy*

1. Successful completion of a diagnostic examination in the following areas of emphasis:

   Play production, technical theater, dramatic literature, theater history, costuming and make-up.
2. Removal of all undergraduate deficiencies.
3. Demonstration of proficiency in oral skills.
4. Approval of a program of graduate studies by the student's departmental adviser and departmental committee.

*Requirements for the Master of Arts*

1. A minimum of 30 units beyond the bachelor's degree in upper division and graduate courses approved by the student's departmental adviser, including:

   a. A minimum of 18 units of upper division or graduate work in drama.

b. A minimum of 6 units outside the departments of drama or education.
c. The remaining 6 units of electives in any approved area except student teaching and special methods courses.

2. The above 18 units of drama must include a minimum of 12 units of graduate courses (200 series), composed of the following:
a. Drama 200 completed as early as possible in the graduate program.
b. Additional units chosen from the following: Drama 224, 252, 275.
c. A thesis or a creative project.

## MASTER OF ARTS IN EDUCATION

The master of arts degree with a major in education, disassociated from all teaching credentials, requires, in addition to a background of 15 units of appropriate upper division education courses which may be acquired before or after the bachelor of arts degree: (1) a 20-unit area of concentration in education, 14 units of which are in courses organized primarily for graduate students, and (2) a 10-unit area of upper division or graduate courses that may be outside or in the field of education depending upon the academic background and interest of the student.

Individual purposes of the student are met by requiring that the 30-unit program includes at least three courses in education related to his particular interest. Interest areas are: elementary education, secondary education, educational psychology and social foundations, audio-visual education, and administration-supervision.

The above statements apply to graduate students who have approved graduate programs on file and who are remaining in continuous attendance, they do not fully apply to graduate students who have failed to remain in continuous attendance or to students who entered the graduate program in education beginning with the fall semester of 1963-64. All graduate students in education who enter the program for the first time are now required to complete a 4-unit thesis or project and/or take a comprehensive examination; this applies also to students who entered the program prior to September 1, 1963 but failed to remain in continuous attendance.

A *Handbook for the Master of Arts Degree in Education* is available in the Division of Education.

## MASTER OF SCIENCE IN CIVIL ENGINEERING

*Prerequisites*

1. A bachelor's degree in engineering with a major in civil engineering from an approved or recognized college or university, *or:*
2. A bachelor's degree in engineering, mathematics, the physical sciences or other appropriate discipline with the requirement that essential undergraduate prerequisites in civil engineering will be satisfied prior to advancement to candidacy.

*Advancement to Candidacy*

1. A Department Graduate Study Committee, consisting of the graduate student's adviser, and at least one other faculty member, will be responsible for the formulation and supervision of each individual graduate student's program.
2. This committee shall determine candidacy admission requirements as to removal of prerequisite or undergraduate deficiencies.
3. Satisfactory completion of the graduate aptitude test battery and the Advanced Test in Engineering of the Graduate Record Examination.
4. A student may, at the discretion of the Department Graduate Study Committee, be required to take an examination in his chosen area.

*Requirements for the Master of Science*

1. Completion of a minimum of 30 units beyond the bachelor's degree in upper division and graduate courses approved by the Department Graduate Study Committee including:
   a. A minimum of 6 units of approved upper division or graduate level mathematics.
   b. A minimum of 15 units (including thesis or research project) in approved 200-series courses within the major field of study.
   c. A thesis and/or research project.
   d. A written and/or oral examination.

## MASTER OF SCIENCE IN ELECTRICAL ENGINEERING

*Prerequisites*

1. A bachelor's degree in engineering with a major in electrical engineering, *or:*
2. A bachelor's degree in engineering, mathematics, or science with the requirement that essential undergraduate prerequisites in electrical engineering would have to be satisfied.

*Advancement to Candidacy*

1. Removal of all undergraduate deficiencies as determined by the Department Graduate Study Committee.
2. Satisfactory completion of the graduate aptitude test battery and the Advanced Test in Engineering of the Graduate Record Examination.
3. A student may, at the discretion of the Department Graduate Study Committee, be required to take an examination in his chosen area.

*Requirements for the Master of Science*

1. Completion of a minimum of 30 units beyond the bachelor's degree in upper division and graduate courses approved by the student's Department Graduate Study Committee including:
   a. A minimum of 6 units of approved upper division or graduate level mathematics.
   b. A minimum of 15 units (including thesis or research project) in approved 200-series courses within the major field of study.
   c. A thesis and/or research project.

## MASTER OF SCIENCE IN MECHANICAL ENGINEERING

*Prerequisites*

1. A bachelor's degree in engineering with a major in mechanical engineering, *or:*
2. A bachelor's degree in engineering, mathematics, or science with the requirement that essential undergraduate prerequisites in mechanical engineering would have to be satisfied.

*Advancement to Candidacy*

1. Removal of all undergraduate deficiencies as determined by the Department Graduate Study Committee.
2. Satisfactory completion of the graduate aptitude test battery and the Advanced Test in Engineering of the Graduate Record Examination.
3. A student may, at the discretion of the Department Graduate Study Committee, be required to take an examination in his chosen area.

*Requirements for the Master of Science*

1. Completion of a minimum of 30 units beyond the bachelor's degree in upper division and graduate courses approved by the student's Department Graduate Study Committee including:
   a. A minimum of 6 units of approved upper division or graduate level mathematics.
   b. A minimum of 15 units (including thesis or research project) in approved 200-series courses within the major field of study.
   c. A thesis and/or research project.

## MASTER OF ARTS IN ENGLISH

*Prerequisites*

1. A bachelor of arts degree in English or a bachelor's degree with a minimum of 24 units of upper division courses in English. These courses must be comparable to those required of a major in English at this College. Deficiencies will be determined by the adviser after consultation with the student and after study of transcript records.

*Advancement to Candidacy*

1. Approval of a graduate program by the academic adviser and/or departmental committee and the Dean of Graduate Studies.

*Requirements for the Master of Arts*

1. Completed a minimum of 30 units of approved upper division and graduate courses with 24 units in the major. The following courses may not apply toward requirements for the degree: English 112, 116, 117, 179, or any workshop.
2. A minimum of 12 units in the 200 series in English, including English 297.

3. A reading knowledge of a foreign language.
4. A comprehensive examination.

*A Handbook for the Masters of Arts in English is available in the English Office*

## MASTER OF ARTS IN HISTORY

*Prerequisites*

1. A bachelor's degree with a major in history (deficiencies will be determined by the adviser after consultation with the student and after study of transcript records) *or:*
2. A bachelor's degree with 24 units of upper division courses in history.
   These courses must be comparable to those required of a major in history at this College.

*Advancement to Candidacy*

1. Candidates must have taken History 199 or its equivalent or must be registered in this course at the time of advancement to candidacy.

*Requirements for the Master of Arts*

1. Twenty-four units of upper division and graduate courses in history with a minimum of 12 units in the 200 series (excluding History 298). At least 8 units of the graduate program, including one 200-level seminar, must be taken in each of the following groups: (a) United States and Latin American History, (b) European, British, Far Eastern and Russian History.
2. Reading knowledge of a foreign language.
3. Six additional units of upper division or graduate courses in history or closely allied fields included in the graduate program.
4. A comprehensive written examination in history prior to the completion of his work unless permission of the History Department is given to substitute a thesis for this requirement.

## MASTER OF ARTS IN HOME ECONOMICS

The master of arts degree in home economics is designed for teachers on the secondary level, students preparing for junior college teaching and those working toward leadership in other specializations in this field.

*Prerequisites*

1. A bachelor's degree with a major in home economics, *or:*
2. A bachelor's degree with a minimum of 24 units of upper division courses in home economics.

(Students deficient in undergraduate preparation must take courses to remove these deficiencies with or without credit toward the degree at the discretion of the departmental graduate study committee.)

*Advancement to Candidacy*

1. Completed the graduate English test. (If, upon evaluation, a student's performance is found to be unsatisfactory, this deficiency must be removed before the candidate has completed a major portion of the work toward the master's degree.)
2. Is taking or has completed Home Economics 297.

*Requirements for the Master of Arts Degree*

1. A minimum of 18-22 units in the Home Economics Department.
2. Home Economics 297 (3 units). Home Economics 225 (3 units), and Home Economics 265 (3 units).
3. A thesis or project (Home Economics 298) or a comprehensive examination.

## MASTER OF ARTS IN INDUSTRIAL ARTS

*Prerequisites*

1. A bachelor's degree with a major in industrial arts, *or:*
2. A bachelor's degree in industrial education with course work determined by the Industrial Arts Department to be the equivalent of that required at this College, *or:*
3. Twenty-four units of upper division industrial arts.
(Students deficient in undergraduate preparation must take courses to remove these deficiencies at the discretion of the departmental graduate committee.)

*Advancement to Candidacy*

1. Satisfy the general College requirements for advancement to candidacy.

*Requirements for the Degree*

1. A minimum of 30 units of approved upper division and graduate courses.
2. A minimum of 18-22 units of industrial arts courses of which 12 units must be in the 200 series at this College.
3. Eight to 12 units of approved upper division work outside the area of industrial arts.
4. Industrial Arts 200 and 296.
5. Thesis or project approved by the departmental graduate committee.

## MASTER OF ARTS IN MATHEMATICS

*Prerequisites*

1. A bachelor's degree with a minimum of 24 upper division units in mathematics. Courses must include Mathematics 114 and 122AB.

*Advancement to Candidacy*

1. The student must pass a written, qualifying examination covering work normally studied in Mathematics 114 and 122AB.

*Requirements for the Master of Arts*

1. A minimum of 24 units of upper division and graduate work in mathematics to include Mathematics 215A, 221A, 222, and 231.
2. Six units of upper division or graduate electives to total 30 for the degree.
3. A reading knowledge of French, German or Russian.
4. A comprehensive examination.

## MASTER OF ARTS IN MUSIC

*Prerequisites*

1. A bachelor's degree with a major in music *or:*
2. A bachelor's degree with 24 upper division music units, including: Music 104, 144, 163, 164 and 174, or their equivalents; applied music, four units; a demonstration of musicianship by one of the following: (a) performance on principal instrument or voice of standard repertory works; (b) performance and ability to sight read standard school music literature in each of these areas: voice, piano, stringed, woodwind and brass instruments.

*Advancement to Candidacy*

1. There are no specific courses which must be completed prior to advancement to candidacy. Music 297 should be taken the first time it is offered during a student's residency.
2. The student's graduate committee, consisting of three music faculty members, must approve the student's program at the time of advancement to candidacy.

*Requirements for the Master of Arts Degree*

1. A minimum of 24 units in music.
2. A minimum of 14 units in courses numbered in the 200 series within the major field of concentration completed at this College, to include: Music 260, 261 and 297; and at least two courses selected from Music 265, 266, 267, 268, 269.
3. A minimum of 10 units in music selected from any combination of graduate or upper division courses not already taken to satisfy

other degree or general education requirements, and which are approved by the student's graduate committee.

4. A written and oral comprehensive examination, *or* a thesis or project.

## MASTER OF ARTS IN PHYSICAL EDUCATION

*Prerequisites*

1. A bachelor's degree with a major in physical education, *or:*
2. A bachelor's degree with a minimum of 24 units of upper division courses in physical education. (Students deficient in undergraduate preparation must take courses to remove these deficiencies at the discretion of the departmental graduate committee.

*Advancement to Candidacy*

1. Satisfy the general College requirements for advancement to candidacy.

*Requirements for the Master of Arts*

1. Thirty units with a minimum of 16 units of 200-series courses in physical education, including Physical Education 205, 220, and 297; Physical Education 201 or 209; Physical Education 206 or 275; and Physical Education 233 or 235.
2. A thesis (Physical Education 298) and an oral thesis examination.
3. A maximum of 6 units may be elected outside the division.

## MASTER OF ARTS IN PHYSICS

*Prerequisites*

1. A bachelor's degree with a major in physics (deficiencies will be determined by the adviser after consultation with student and study of transcript records) *or:*
2. A bachelor's degree with a minimum of 24 units of upper division physics, including courses comparable to Physics 105A, 109, 112, 120A, 121A and Mathematics 110AB as offered at this College.

*Advancement to Candidacy*

1. A qualifying examination, administered by the departmental graduate committee, based on classical mechanics, electricity and magnetism, thermodynamics, optics, and modern physics covering essentially the content of Physics 1ABCD, 105A, 109, 112, 120A, 121A. This examination will be given at the earliest possible date.

*Requirements for the Master of Arts*

1. A minimum of 17 units of courses in the 200 series within the major field of concentration at this College, including Physics 205, 210A, 226A, 269 (4 units) and 295.

2. Not more than 9 units in related fields (such as chemistry or mathematics) may be applied to the 30-unit total.
3. A reading knowledge of French, German or Russian.
4. A thesis. (Physics 298.)

## MASTER OF ARTS IN PHYSICAL SCIENCE

*Prerequisites*

1. A bachelor's degree with a major in physical science *or:*
2. A bachelor's degree with 36 units of physical science of which 24 units must be upper division including 12 upper division units in chemistry or physics. This must include at least a one semester course in modern physics and one in organic chemistry.

*Advancement to Candidacy*

1. A qualifying examination, administered jointly by the Departments of Physics, Chemistry and Geology, based on Physics 1ABCD and Chemistry 1AB. This examination will be given at the earliest possible date.

*Requirements for the Master of Arts*

1. Twenty-four units of upper division or graduate courses in the physical sciences with a minimum of 12 units in the 200 series taken at this College including Physical Science 212AB, Physics 295 (1) or Chemistry 295 (1), Physics 269 (2 to 4 units) or Chemistry 269 (2 to 4 units).
2. A thesis or a comprehensive written or oral examination.

## MASTER OF ARTS IN POLITICAL SCIENCE

*Prerequisites*

1. A bachelor's degree with a major in political science (deficiencies will be determined by the adviser with consent of the department) *or:*
2. A bachelor's degree with 24 units of upper division courses in political science comparable to those required of a major in political science at this College.

*Advancement to Candidacy*

1. Satisfy the general requirements of the College for advancement to candidacy

*Requirements for the Master of Arts*

1. Twenty-four units of upper division and graduate courses concentrated in three of the following fields of political science: public law, political thought, international politics, comparative government, politics, public administration. A minimum of 16 units

must be in the 200 series of which 4 units will be given for the thesis (Political Science 298).

2. Six additional units of upper division or graduate courses related to the candidate's educational objectives, selected in conference with the adviser.
3. An overall 3.0 (B) average in political science courses as well as in all graduate work attempted.
4. A reading knowledge of one foreign language chosen in consultation with adviser. The language examination must be passed before the comprehensive written examination may be taken.
5. A thesis.
6. A comprehensive written examination over three fields of concentration and an oral examination on the thesis.

## MASTER OF ARTS IN PSYCHOLOGY

### *Prerequisites*

1. A bachelor's degree with a major in psychology, or 24 units of upper division psychology including Psychology 131 and any three of the following: Psychology 111, 115, 135, 155, 164.
2. College algebra (Mathematics 3A or 8 or equivalent).
3. General physics (Physics 10 or equivalent).
4. General zoology (Zoology 1AB or equivalent) or anatomy and physiology (Anatomy and Physiology 50 or equivalent).
5. Principles of sociology (Sociology 50A or equivalent) or cultural anthropology (Anthropology 60 or equivalent).

### *Advancement to Candidacy*

1. File with Office of Graduate Studies a program of studies approved by the student's graduate program adviser and the department chairman.
2. Satisfactorily complete departmental comprehensive examination.
3. Complete all prerequisite courses with at least a 3.0 (B) average in those taken as a graduate student.
4. Receive final approval by Dean of Graduate Studies.

### *Requirements for the Master of Arts*

The student must complete at least 30 units as a graduate student in upper division and graduate psychology including:

1. A minimum of 12 units of psychology courses numbered in the 200-299 series, including: Psychology 200, 235, and 297.
2. Psychology 111, 115, 130, 135, 148, 155, 164, and 186, if these were not taken in the undergraduate program or to fulfill the 24 units required in the prerequisites.

# CREDENTIAL REQUIREMENTS

# CREDENTIALS

**A special credential supplement, describing the College required credential program, will be available in division and department offices during the summer. Reprints of the credential section from the 1963-64 catalog are available.**

The College is authorized by the State Board of Education to recommend to the Commission on Credentials the granting of the following public schools service credentials to candidates who have successfully completed the required courses of instruction:

Kindergarten-Primary
General Elementary
Junior High School
General Secondary
Junior College
Special Secondary—
  Art
  Music
  Business Education
  Industrial Arts
  Homemaking Education
  Limited in Industrial Arts Education
  Physical Education
  Public Safety and Accident Prevention Including Driver Education and Driver Training
Credential to Teach Exceptional Children—
  Mentally Retarded
  Speech Correction and Lip Reading in Remedial Classes
General Pupil Personnel Services—
  Pupil Counseling
  Child Welfare and Attendance
  School Psychology
  School Psychometry
Health and Development
Elementary School Administration
Secondary School Administration
The Supervision Credential

## CHANGES EFFECTIVE JANUARY 1, 1964

The new Certification of School Personnel law, enacted in 1961, changed the type of credentials for public school service and the requirements for them. Specific additional requirements were adopted by the State Board of Education on May 23, 1963. Students who were not juniors in clear standing and were not enrolled in an approved teacher education curriculum on or before November 1, 1963, must follow the new credential requirements. The basic legal requirements for the new credentials are available in the College Bookstore. Students are referred to the Division of Education and to advisers in their major and minor areas for information concerning the most recent developments in recommended credential programs.

Students who are eligible and wish to receive their credentials under currently existing credential programs described in the 1963-64 Catalog must comply with the following:

1. Must have been a junior (60 units or more) in clear standing ("C" average or better) and enrolled in an approved teacher education curriculum on or before November 1, 1963; and
2. Must be approved by the appropriate Teacher Education Committee, upon special application, for admission to the current credential program; and
3. Must finish all requirements for the credential and have the application on file by September 14, 1966.

The College is authorized to offer courses leading to the renewal of all provisional credentials. Students working toward the renewal of such credentials should report to the appropriate department head in the Division of Education for the necessary assistance with information and problems identified with such credentials. Information concerning requirements for credentials other than those described in the catalog should be obtained from the Credentials Office, State Department of Education, Sacramento.

## ADMISSION TO TEACHER EDUCATION COURSES

No student may enroll for professional education courses until he has satisfactorily completed at least 60 semester units of lower division work and has been admitted to a teacher education program. The standards for admission to teacher education are not the same as those for admission to the college. A satisfactory record of course work preliminary to the professional curriculum does not guarantee that the student will be admitted to teacher education.

The student planning to enroll in professional education courses should request admission to teacher education courses by securing application blanks for Admission to Teacher Education in the Division of Education Office. The application blanks should be completed at the time the student registers for the semester preceding the one in which he intends to enroll, for the first time, in education courses.

An exception will be made for transfer graduate students who will be permitted to enroll in education courses the first semester on campus, on a provisional basis, subject to verification of their meeting requirements for admission to teacher education. The responsibility for evaluation of candidates of teacher education lies with the Elementary Teacher Education Committee and/or the Secondary Teacher Education Committee. The appropriate committee acts upon each application in terms of standards referenced in the Regulations of the Trustees in Article 6, Sections 41,100 and 41,101, which includes these factors: (a) Academic aptitude, (b) scholarship, (c) professional aptitude, (d) physical fitness, (e) fundamental skills, (f) personality and character and (g) many-sided interest.

Professional curriculums are offered students preparing to teach in elementary schools, secondary schools, junior colleges, and to experienced teachers desiring preparation in counseling, guidance, administration, supervision and other special phases of public school service.

FINE ARTS BUILDING AND THEATER

PATIO, MUSIC BUILDING AND LITTLE THEATER

VICTORY FLAG IN FRONT OF ASSOCIATED STUDENT OFFICES

DORMITORY LAWN PARTY

THE COLLEGE LIBRARY

PATIO-ART BUILDING COMPLEX

# COURSES OF INSTRUCTION

# COURSES OF INSTRUCTION

Accounting (See Business Administration)
Anatomy
Anthropology
Art
Astronomy
Biology
Botany
Business Administration
Business Education (See Business Administration)
Chemistry
Civil Engineering
Drama
Economics
Education
Electrical Engineering
Engineering
English
Entomology
Finance (See Business Administration)
Foreign Languages (See Specific Language)
French
Geography
Geology
German
Health Education
History
Home Economics
Industrial Arts
Industrial Relations
Industrial Technology
Journalism
Latin
Marketing (See Business Administration)
Mathematics
Mechanical Engineering
Microbiology
Music
Natural Sciences
Nursing
Philosophy
Photography
Physical Education
Physical Science
Physics
Physiology
Police Science and Administration
Political Science
Production Management (See Business Administration)
Psychology
Public Administration (See Political Science)
Recreation
Russian
Safety Education
Social Science
Sociology
Spanish
Speech
Zoology

# COURSES OF INSTRUCTION

## ACCOUNTING (See Business Administration)

## ANATOMY AND PHYSIOLOGY

Professor: Johnson, K. L.
Assistant Professors: Beekman, Egge, Schatzlein.
Instructor: Elpers.

### LOWER DIVISION

**40A, B. Anatomy and Physiology (4,4) F, S**
Prerequisites: Chemistry 2, Physics 10, and Biology 10. Chemistry 2 may be taken concurrently with 40A. An integrated course in the principles of anatomy and physiology of the human body. Fundamentals of regulatory mechanisms. Designed primarily for majors in nursing or related disciplines. (Lecture 2 hours, laboratory 6 hours.)

**50. Anatomy and Physiology (3) F, S**
Prerequisite: Biology 10. Brief survey of structure and function of human systems. Designed for those who desire basic understanding of the body. Not open for credit to biology majors. (Lecture 2 hours, laboratory 3 hours.)

**52. Human Anatomy (4) F, S**
For physical education majors. General introduction to the structure of human body systems with emphasis on skeletal and muscular systems. (Lecture 2 hours, laboratory 6 hours.)

**53. Human Physiology (4) F, S**
Prerequisite: Anatomy and Physiology 52. For physical education majors. General introduction to the function of human body systems. (Lecture 2 hours, laboratory 6 hours.)

**60. Fundamentals of Physiology (3) F, S**
Prerequisites: Zoology 1AB; Chemistry 1AB. Chemistry 1B may be taken concurrently. The fundamental principles of physiology. (Lecture 2 hours, laboratory 3 hours.)

### UPPER DIVISION

**160. Comparative Animal Physiology (3) S**
Prerequisite: Anatomy and Physiology 60. Recommended: Zoology 100, Zoology 135. Comparison of the fundamental physiological processes of the major animal phyla, including time devoted to unique and special physiological phenomena exhibited by some animals. (Lecture 2 hours, laboratory 3 hours.)

**180. General and Cellular Physiology (3) F**
Prerequisites: 6 units of biological science, Chemistry 108, and Physics 2AB. Physiological processes of plant and animal cells and tissues basic to understanding the function of the whole organism. (Lecture 2 hours, laboratory 3 hours.)

# ANTHROPOLOGY

Professors: Ewing, Wallace.
Associate Professor: Dixon.
Assistant Professors: Alexander, McCone.
Lecturer: Bates, E.

## LOWER DIVISION

**50. Introduction to Physical Anthropology (3) F, S**
The origin and present nature of man; man's relation to other animals, heredity and principles of evolutionary change, fossil evidence of prehistoric man, significance of racial variation in modern man; the origin and adaptive value of cultural behavior.

**60. Introduction to Cultural Anthropology (3) F, S**
The nature of culture; a comparative and historical approach to the religion, social organization, subsistence patterns and other aspects of the cultures of primitive, peasant and more complex societies.

## UPPER DIVISION

**130. Methods in Archaeology (3) S**
Prerequisite: Consent of instructor. Excavation of a local archaeological site; recording field data and cataloging specimens; related laboratory methods of preservation, description and interpretation of archaeological materials. (Saturday sessions required.)

**142. Comparative World Ethnology (3) F, S**
A study of primitive and peasant cultures representing major world areas and different levels of development; emphasis on the interaction of environment, technology, social system, and culture history.

**164. Primitive Social Systems (3) F, S**
Analysis of social structure of primitive peoples, including kinship, community, and other principles of organizing social life; comparison of primitive with Western societies.

**165. Personality and Culture in Primitive Societies (3) S**
Relationships between cultural, social and personality factors in human behavior; development of personality in representative cultures; changing viewpoints in culture-personality studies.

**166. Methods in Ethnology and Social Anthropology (3) S**
Prerequisite: Consent of instructor. Methods used in the study of other peoples and cultures; field techniques and supervised practice in observation, interviewing, securing and interpreting data; related theory.

**170. Folklore (3) S**
Myths and tales of peoples of the world; the place of folklore in cultural life and its spread from one people to another.

**176. Religions of Primitive Peoples (3) F**
The variety of religious beliefs and practices in primitive cultures analyzed from a broad comparative view of religion as a universal human institution; emphasis on the nature, meaning and functions of religion in primitive societies.

**178. Language and Culture (3) F**
An introduction to linguistic patterns and a study of their relation to other aspects of the culture, such as social organization and ways of thinking. Use of language as a tool in the study of culture.

**179. Methods in Anthropological Linguistics (3) S**
Prerequisites: Anthropology 178 or consent of instructor. An introduction to the theory and methodology of descriptive and comparative linguistics; emphasis upon the languages of non-literate peoples.

**180. Indians of North America (3) F**
An introduction to the prehistory, history, physical characteristics and cultures of the Indians north of Mexico.

**181. Ancient Civilizations of the New World (3) F**
The origin and growth of the Aztec, Maya, Inca and other civilizations of Mexico and South America with emphasis upon their changing social systems, economic patterns, art and intellectual achievements; contact with European cultures.

**182. Indians of California (3) S**
The origin, physical characteristics, languages, history, and cultures of the Indians of California.

**183. Prehistoric Cultures of Europe (3) S**
European archaeology from the earliest Stone Age through the Bronze Age; varying cultural adaptations to different environments, migrations of peoples, influences from Asia and Africa; problems of culture reconstruction from ancient remains.

**186. Cultures of the Far East and India (3) F**
Analysis of the cultures of China, Korea, Japan and Central Asia; the Hindu culture of India and its influence on Southeast Asian and Indonesian culture; the trends of modernization.

**187. Cultures of the Near East and Africa (3) S**
Analysis of the Moslem cultures of the Near East; typical African cultures; the trends of modernization.

**188. Early Civilizations of the Old World (3) F**
The interrelated growth of the civilizations of Egypt, Mesopotamia, India and the Mediterranean from agricultural villages to urban centers and empires; the significance of increasing complexity in social organization, technology, art and accumulation of knowledge.

**190. The Dynamics of Cultural Change (3) S**
Analysis of the processes of cultural change such as invention, diffusion and culture contact; the impact of Western civilization upon primitive and peasant cultures; emphasis on major theories and case studies of cultural change.

**195. History and Theory of Anthropology (3) F**
Prerequisites: Six upper division units in anthropology and senior or graduate standing. A systematic survey of the development of anthropology as a scientific field; an examination of the principal ideas and theories of leading anthropologists, past and present.

# ART

Professors: Crafts, Dillingham, Glenn, Krause, Merlino, Schultz, J., Thompson, C., Youry.

Associate Professors: Archer, Biro, Ferreira, Henry, Hitchcock, Leland, Martin, Ramsey, Swift.

Assistant Professors: Borders, Gross, Hill, W., Oden, Tyrnauer, Van Eimeren, Wallin.

Instructors: Moryl, Pine, Shaak.

## LOWER DIVISION

**7A, B. Drawing and Sketching for Illustration (2,2) F, S, SS**

An extensive study of drawing to help the student to draw easily and accurately. Emphasis on devices and means for representing the volume, structure, character, and delineation of nature, man-made, and human forms for illustrative purposes. Media: watercolor, pen and ink, pencil, charcoal, conte crayon, and scratchboard.

**9A, B, C. Foundation Course in Art (3,3,3) F, S**

A basic course in the use of materials, tools, and elements of plastic organization and visual representation. Primarily designed to help the student experience and understand the interrelationship of materials, processes, and esthetic means of expression in the visual arts. Must be taken in sequence.

The course is designed to give a broad background and understanding in the technology of materials, the esthetic means of expression, and the organic evolutionary use of materials in all fields of the visual arts. The student will be encouraged to develop original solutions to problems designed to meet human needs and involving the appropriate use of materials and processes. The content of the course will include the equivalent of 3 units in drawing and painting, 3 units in two-dimensional design, and 3 units in three-dimensional craft experience.

**10A, B. Exploratory Course in Art (2,2) F, S, SS**

Individual and group experiences in the creative use and understanding of a wide variety of art materials, processes, and concepts. Emphasis will be placed on individual growth and exploration and on the relationship of art to human needs and contemporary living. Processes to be covered include: painting, drawing, clay-modeling, weaving, paper and wood construction, textile dyeing, simple bookmaking and printing techniques. (Must be taken in sequence.)

**11. Fundamentals of Art (2) F, S**

Comparative study through lecture, discussion, and reading of fundamental art ideas, modes, devices, problems of organization and structure, terminology, space representation, content and symbolism and the relationship of art to society.

**15. Beginning Ceramics I (2) F, S, SS**

An introduction to the possibilities of ceramic materials, design, forming, glazing, and firing with emphasis on hand building techniques in relation to purpose and appropriate use of materials.

**16. Beginning Ceramics II (2) F, S, SS**

Experiences in working with ceramic materials and design with emphasis on the use of the potter's wheel to develop functional ceramic forms in relation to contemporary living.

**17A, B, C, D. Life Drawing (1,1,1,1) F, S, SS**

Drawing, painting, and modeling from the human figure.

**23A, B. Lettering and Typographical Design (2,2) F, S**
History, design, and use of letter forms in advertising. Techniques for rough and comprehensive layouts using reproduction lettering and typographical materials in relation to various advertising media such as newspapers, packages, and magazines.

**35A, B. Ceramic Processes (2,2) F, S, SS**
Prerequisite: Art 16. Exploration into the many possibilities of ceramic design and simple glaze formulation. Further work with hand building techniques, the potter's wheel, and fundamental operation of the jigger. Emphasis during the first semester on creating a variety of sizes and forms in relation to function and during the second semester on use of the jigger for designing and producing forms for mass production.

**51. Introduction to Art (3) F, S, SS**
Art of the home, community, commerce, industry, and religion. A comparative study of the relationship of art to human needs and daily living, not only in contemporary life but also in primitive and historical cultures. (Field trips to be arranged.) Not open for credit to art majors.

**53. Design and Composition I (2) F, S, SS**
Exploring the potentialities of various materials in relation to visual concepts.

**54. Design and Composition II (2) F, S, SS**
Prerequisite: Art 53. Specific problems in relating visual concepts to the contemporary environment.

**55. Introduction to Crafts (2) F, S**
Use of clay, paper, wood, wire, and metal to create both two- and three-dimensional art forms.

**57. Rendering Techniques (2) F, S**
Prerequisites: Art 7AB or equivalents. Designed to develop ability in the accurate representation and simulation of textures, surface qualities, and structure using a variety of techniques and materials such as scratchboard, wash, pen and ink, and airbrush.

**59A, B. Survey of Art History (2,2) F, S, SS**
The development of art as an integral part of human culture from prehistoric times to the present day.

**67. Head and Figure Painting (2) F, S**
Prerequisites: Art 17AB and 7AB or equivalents. The study of drawing with emphasis on the detailed representation of the volume, structure, character and delineation of the head and body for illustrative purposes. Limited color progressing to full color, light and shade, planes of the head and figure, and analysis of proportion, form, and dimension.

## UPPER DIVISION

**101. Appreciation of Contemporary Art (2) F, S, SS**
Discussion and evaluation of the visual arts as they contribute to contemporary living. Not open for credit to art majors. (Field trips to be arranged.)

**102. Appreciation of Modern Paintings and Architecture (2) F, S, SS**
Evaluation of the work of contemporary painters and architects with emphasis on the Southern California area. (Field trips to be arranged.)

**106. General Crafts (2) F, S, SS**
Prerequisites: Art 10AB or equivalent. Craft processes, techniques, and concepts as related to the design and making of utilitarian objects with emphasis on the use of hand tools.

**107. Drawing and Painting I (2) F, S, SS**
Prerequisites: Art 9ABC and Art 17ABC, or equivalents. Use of painting materials with emphasis on individual growth and planning.

**108. Drawing and Painting II (2), F, S, SS**
Prerequisite: Art 107. Further experiences in using various painting media.

**111. History of Art: Renaissance and Baroque Periods (2) F**

**113. Interior Design I (2) F, S**
Prerequisites: Art 9ABC, or equivalent. The functional, social and aesthetic problems of house design.

**114. Interior Design II (2) offered on adequate demand**
Prerequisite: Art 113. A further study of the materials of interior design.

**117. Advanced Life Drawing I (2) F, S, SS**
Prerequisites: Art 17ABC, or equivalents. Drawing and painting from the live model.

**118. Advanced Life Drawing II (2) F, S, SS**
Further experiences in drawing and painting from the live model.

**119A, B, C, D. Theory of Creative Development in Art (1,1,1,1) F, S, SS**
The study of theories of creative development as applied to visual art experiences. Required of all candidates for teaching credentials with a major or minor in art. (Observation 1 hour; discussion and critical analysis 1 hour; written reports.)

**120. Elementary School Crafts (2) F, S, SS**
Prerequisite: Art 10A or equivalent. The creative use of paper, clay, wood, and other art materials in relation to the elementary school program.

**121. Art in the Community (2) offered on adequate demand**
Discussion and evaluation of the arts and art materials as a part of communal life and activities in relation to primitive, historical, and contemporary cultures. Particularly recommended for social studies teaching majors.

**123. Advertising Design I (2) F, S, SS**
Prerequisites: Art 9ABC or equivalent. Development and projection of ideas in relation to the technical, aesthetic, and psychological aspects of advertising art.

**124. Advertising Design II (2) F, S, SS**
Prerequisite: Art 123. Specific problems involving production techniques and materials of advertising art.

**125A, B. Jewelry (2,2) F, S, SS**
Prerequisites: Art 9ABC or consent of instructor. Materials and processes of jewelry making.

**127A, B. Illustration (2,2) F, S**
Prerequisites: Art 7AB and Art 67 or equivalents. Preparation of original sketches and illustrations from script and editorial material with emphasis on composition, characterization, and mood. Media: transparent water colors, pen and ink, pencil, charcoal, casein.

**128A, B. Cartooning (2,2) F, S**
Graphic humor for contemporary publication. The development of an individual expression of wit, humor, and satire; cartoon media and techniques for reproduction, style development, job opportunities, and professional presentation.

**129A, B. Production Techniques and Processes (2,2) F, S**
Prerequisites: Art 9ABC; Art 23AB; Art 53, 54; or equivalents. A study of the limitations and possibilities of photoengraving, offset-lithography, and letterpress printing in relation to the advertising designer and illustrator. Standards and guidelines for working with the printing trades. Field trips to print shops, agencies, art studios, services, animation studios, and advertising photography workshops.

**130. Art Appreciation for Teachers (2) F, S, SS**
Discussion and evaluation of the visual arts in relation to the classroom environment and to daily living. (Field trips to be arranged.)

**131. History of Art: Ancient to Early Christian (2) F**

**132. History of Art: Early Christian to Renaissance (2) S**

**133. Design for Industry I (2) F, S, SS**
Prerequisite: Art 9ABC, or equivalent. Planning and designing useful objects in relation to the technological, psychological and social aspects of contemporary industrial society.

**134. Design for Industry II (2) F, S, SS**
Prerequisite: Art 133. Problems in designing for mass production.

**135A, B. Advanced Ceramic Processes (3,3) F, S, SS**
Prerequisites: Art 35AB or the equivalent. Opportunities for working with ceramic materials and design with emphasis on inventiveness and control of forms and glazes including salt glazing and reduction firing using both porcelain and stoneware clay bodies. Designing of ceramic forms in relation to contemporary needs will be stressed.

**137A, B. Representational Painting (2,2) F, S, SS**
Prerequisites: A course in perspective drawing or consent of the instructor. Use of traditional painting methods and media with emphasis on developing skill in working in a representational manner. Subject areas covered include still life and landscape. (Landscape painting will be conducted on location as weather permits.)

**138A, B. Architectural Rendering (2,2) F, S**
Prerequisites: A course in perspective drawing or consent of the instructor. The representation of the interior and exterior of architectural forms in various art media.

**140. Art for Recreational Leaders (2) offered on adequate demand**
Prerequisites: Art 10AB, and Art 106 or equivalents. The creative use of art materials as they contribute to recreation programs and leisure time activities.

**141. History of Exterior and Interior Architecture (3) S**
An analysis of the development of both the interior and exterior styles of architecture in relation to the expression of human cultural values.

**143. Costume Design I (2) F**
Prerequisite: Art 9ABC, or equivalent. The design of clothing in relation to personality, materials and processes.

**177A, B. Animation (2,2) F, S**

Prerequisite: Consent of instructor. Production of animated drawings, graphs, and cartoons for motion pictures, television, and advertising.

**180A, B. Elementary Art Education (2,2) F, S, SS**

A study of art concepts essential for visual communication and the teaching of art in the elementary schools. Related laboratory projects will apply principles of visual organization and appreciation. Not open to students with credit in Education 122.

**181. History of Ceramics (1) S odd years**

A survey of the development and classification of ceramic forms, tools, and processes in relation to function, materials and processes, and environmental influences.

**183A, B. Display and Exhibition Design (1,1) F, S**

Prerequisites: Art 9ABC, or equivalent. A course in the appropriate and creative use of materials, processes, and design concepts as they relate to the special problems involved in the planning and preparing of displays, exhibits, and art portfolios.

**190. Special Studies in Art Education (3) F, S, SS**

Prerequisites: All lower division required art courses for the major or minor in Art-Plan III B.A. (Teaching Credential). Identification, critical analysis and solution of problems with related laboratory experiences. (May be repeated for a maximum of 6 units.)

**191. Art of Primitive Cultures (2) S**

The primitive cultures in Africa (African Negro Art), Oceania (South Seas), and North America. Their role and influence on contemporary art in the western world. (Includes arts of American Indians and North-West Coast Indians.)

**193A, B. Advanced Industrial Design (4,4) F, S, SS**

Advanced planning and design of projects in the areas of mass produced objects, packaging, traffic, transportation, mechanical design, and shelter.

**194A, B. Advanced Interior Design (4,4) F, S**

Prerequisite: Art 114 or equivalent. Advanced planning and design projects in the areas of domestic, commercial, and institutional interiors.

## GRADUATE DIVISION

**201. Seminar in Art Appreciation and Art History (1-3) F, S, SS**

Prerequisite: Consent of instructor. Special studies, research and evaluation of the development of art from prehistoric times to the present day. For graduate students only. May be repeated to a maximum of 8 units.

**203A, B, C, D, E, F, G, H. Studio Problems in Design (1-6) F, S, SS**

Prerequisite: Consent of instructor. Advanced work with emphasis on planning and development of individual projects in the following design areas: (a) Advertising Design; (b) Theater Design; (c) Costume Design; (d) Display Design; (e) Design for Industry; (f) Interior Design; (g) Design and Composition; (h) Fabric Design. Each area listed may be repeated to a maximum of 8 units, but no more than 6 units of credit may be obtained in any one area in a single semester.

**205A, B, C, D. Studio Problems in Crafts (1-6) F, S, SS**

Prerequisite: Consent of instructor. Advanced work with emphasis on planning and development of individual projects in the following craft areas: (a) Jewelry; (b) General Crafts; (c) Ceramics; (d) Sculpture. Each area listed (with the excep-

tion of sculpture) may be repeated to a maximum of 8 units. Sculpture may be repeated to a maximum of 12 units. No more than 6 units of credit may be obtained in any one area during a single semester.

**207A, B, C, D. Studio Problems in Drawing, Painting, and Printmaking (1-6) F, S, SS**
Prerequisite: Consent of instructor. Advanced work with emphasis on planning and development of individual projects in the following areas: (a) Painting; (b) Life Drawing; (c) Drawing; (d) Printmaking. Each area listed may be repeated to a maximum of 8 units, but no more than 6 units of credit may be obtained in any one area in a single semester.

**210. Seminar in Art Education (1-3) F, S, SS**
Special studies, research, and evaluation of the role of the art teacher in contributing to the total development of the learner in a democratic society. May be repeated to a maximum of 6 units.

**250A, B. Studio Problems in Art Education (2,2) F, S, SS**
Prerequisites: Graduate standing in art, Art 190. Advanced individual problems in art education with emphasis on planning, and developing creative projects related to specific learning situations.

**297. Seminar (2) F, S, SS**
The definition, and methods of solution, of problems in the field of art and art education with emphasis on the descriptive method of research and the use of the library.

**298. Project or Thesis (3-6) F, S, SS**
Planning, preparation, and completion of a project or thesis related to this field. Open only to students who have been admitted to candidacy. Required of all master of arts candidates in art.

## ASTRONOMY

See Physics faculty listing.

### LOWER DIVISION

**55. Astronomy (3) F, S, SS**
An introductory course in Astronomy. The earth moon system and the planets, the stars and their constitution. Survey of the methods of astronomical observation.

## BIOLOGY

Professors: Cox, Durbin, Shipley.
Associate Professors: Baird, Hrubant, Kluss, Wellhouse.
Assistant Professor: Kroman.

### LOWER DIVISION

**10. General Biology (3) F, S, SS**
General survey of plant and animal life processes. Emphasis on importance of biology in areas of health, heredity, conservation, and appreciation of nature. Not open to majors or minors in biological science or to those with credit in Biology 50. (Lecture 2 hours, laboratory 3 hours.)

**45. Marine Natural History (3) S, SS**
Prerequisite: Biology 10. Survey of native plants and animals of the coast; emphasis on identification and life history of local forms. Collecting of specimens for

study in laboratory an integral part of course. Not open for credit to biological science majors. (Lecture 2 hours, laboratory and field 3 hours.)

**50. Principles of Biology (3) F, S, SS**

Prerequisites: Chemistry 1AB. Principles of biology in relationship to the physical world. Emphasis on human biology and man's effects on the environment. For engineering and non-teaching physical science majors; not open for credit to biological science majors. (Lecture 2 hours, laboratory 3 hours.)

**52. Conservation of Natural Resources (2) F, S**

Prerequisite: Biology 10. Natural recources of world; extent, value, wise utilization and conservation of these resources for future generations. Not open for credit to biological science majors. (Lecture 2 hours.) Not open to students with credit in Conservation 52.

**56. Heredity (3) F, S, SS**

Prerequisite: Biology 10. Survey of principles of inheritance; role of heredity in improvement of plants and animals; implications in human genetics. Not open for credit to biological science majors. (Lecture 3 hours.)

## UPPER DIVISION

**100A, B. Topics in Biology (3,3) F, S**

Prerequisites: Bachelor's degree in biological sciences; two or more years teaching experience in biology at secondary level. A seminar type course to supplement and extend knowledge of recent scientific developments, trends in research, and principles which can be modified for use in the classroom. (Not applicable to the minimum biological science requirements for a degree in the biological sciences.)

**101. Nature Study (3) F, S, SS**

Prerequisites: Biology 10 and Physical Science 12 or Geology 50. Common plants, animals, rocks, and minerals, the solar system; emphasis on forms of life easily observed locally. Not open for credit to biological sciences majors or minors. Not open to students who have credit in Nature Study 101. (Lecture 2 hours, laboratory and field 3 hours.)

**102. Conservation (3) F**

Prerequisites: Zoology 1AB or Botany 1. The wise utilization of natural resources in the United States; historical development, economics, water, soils, minerals, forests, grasslands, wildlife, recreational resources, planning and the conservation of man. (Lecture 2 hours, laboratory and field 3 hours.)

**103. Natural History and Ecology of Vertebrates (3) SS**

A concentrated six-week period of work in (1) modern technique in collection, preservation and identification of vertebrates and (2) modern principles of natural history of each class, method of sampling populations, and recording and analyzing field data. (Open only to National Science Foundation grantees.)

**104. Plant and Animal Physiology (3) SS**

A concentrated six-week period of work in the principles of plant and animal physiology, including water requirements, pigments, osmotic pressures, cellular respiration and growth requirements. (Open only to National Science Foundation grantees.)

**105. General Ecology (3) S**

Prerequisites: Zoology 1AB; Botany 1, chemistry and physics recommended. Relationships of plants and animals to environment, both physical and biotic; distri-

bution and interrelationship of land forms; visits to typical local plant and animal communities. (Lecture 2 hours, laboratory and field 3 hours.)

**106. Science in the Elementary School (2) F, S, SS**
Prerequisites: Nine units of science, admission to the teacher education program. A study of objectives; materials and equipment; basic information, concepts and principles of science in the elementary school. Not open to biology majors.

**126. Genetics (4) F, S**
Prerequisite: Six units of biological science including Zoology 1A or Botany 1 or 1A, Mathematics 7 (or 1 and 2), Mathematics 8 or 3B recommended. A detailed study of classical transmission genetics and an introduction to the principles of human microbial genetics, radiation biology and the current observations and concepts of the nature, organization and action of the genetic material. (Lecture 3 hours, laboratory 3 hours.)

**128. Elementary School Science Workshop (2) SS**
Prerequisite: Six units in biological and/or physical sciences. Program in carrying out science activities in grades one through eight. Not open for credit to biological sciences majors or minors. Not open to students who have credit in Nature Study 128. (Lecture 1 hour, laboratory 3 hours.)

**130. Microtechniques (3) S**
Prerequisites: Six units of biological science including Zoology 1A or Botany 1A. Principles and methods employed in preparation of plant and animal tissue for microscopic study. (Lecture 1 hour, laboratory 6 hours.)

**145. Marine Ecology (3) F**
Prerequisites: Zoology 1AB or Zoology 1A and Geology 5; Chemistry 1AB. Introduction to physical, chemical and biological aspects of marine environment. Ecology of organisms of littoral, deep sea and pelagic zones; their economic implication. (Lecture 2 hours, laboratory and field 3 hours.)

**151. Field Natural History (2-6) SS**
Prerequisites: Six units in upper division biological sciences courses, consent of instructor. Studies of the flora and fauna of a specific area or habitat type such as deserts, mountains or marine zones. Open for maximum of 4 units for those students who have credit for Nature Study 151. (Lecture, laboratory and field arranged.)

**155. Cytology (2) F**
Prerequisites: Zoology 1AB or Botany 1. Structure, organization and function of protoplasm at the microscopic and submicroscopic levels, including techniques of study.

**156. Cytogenetics (3) F even years**
Prerequisites: Biology 126 and consent of instructor. An intensive study of the cytological basis of genetic phenomena involved in mitosis, meiosis, crossing over, euploidy, aneuploidy, and aberrant chromosomal behavior, with their role in evolution. (Lecture 1 hour, laboratory 6 hours.)

**157. Cytology Laboratory (2) S**
Prerequisites: Biology 155, consent of instructor. Experimental approaches to problems of cell structure and function, using electron microscopy, phase microscopy, tissue culture and other methods. (Laboratory 6 hours.)

**172. Biometry (3) F**
Prerequisites: Math 7; Math 8 or 3B recommended. Introduction to statistical analysis and experimental design, emphasizing biological problems. (Lecture 2 hours, laboratory 3 hours.)

**175. Radio-chemical Techniques in Biology (4) S even years**

Prerequisite: Chemistry 108; 6 units of biological science; Chemistry 5 and 5L, strongly recommended. Experience in use and handling of radioactive tracers in the biological sciences. (Lecture 2 hours, laboratory 6 hours.)

**185. Biology and Human Affairs (3) F even years, SS odd years**

Prerequisite: Six units of biological sciences. A study of major contributions of biology to human welfare, health, eugenics, conservation, economics, and philosophy with a consideration of the resulting aspects and problems to the citizen.

**193A, B. Laboratory Techniques (1,1) F, S**

Prerequisites: Senior or graduate standing; major in a biological science, and consent of instructor. Experience for advanced students in the organization and techniques in a basic science laboratory. (Conference 1 hour, laboratory 3 hours.) (Formerly Natural Science 193A, B.)

**199. Investigations in Biology (1-3) F, S, SS**

Prerequisite: Consent of instructor. Research in a specific subject in biology, such as anatomy and physiology, biology, botany, entomology or zoology. Topic of study to be approved and directed by a staff member in the Biology Department. (May be repeated for a maximum of 3 units.)

## GRADUATE DIVISION

**200. Seminar (1) F, S**

Subjects in biology to be presented by graduate students, or by faculty members. Required of all master's degree candidates in biology. All graduate students are expected to attend each semester they are enrolled in the College. Credit to be obtained only for one semester.

**225. Biological Literature (2) F**

Classic works in botany and zoology; the role of literature in biological science; methods of utilizing literature in science. (Lecture 2 hours.) (Formerly Natural Science 225.)

**252. Field Biology and Ecology (3) F**

Field investigations in taxonomy and ecology of local organisms; emphasis on advanced techniques of population analysis and census. (Lecture 1 hour, laboratory and field 6 hours.)

**290. History of Biology (2) S**

Survey of development of the biological sciences, from ancient to modern times. (Lecture 2 hours.) (Formerly Natural Science 290.)

**297. Seminar in Biology (2) F, S**

Definition, methods of solution, and research methods of problems in the biological sciences; emphasis on utilization of library. (Lecture 2 hours.) (Formerly Natural Science 297.)

**298. Thesis (1-4) F, S, SS**

Prerequisite: Biology 297. Planning, preparation and completion of a thesis in the biological sciences. (May be repeated for credit to maximum of 4 units.)

**299. Investigations in Biology (1-3) F, S, SS**

Prerequisite: Consent of instructor. Research on a specific subject in biology. Topic for study to be approved and directed by a staff member in biological sciences. (May be repeated for credit to maximum of 3 units.)

# BOTANY

Professors: Burch, Miner.
Associate Professor: Lincoln.
Assistant Professor: Carpenter.
Instructor: Mansfield-Jones.

## LOWER DIVISION

**1A. General Botany (3) F, S, SS**
The development of structures, functions and genetics of flowering plants. (Lecture 2 hours, laboratory 3 hours.)

**1B. General Botany (2) S**
Prerequisite: Botany 1A. The morphology and life history of the major groups of plants. (Lecture 1 hour, laboratory 3 hours.)

**1. General Botany (5) F, S**
A course combining Botany 1A and B. (Lecture 3 hours, laboratory 6 hours.)

**62. Trees and Shrubs (3) F, S**
Prerequisite: Biology 10 or Botany 1A. The identification and culture of the principal trees and shrubs found in Southern California. Not open for credit to biological sciences majors. (Lecture 2 hours, laboratory 3 hours.)

## UPPER DIVISION

**106. Botany of Economic Plants (3) F even years**
Prerequisite: Botany 1. History, nature and use of the more common plants and plant products used by man. (Lecture 2 hours, laboratory 3 hours.)

**110. Algae (3) S even years**
Prerequisite: Botany 1. Systematics, morphology, ecology and phylogeny of marine and freshwater algae, emphasis on forms of Southern California. (Lecture 1 hour, laboratory and field 6 hours.)

**115. Plant Anatomy (3) F odd years**
Prerequisite: Botany 1. Structural study of developing and mature seed plant; microscopic determination of commercial woods to be correlated with industrial uses. (Lecture 2 hours, laboratory 3 hours.)

**116. Plant Morphology (4) S odd years**
Prerequisite: Botany 1. Comparative structure, life history and phylogenetic relationships of mosses and vascular plants. (Lecture 2 hours, laboratory 6 hours.)

**120. Plant Pathology (3) F even years**
Prerequisites: Botany 1 and Chemistry 1AB. Fundamental principles and practices of plant pathology. Structure, development and classification of fungi. Emphasis on diagnosis, treatment and control of diseases affecting cultivated plants. (Lecture 2 hours, laboratory and field 3 hours.)

**126. Taxonomy of Vascular Plants (4) S, SS**
Prerequisite: Botany 1. History of taxonomy; relationships and identification of native and introduced vascular plants of Southern California. Training in identification and collecting practices. (Lecture 2 hours, laboratory and field 6 hours.)

**130. Plant Physiology (4) F, S**
Prerequisites: Botany 1 and Chemistry 108. Photosynthesis and other anabolic syntheses, digestion, respiration, mineral nutrition, water relationships, growth and development of plants. (Lecture 3 hours, laboratory 3 hours.)

**176. Plant Ecology and Systematics (3) S odd years**

Prerequisites: Botany 126 and 130; Biology 126. Principles of plant distribution and evolution; relationship of plant to its environment, plant association; principles of experimental taxonomy. (Lecture 2 hours, laboratory and field 3 hours.)

**180. Plant Production (3) S odd years**

Prerequisite: Botany 1. Basic principles of plant production; the reproduction, propagation, environmental influences and cultural practices employed in maintaining the more important local horticultural plants. (Lecture 2 hours, laboratory and field 3 hours.)

# BUSINESS ADMINISTRATION

## ACCOUNTING COURSES

Professor: Lehnberg.

Associate Professors: Andersson, H., McKinnon, Pickel, Stone, H., Williamson.

Assistant Professors: LaPage, Suttle.

### LOWER DIVISION

**53A, B. Elementary Accounting (3,3) F, S, SS**

An introduction to accounting theory and practice, including analyzing, recording, and summarizing transactions which are ultimately presented in balance sheet and income statement form, treatment of special journals, the voucher system, and subsidiary ledgers; payroll, property, and miscellaneous taxes; partnership and corporate accounts; financial statement analysis; preliminary manufacturing and cost accounting 53A not open to students who have credit in Business 53H. 53A or 53H is prerequisite to 53B.

**53H. Elementary Accounting (3) F, S**

Prerequisite: Mathematics 1 or 7. Accelerated elementary accounting course which combines 53A,B into a 3 unit course. Not open to students with credit in 53A,B. (Students receiving a grade of C or better in this section will be exempt from Business 53B.)

### UPPER DIVISION

**117. Electronic Computers in Business (3) F, S**

(Cross referenced and described under Statistics courses.)

**130A, B. Intermediate Accounting (3,3) F, S, SS**

Prerequisite: Business 53H with grade of "C" or higher or Business 53B. Preparation of principal accounting statements and study of accounting theory including recording, valuation, and presentation of cash, receivables, inventories, investments, plant and equipment, intangibles, current obligations, long-term debt, paid-in capital, and retained earnings. Statement analysis. Statement of application of funds. 130A is prerequisite to 130B.

**132. Cost Accounting (3) F, S, SS**

Prerequisites: Business 53H with grade of "C" or higher or 53B. Theory of cost accounting and cost control including job order, process costs, joint-product and by-product costs, budgeting, standard costs, direct costing, distribution costs, differential cost analysis, profit-volume relationships, and break-even analysis. Emphasis on standard costs as a device for cost control.

**134. Advanced Accounting (3) F, S**
Prerequisite: Business 130B. Specialized problems in partnership and corporation accounting; accounting for joint ventures, agencies and branches, consolidated balance sheets and income statements, statement of affairs, receivership accounting, estate and trust accounting, realization and liquidation statements. (Not open to students with credit in 130C.)

**164. Federal Tax Accounting (3) F, S**
Prerequisite: Business 130A or 132. The federal income tax structure as related to individuals, partnerships, and corporations, including problems intended to provide an understanding of the laws and regulations.

**165. Auditing (3) F, S**
Prerequisites: Business 130B, 132. Problems of verification, valuation, and presentation of financial information in reports covered by the opinion of an independent public accountant. Responsibilities of the public accountant and rules of professional conduct.

**167. Governmental and Institutional Accounting (3) S**
Prerequisite: Business 130A or 132. Principles and procedures of accounting for governmental and institutional units; financial and budgetary accounts; accounting for various funds including financial and statistical statements.

**169. Advanced Accounting Problems (3) F, S**
Prerequisites: Business 132, 134, 164, 165. Applications of accounting theory to advanced problems of the type contained in examinations for C.P.A. certification. (Not open to students with credit in Business 231.)

**GRADUATE DIVISION**

**230. Seminar in Accounting Theory (3) S**
Prerequisites: Business 130B, 134. Critical analysis of generally accepted accounting theories and principles. Accounting literature and cases will be examined.

**232. Advanced Cost Accounting, Budgeting and Control (3) S**
Prerequisite: Business 132. The theories of budgeting and control including interrelationships of the various budgets used in the business firm; examination of theories of cost allocation and absorption. Current literature and cases in budgeting and control will be examined.

**264. Advanced Tax Accounting (3) F**
Prerequisite: Business 164. Advanced study of problems in Federal and state income, franchise, gift, and estate taxes; source materials and research methods for ascertaining current rulings and trends in laws and regulations.

## BUSINESS EDUCATION COURSES

Professor: Burras.
Associate Professor: Nelson, D.
Assistant Professors: Barber, Jackson.

**LOWER DIVISION**

**1A, B. Typewriting (2,2) F, S**
Fundamentals of typewriting. The operation of various kinds of typewriters, special adaptations of each, basis of speed and accuracy development. (1A not available to students with any credit in typing.) (Daily)

**2A, B. Shorthand (3,3) F, S**

Fundamentals of shorthand. The various techniques used in the mastery of technical vocabularies and speed in writing and reading shorthand from dictation. (2A not available to students with one year of high school credit in shorthand.) (Daily)

**51. Introduction to Business (3) F, S, SS**

A general survey of business organization and management. Factors influencing establishment, location and operation of business units; functional business areas of accounting, finance, management, marketing and personnel. The economic and legal framework, including regulation and taxation, within which modern American business activities are conducted. (Not applicable to a major in Business Administration.)

## UPPER DIVISION

**102. Office Machines and Filing (2) F, S, SS**

Operation, purposes, and adaptations of rotary calculators, adding machines, transcribing and duplicating machines. Procedures and practices in filing and indexing.

**103. Machine Transcription and Duplication (2) S**

Prerequisite: Business 1B, or equivalent. Extensive training in dictating to and transcribing from both disc and belt transcription machines; duplicating machines, both liquid and ink process with attention to particular characteristics of products of various manufacturers. (Meets four clock hours.)

**183. Busines Communications Typewriting (2) S**

Prerequisite: Business 1B or equivalent. Development of skill in composing and typing effective business letters and reports. Building of high speed on straight copy, business letters and forms, manuscripts, legal documents, tabulation and statistical work. (Meets four clock hours.)

**184. Advanced Shorthand (3) F**

Prerequisite: Business 2B or equivalent. Increased skill in taking dictation at high speed; building of vocabulary; shorthand theory and phrasing skill; emphasis on correct use of English; increased ability to read shorthand notes. (Daily)

**188. Secretarial Procedures (3) S**

Prerequisites: Business 1B and 2B or equivalent. Principles underlying editing and arrangement of dictated letters and reports; development of expert skill and ability in shorthand transcription.

**189. Office Organization and Management (3) F, S, SS**

Prerequisites: Business 102, 110, and 51 or 175. Organization and functions of office departments, layout, equipment and appliances; selection and supervision of office personnel, methods of improving operating efficiency, techniques for performing office duties.

*The following Education courses are offered by the Business Education faculty:* (see Education courses for course descriptions).

116. Organization and Administration of Distributive Education (3) offered on adequate demand
117. Curriculum Development in Distributive Education (3) offered on adequate demand
161. Principles and Curriculum in Business Education (2) F, S, SS
164. Teaching Methods in Bookkeeping and General Business (2) F, S, SS
174. Methods of Teaching Typewriting (1) F, S, SS
176. Methods of Teaching Office Practice and Business Machines (1) F, SS
177. Methods of Teaching Secretarial Subjects (2) F

## BUSINESS LAW COURSES

Professor: Rhoads.

Assistant Professor: Moore, B.

### LOWER DIVISION

**55. Business Law I (3) F, S, SS**

Elements of contracts used in business; fundamental factors governing negotiable instruments, and the laws dealing with agency.

**56. Business Law II (3) F, S**

Prerequisite: Business 55. Fundamental laws of corporations, sales, sales contracts, and partnerships. (Not open to students with credit in Business 106.)

### UPPER DIVISION

**107. Business Law III (3) F**

Prerequisite: Business 56. Analysis of business problems involving the law of contracts, negotiable instruments, sales, corporations and partnerships, fundamental laws of real property, fiduciary relationships, bankruptcy, and insurance.

**142. Legal Aspects of Real Estate (3) F, S**

(Cross referenced and described under Real Estate courses.)

## BUSINESS FINANCE COURSES

Professor: Reep.

Associate Professor: Belt.

Assistant Professors: Beecher, Kearney.

### UPPER DIVISION

**118. Business Finance (3) F, S, SS**

Prerequisites: Economics 1AB or 100; Business 53B or equivalent; Mathematics 3A. Different forms of ownership organization emphasizing significance of corporate form. Methods, instruments, control factors in raising, administering, distributing funds of business firms; working and fixed capital requirements; internal and external fund sources; financial aspects of promotion, growth, reorganization, liquidation.

**121. Insurance Principles (3) F, S, SS**

Fundamentals upon which the insurance industry is based. Types of carriers; internal and field organization of carriers; economic aspects; insurance needs of the individual and the business firm; analysis of typical insurance contracts.

**122. Life Insurance (3) F, S**

Prerequisite: Business 121 or consent of instructor. Structure of life insurance and annuity contracts and their application to personal and business situations; calculation of premiums, reserves. Financial management of life insurance carriers; contract provisions and legal principles; marketing, underwriting and regulation.

**123. Multiple-Lines Insurance (3) S**

Prerequisite: Business 121. All lines of property and casualty insurance are examined, including fire and allied lines, inland and ocean marine, automobile, general liability, suretyship, workmen's compensation, theft, accident and sickness. Contract analysis of specific lines of insurance; loss prevention and settlement, ratemaking, underwriting, marketing, regulation, reinsurance, and carrier organization.

**127. Credits and Collections (3) F, S**

(Cross referenced and described under Marketing courses.)

**153. Investment Principles (3) F, SS**

Prerequisite: Business 118. Types of investment media centering attention on stocks for investment and commodities for speculation; technical approach to analysis of price patterns, trends and turning points. Analysis of objectives, risk patterns, values in investments; development of a rational investment philosophy.

**154. Investment Security Analysis (3) S**

Prerequisite: Business 118. Application of quantitative techniques in evaluating business management from investor's viewpoint. Analytic methods and transaction timing are detailed and applied to securities of governments, public utilities, railroads, industrials and financial institutions. Framework established for personal investment administration.

**178. Financial Institutions and the Money Market (3) F, S**

An institutional approach to the field of finance; comparative analysis of American financial institutions, including nature and character of the money market emphasis on (1) differentiating functions and practices, (2) interrelations of financial institutions and business firms, (3) interest rates and yields resulting from demand-supply relationships, (4) character and economic significance of financial specialization.

**190. Business Financial Management (3) F, S**

Prerequisites: Business 118 and 130A or 132. Classification of major problems and policies in business finance with emphasis on financial framework within which business operates. Management of flow-of-funds through the firm including sources, uses, and controls; alternative policies of working capital, capital budgeting, dividends, retained earnings, and income management are explored.

**191. Security Markets (3) S**

Prerequisite: Business 118. Examination of purposes and functions of over-the-counter markets and organized exchanges for securities marketing. Operations of New York Stock Exchange and Chicago Board of Trade are reviewed. Fundamental and technical aspects of securities industry required of individuals in qualifying for certificates as customers brokers, security salesmen and analysts, and other registered positions of finance and investment.

## GRADUATE DIVISION

**221. Seminar in Insurance and Risk Management (3) S even years**

Prerequisites: Business 122 and 123. Risk management, focusing especially on the insurance problems of the firm. Theory and principles of risk management; application of risk analysis to physical plant and operations; loss prevention and protection; appraisals. Advanced consideration given to types and characteristics of insurance and policy contracts. Presentation and interpretation of student reports on selected topics.

**254. Seminar in Investments (3) S**

Prerequisites: Business 153 or 154, 190. Selected problems in security analysis, portfolio planning, balance and adjustment as related to (1) individual circumstances of the investor, (2) specific market conditions, and (3) broader financial aspects of the economy. Presentation and interpretation of student reports on selected topics.

**278. Seminar in Business Finance (3) F**

Prerequisites: Business 118, 178. Specific analysis of capital formation with selected problems concerning supply and demand of investment funds. Problems imposed on equity capital markets by public taxation, business debt financing, and practices of investing institutions. Presentation and interpretation of student reports on selected topics.

## INDUSTRIAL RELATIONS COURSES

Professor: Gregory.

Assistant Professor: Heise.

### UPPER DIVISION

**100. Human Relations in Business (3) F, S, SS**

Human relations concepts and problems in the administration, organization, and supervision of business enterprise. Topics include authority systems and chain of command, information theory, leadership and organizational performance, incentives and worker productivity, unions in business enterprise, minority groups in industry and unions, human problems in foreign operations, management of the handicapped and older workers, and current trends in human relations in business enterprise.

**151. Personnel Management (3) F, S, SS**

Prerequisites: Economics 1AB; Business 110; Mathematics 3A or equivalent. The importance of employee-employer relationships, personnel policies, procedures, operations and training; techniques of personnel administration, interviewing and testing; wages and salary administration; recruitment, inductions, transfers, promotion and merit rating.

**162. Job Analysis and Evaluation (3) F, S**

Prerequisites: Business 151; Mathematics 3A. Processes, methods, and fundamentals used in preparing job descriptions, making job evaluations, and administering wage and salary programs. Case studies from organizations and industries will be critically examined. (Cross referenced under Production Management courses.)

**163. Collective Bargaining (3) F, S**

Prerequisite: Economics 165. Fundamentals and problems of collective bargaining in American industry. Labor agreements, conciliation, mediation and arbitration of labor disputes. (Cross referenced under Production Management courses.)

**172. Motion and Time Study (3) F, S**

(Cross referenced and described under Production Management courses.)

**173. Employee Development and Training (3) F, S**

Determination of development and training goals, implementation and evaluation of programs for employee and supervisory training, and for management development.

### GRADUATE DIVISION

**251. Seminar in Labor Relations (3) F, S**

Prerequisites: Business 151, Economics 165. Intensive analysis of current problems of labor and management as related to governmental regulation, unionism, wages, employment, social security and management prerogatives. (Cross referenced under Production Management courses).

**253. Seminar in Personnel Management (3) F, S**

Prerequisite: Business 151. Case approach to human relations problems confronting business executives. Attention to selected literature covering relationships be-

tween management, supervisors, and employees as they affect status, operational efficiency and morale. (Cross referenced under Production Management courses).

**275. Business Problems and Policies (3) F, S**

(Cross referenced and described under Production Management courses).

## MARKETING COURSES

Associate Professors: Ash, Cotta, Wolff.
Assistant Professors: Hall, Holmes.

### UPPER DIVISION

**125. Marketing (3) F, S, SS**

Prerequisites: Economics 1AB or 100; Business 53B. The distribution of goods from the producer to the ultimate user. Topics include retailing, wholesaling, pricing, cost to the consumer, and government regulation. Emphasis on principles, policies, and trends in marketing.

**126. Retailing (3) F, S, SS**

Prerequisite: Business 125. The principles of store operation and management including stores location and layout; retail buying and merchandising; sales promotion, advertising, and customer service; retail accounting and control; the management viewpoint toward operations, policies, and integration of the various functional areas.

**127. Credits and Collections (3) F, S**

Prerequisite: Business 53B or equivalent. Mercantile and consumer credit; methods of evaluating the credit of individuals, partnerships, and corporations; rights and equities of debtors and creditors; debtor-creditor relationship; sources of credit information; analysis of financial statements for credit purposes. (Cross referenced under Finance courses.)

**128. Salesmanship (3) F, S, SS**

The economic aspects of consumer demand as related to selling. Individual and company objectives in selling from the business and social point of view; contributions of psychology, sociology, and other behavioral sciences of salesmanship; evaluation of selling techniques and practices including recruiting, training, and compensation.

**140. Traffic and Transportation (3) F, S**

The economic and financial aspects of transportation facilities, services, and patterns of public regulation; analysis of major traffic management principles and problems including rates, tariffs, and new developments in rail, motor, air, water, and pipeline transportation. (Cross referenced under Production Management courses.)

**155. Industrial Purchasing (3) F, S**

Procurement and commercial buying in relation to wholesale and industrial marketing. Purchasing policies and organization; coordination with production schedules and materials planning; optimum quantity and price; vendor relations; following up and expediting receiving and inspections, purchasing research. (Cross referenced under Production Management courses.)

**157. Advertising (3) F, S, SS**

The principles and practices of advertising including the social importance of advertising, its economic significance and relation to modern business organization; the preparation of advertisements, copy writing, layout, and media selection.

**159. Advertising Management and Policies (3) S**

Prerequisite: Business 157. Advertising as a tool of marketing management. Major problems of policy formulation faced by advertising management, including advertising budgets, agency compensation, advertising account management, evaluation of media, advertising testing and coordination with other marketing efforts.

**160. International Marketing (3) S**

Prerequisite: Business 125. Basic principles of foreign trade and finance; analysis of character and importance to United States; theory of comparative costs; balances of trade and of international payments; tariffs; quotas, exchange, and other trade barriers, dumping and export subsidies.

**161. Retail Management and Policies (3) F**

Prerequisite: Business 126. The various phases of retail operation and management, using case problems and readings to illustrate retail decisions and policies in the areas of store location, merchandising of staple and fashion goods, buying for resale, sales promotion, store operations and control.

**180. Marketing Management (3) F, S, SS**

Prerequisites: Business 125 and senior standing. Marketing policies and marketing management techniques. Marketing management methods include distribution decisions, product and promotional policies, regulatory legislation, competition, pricing and selling policies. Major emphasis on the development of a total marketing strategy for the firm.

**182. Marketing Research (3) F, S**

Prerequisites: Business 111, 125, and senior standing. The fundamentals of marketing and industrial research as an approach to problem-solving in business. Cases are used to develop the student's analytical ability and demonstrate the application of business research fundamentals.

## GRADUATE DIVISION

**280. Seminar in Marketing Policies (3) F, S**

Prerequisite: Business 180. Current marketing problems, both technological and social, and their relation to population, income, channels of distribution, government regulation of marketing, executing product development, and the sales organization.

**282. Seminar in Marketing Research (3) F, S**

Prerequisite: Business 180. The role of research in the solution of marketing problems. Research methods in assemblying, analyzing, and interpreting information for business use. Case studies and class projects may be required.

**284. Seminar in Advertising Policies (3) F, S**

Prerequisites: Business 157 and 180. Advertising policies and problems. Case studies in executive determination of basic strategy, promotional programs, advertising administration, physical and psychological aspects, determination of effectiveness and coordinative concepts. Special problems of economic justification; ethics and government regulation.

## PRODUCTION MANAGEMENT COURSES

Professors: Gregory, Metzger, Stewart.
Associate Professors: Laufer, Simons.
Assistant Professor: Heise.

### UPPER DIVISION

**100. Human Relations in Business (3) F, S, SS**
(Cross referenced and described under Industrial Relations courses.)

**117. Electronic Computers in Business (3) F**
(Cross referenced and described under Statistics courses.)

**140. Traffic and Transportation (3) F, S**
(Cross referenced and described under Marketing courses.)

**155. Industrial Purchasing (3) F, S**
(Cross referenced and described under Marketing courses.)

**162. Job Analysis and Evaluation (3) S**
(Cross referenced and described under Industrial Relations courses.)

**163. Collective Bargaining (3) F, S**
(Cross referenced and described under Industrial Relations courses.)

**170. Industrial Management (3) F, S**
Prerequisites: Business 111, 132, Mathematics 3A. Introduction to theory and practice of industrial management; problems of internal industrial organization and control; systems and procedures; materials control; production control; motion and time study; industrial statistics; industrial safety; and industrial research.

**171. Production Planning and Control (3) F, S**
Prerequisites: Business 170, Mathematics 3A. Problems and fundamentals in managing manufacturing operations. Production planning and control-routing scheduling, dispatching, and follow-up; materials planning and control; equipment control; quality control; production budgeting.

**172. Motion and Time Study (3) F, S**
Prerequisites: Business 170, Mathematics 3A. The laws of motion and economy; work place motions and movements; equipment layout; and the theory and practice of time study. (Cross referenced under Industrial Relations courses.)

**173. Employee Development and Training (3) F, S**
(Cross referenced and described under Industrial Relations courses.)

**175. Business Organization and Policy (3) F, S, SS**
Prerequisites: Business 111, 118, 125, 132, 151, 170. Analytical study of administrative organization, business plans and policies and their formulation. Consideration of budgeting and other executive control techniques of management. Problems and cases will be examined.

### GRADUATE DIVISION

**251. Seminar in Labor Relations (3) F, S**
(Cross referenced and described under Industrial Relations courses.)

**253. Seminar in Personnel Management (3) F, S**
(Cross referenced and described under Industrial Relations courses.)

**270. Seminar in Advanced Industrial Management (3) F, S**
Prerequisites: Business 170, 171 and 172 or consent of instructor. Application of principles to the problems encountered at the plant management level. Decisions affecting production policies, production methods, and control systems and procedures with the objective of coordinating all production activities.

**275. Business Problems and Policies (3) F, S**
Prerequisite: Business 175. Organization theory and practice, functions of top management, management control processes, the management movement, management policies and planning, and management problems. (Cross referenced under Industrial Relations courses.)

**276. Organization Analysis and Management Auditing (3) F, S**
Prerequisite: Consent of instructor. The scientific analysis of organization. The management function; the audit of management performance.

## REAL ESTATE COURSES

Assistant Professors: Hall, Kearney.

### UPPER DIVISION

**141. Real Estate Principles (3) F, S, SS**
Major forces affecting real property values and the real estate industry including production of real estate resources, marketing and financing of land based on valuation processes as related to location and development; effects of business trends and government regulation; rural and urban real estate development and transfer. Role of residential, commercial and individual construction in the health of American economic system is closely examined. Not open to students with credit in Business 119.

**142. Legal Aspects of Real Estate (3) F, S**
Prerequisite: Business 141. Basic principles of the law of real estate as related to conveyances, titles, private and public restrictions on the use of land, escrows, community property, and financial transactions. (Cross referenced under Business Law courses.)

**143. Real Estate Appraisal (3) F**
Prerequisites: Business 53B, 141. Development of the capacity for selection of criteria for establishing real property values and the determination of alternative uses and locations.

**144. Real Estate Finance (3) S**
Prerequisites: Business 53B, 118, 141. Institutions, techniques and instruments involved in real estate finance. Equity financing, mortgage origination, servicing and foreclosure; construction financing, and the role of government in real estate finance.

## STATISTICS AND OPERATIONS ANALYSIS COURSES

Associate Professor: Stone.

### UPPER DIVISION

**110. Introduction to Statistical Inference (3) F, S**
Prerequisite: Mathematics 3A. Principles of statistical inference, with applications to problems of a business nature. Includes probability, combinations and permutations, binomial and other theoretical distributions, estimation and tests of hypothesis about means, proportions, and variances, O.C.C. and quality control, contingency tables, analysis of variance, regression and correlation, and nonparametric tests.

**111. Elementary Decision Theory (3) F, S**

Prerequisites: Mathematics 3A, Business 110. Decision making and consistent behavior in terms of personal utilities and probabilities. Includes uncertainty Bayes Strategies, minimax.

**112. Advanced Topics in Statistics (3) F, S**

Prerequisites: Mathematics 3A, Business 110. Intensive study of selected topics in statistical inference. Includes analysis of variance, correlation, nonparametric methods, time series and forecasting.

**115. Finite Mathematical Analysis for Business (3) F**

Prerequisite: Mathematics 3A. Theory and applications of modern mathematical topics as a management tool. Includes compound statements, sets and functions, linear algebra, matrices, vector spaces.

**116. Introduction to Operations Research (3) S**

Prerequisites: Business 111, 115 Mathematics 3B. Theory and applications of operations research as an aid to management decision making. Includes programming (linear, non-linear, dynamic, distribution models), simulation, waiting lines, etc., as they apply to inventory, scheduling, transportation, portfolio selection and other business problems.

**117. Electronic Computers in Business (3) F, S**

The logic of computers; elements of programming and operation. Cases and observations will emphasize computer applications to decision making and data processing. (Cross referenced under Accounting courses and Production Management courses.)

## GRADUATE DIVISION

**210. Probability and Statistics (3) F**

Prerequisites: Statistics and rudiments of calculus. Probability, expectation and utility. Sample spaces, probability distributions, joint and conditional probabilities. Evaluation by means of Bayes theorem of information obtained by sample; classical approach to problems already analyzed from the Bayesian point of view. Applications to problems of the firm.

**211. Theory of Decision and Information (3) S**

Prerequisites: Probability or statistics, rudiments of calculus and economics. Decision making and behavior in terms of personal utilities and probabilities. Optimal decision and information rules. Amount, cost, and value of information. Relation to the theory of games.

## THESIS AND RESEARCH

### GRADUATE DIVISION

**295. Specialized Study (3) F, S**

Prerequisites: Grade point average of 3.5 or higher, adequate work in specialization, consent of instructor. This course permits the student working on the master's degree in business administration to undertake an intensive study program, under the direction of a faculty member in an area of specialization.

**297. Seminar in Research Methodology (3) F, S**

Prerequisite: Passing of graduate tool examination in business administration. The scientific method of research; variation in research methodology and design; the application of research findings to major phases of business. Emphasis on developing an analytical approach in solving management problems. Individual or group projects required.

**298. Thesis (3) F, S**

Prerequisite: Passing of graduate tool examination in business administration. (Limited to students who have taken or are taking Business 297.) Planning, preparation, and completion of a thesis in business administration.

## WORK EXPERIENCE

**299. Business Internship (3-6) Offered on adequate demand**

Prerequisite: Business 297 or 298 (or currently enrolled in either.) Students without acceptable experience closely related to the field of the occupational major for the master of science degree in business administration will be assigned to cooperating businesses in the immediate or adjacent community for work under the supervision of both the cooperating firms and the Business Division. This directed field study is in addition to the 30 units required for the degree when a candidate has no approved previous experience, or if such experience is not adequate to meet the full requirement. Business internship can be taken only by candidates for a master of science degree in business administration.

# CHEMISTRY

Professors: Henderson, Mayfield, Simonsen.

Associate Professors: Becker, E., Kalbus, Parker, Stern, Tharp.

Assistant Professors: Bauer, Beattie, Harris, Marsi, Osborne.

### LOWER DIVISION

**1A, B. General Chemistry (5,5) F, S**

Prerequisite: High school chemistry and physics recommended; Mathematics 2 or 7 may be taken concurrently. A study of the fundamental principles of chemistry with emphasis on inorganic materials. Qualitative analysis is included in the second semester. (Lecture 3 hours, laboratory and problem session 6 hours.)

**2. Fundamentals of Chemistry (4) F, S**

Prerequisite: One year of high school algebra or consent of instructor. A general course including elementary inorganic, organic, and biological chemistry. This course is not open to majors in the physical sciences or students who have had Chemistry 1AB. (Lecture 3 hours, laboratory 3 hours.)

**5. Quantitative Analysis (2) F, S, SS**

Prerequisite: Chemistry 1B, and 5L or concurrent registration in 5L. An introduction to the theories and techniques of gravimetric and volumetric analysis, with emphasis on the latter. This course, together with course 5L, meets the requirements of most medical schools. (Lecture 2 hours).

**5L. Quantitative Analysis Laboratory (2) F, S, SS**

Prerequisite: Chemistry 5 or concurrent registration in 5. Laboratory work in which the principles taught in course 5 are applied to the analysis of unknown samples. (Laboratory 6 hours).

### UPPER DIVISION

**108. Organic Chemistry (3) F, S, SS**

Prerequisite: Chemistry 1B or 2. An introductory lecture course in the chemistry of the carbon compounds. This course meets the requirements of most medical schools. (Lecture 3 hours.) Not applicable to a degree in chemistry.

**109. Organic Chemistry Laboratory (3) F, S, SS**
Prerequisite: Chemistry 108 which may be taken concurrently. A course designed to provide training in the basic techniques of the organic chemistry laboratory. (Lecture 1 hour, laboratory 6 hours.) Not applicable to a degree in chemistry.

**112A, B. Organic Chemistry (5,5) F, S**
Prerequisite: Chemistry 1B. Recommended: Chemistry 5, 5L. A comprehensive course in organic chemistry designed primarily for chemistry majors, but open to other students who desire a broader background in this field. Emphasis in the course is upon the application of modern principles to structure, reactivity, methods of synthesis, and physical properties of organic compounds. (Lecture 3 hours, laboratory and quiz section 6 hours.)

**115. Identification of Organic Compounds (3) S odd years**
Prerequisites: Chemistry 5, 5L and 112B. Characterization of organic compounds through study of their chemical and physical properties. (Lecture 1 hour, laboratory 6 hours.)

**130. Advanced Inorganic Chemistry (3) S even years**
Prerequisites: Chemistry 170A or consent of instructor. A detailed study of the atomic structure of elements and relationships to chemical behavior; and review of the properties of elements and compounds. (Lecture 3 hours.)

**131. Inorganic Chemistry Laboratory (3) F even years**
Prerequisite: Chemistry 130. Preparation and properties of inorganic compounds. Reference to chemical literature is required. (Lecture 1 hour, laboratory 6 hours.)

**136. Radiochemistry (3) F even years**
Prerequisites: Chemistry 170A or consent of instructor. A study of the properties and uses of natural and artificial radioactive isotopes. (Lecture 3 hours.)

**137. Radiochemistry Laboratory (3) S odd years**
Prerequisites: Chemistry 136. A laboratory course in experimental nucleonics. (Lecture 1 hour, laboratory 6 hours.)

**140. Clinical Chemistry (3) F, S**
Prerequisites: Chemistry 5, 5L and 145A which may be taken concurrently. Methods of analysis and chemical properties of foodstuffs, blood, urine, and other biological materials. Required in medical technology curriculum; not available for credit to majors in the physical sciences. (Lecture 1 hour, laboratory 6 hours.)

**145A, B. Biological Chemistry (3,3) F, S**
Prerequisites: Chemistry 112A or Chemistry 108; one biology or microbiology course recommended. A study of the dynamic metabolic process involved in the maintenance of life; a comparison of these processes in the major species of living organisms. (Lecture 3 hours.)

**146. Biological Chemistry Laboratory (3) F**
Prerequisites: Chemistry 5, 5L and 145A which may be taken concurrently. Laboratory study of the chemical process of life. (Lecture 1 hour, laboratory 6 hours.)

**155. Instrumental Methods of Analysis (4) F, S**
Prerequisites: Chemistry 5, 5L. Theory and application of instrumental methods in chemical problems. Laboratory work includes experiments in colorimetry, spectrophotometry, polarography, refractometry, and other modern techniques. (Lecture 2 hours, laboratory 6 hours.)

**160. Introductory Industrial Chemistry (3) F**
Prerequisites: Chemistry 108 or 112B. A general survey of applied chemistry, designed to show the application of chemistry to industry and to present the fundamental principles and methods of designing chemical processes. (Lecture 3 hours.)

**161. Glass Blowing (1) S**
Demonstrations and practice in elementary laboratory glass manipulation. (Laboratory 3 hours.) Open only to natural science majors.

**169. Special Problems in Chemistry (1-3) F, S, SS**
Prerequisite: Consent of instructor. Problems selected for considered and mature analysis. May be repeated to a maximum total of 6 units.

**170A, B. Physical Chemistry (3,3) F, S**
Prerequisites: Chemistry 1B, Physics 1D, and Mathematics 3D. A study of the fundamental physical laws, theoretical principles, and mathematical relations of chemistry. (Lecture 3 hours.)

**171. Physical Chemistry Laboratory (3) F, S**
Prerequisites: Chemistry 5, 5L, Chemistry 170A, and Chemistry 170B which may be taken concurrently. Introduction to basic apparatus and techniques of physicochemical experimentation and research and application of the principles discussed in 170AB. Reference to chemical literature is required. (Lecture 1 hour, laboratory 6 hours.)

**172. Fundamentals of Physical Chemistry (3) S**
Prerequisites: Chemistry 1B, Physics 2B, and Mathematics 2. An introductory study of the principles of physical chemistry. Not applicable to a degree in chemistry. (Lecture 3 hours.)

**176. Chemical Thermodynamics (3) S**
Prerequisites: Chemistry 170B and consent of instructor. Derivation and application of thermodynamic relationships of particular importance in all fields of chemistry. (Lecture 3 hours.)

## GRADUATE DIVISION

**226A. Special Topics in Organic Chemistry: Physical Organic Chemistry (3) F**
Prerequisites: Chemistry 112B, and 170B or 172. Theoretical interpretations of organic structure, and the mechanisms and kinetics of organic reactions. (Lecture 3 hours.)

**226B. Special Topics in Organic Chemistry: Heterocyclic Compounds (3) S**
Prerequisites: Chemistry 112B, and 170B or 172. Properties and syntheses of the various heterocyclic sytems. (Lecture 3 hours.)

**226C. Special Topics in Organic Chemistry: Natural Products (3) F**
Prerequisites: Chemistry 112B, and 170B or 172. Materials of biochemical origin of interest to both biochemists and organic chemists. (Lecture 3 hours.)

**226D. Special Topics in Organic Chemistry: High Polymers (3) S**
Prerequisites: Chemistry 112B, and 170B or 172. Structure, preparation, and properties of polymeric materials of natural and synthetic origin. (Lecture 3 hours.)

**109. Organic Chemistry Laboratory (3) F, S, SS**
Prerequisite: Chemistry 108 which may be taken concurrently. A course designed to provide training in the basic techniques of the organic chemistry laboratory. (Lecture 1 hour, laboratory 6 hours.) Not applicable to a degree in chemistry.

**112A, B. Organic Chemistry (5,5) F, S**
Prerequisite: Chemistry 1B. Recommended: Chemistry 5, 5L. A comprehensive course in organic chemistry designed primarily for chemistry majors, but open to other students who desire a broader background in this field. Emphasis in the course is upon the application of modern principles to structure, reactivity, methods of synthesis, and physical properties of organic compounds. (Lecture 3 hours, laboratory and quiz section 6 hours.)

**115. Identification of Organic Compounds (3) S odd years**
Prerequisites: Chemistry 5, 5L and 112B. Characterization of organic compounds through study of their chemical and physical properties. (Lecture 1 hour, laboratory 6 hours.)

**130. Advanced Inorganic Chemistry (3) S even years**
Prerequisites: Chemistry 170A or consent of instructor. A detailed study of the atomic structure of elements and relationships to chemical behavior; and review of the properties of elements and compounds. (Lecture 3 hours.)

**131. Inorganic Chemistry Laboratory (3) F even years**
Prerequisite: Chemistry 130. Preparation and properties of inorganic compounds. Reference to chemical literature is required. (Lecture 1 hour, laboratory 6 hours.)

**136. Radiochemistry (3) F even years**
Prerequisites: Chemistry 170A or consent of instructor. A study of the properties and uses of natural and artificial radioactive isotopes. (Lecture 3 hours.)

**137. Radiochemistry Laboratory (3) S odd years**
Prerequisites: Chemistry 136. A laboratory course in experimental nucleonics. (Lecture 1 hour, laboratory 6 hours.)

**140. Clinical Chemistry (3) F, S**
Prerequisites: Chemistry 5, 5L and 145A which may be taken concurrently. Methods of analysis and chemical properties of foodstuffs, blood, urine, and other biological materials. Required in medical technology curriculum; not available for credit to majors in the physical sciences. (Lecture 1 hour, laboratory 6 hours.)

**145A, B. Biological Chemistry (3,3) F, S**
Prerequisites: Chemistry 112A or Chemistry 108; one biology or microbiology course recommended. A study of the dynamic metabolic process involved in the maintenance of life; a comparison of these processes in the major species of living organisms. (Lecture 3 hours.)

**146. Biological Chemistry Laboratory (3) F**
Prerequisites: Chemistry 5, 5L and 145A which may be taken concurrently. Laboratory study of the chemical process of life. (Lecture 1 hour, laboratory 6 hours.)

**155. Instrumental Methods of Analysis (4) F, S**
Prerequisites: Chemistry 5, 5L. Theory and application of instrumental methods in chemical problems. Laboratory work includes experiments in colorimetry, spectrophotometry, polarography, refractometry, and other modern techniques. (Lecture 2 hours, laboratory 6 hours.)

**160. Introductory Industrial Chemistry (3) F**
Prerequisites: Chemistry 108 or 112B. A general survey of applied chemistry, designed to show the application of chemistry to industry and to present the fundamental principles and methods of designing chemical processes. (Lecture 3 hours.)

**161. Glass Blowing (1) S**
Demonstrations and practice in elementary laboratory glass manipulation. (Laboratory 3 hours.) Open only to natural science majors.

**169. Special Problems in Chemistry (1-3) F, S, SS**
Prerequisite: Consent of instructor. Problems selected for considered and mature analysis. May be repeated to a maximum total of 6 units.

**170A, B. Physical Chemistry (3,3) F, S**
Prerequisites: Chemistry 1B, Physics 1D, and Mathematics 3D. A study of the fundamental physical laws, theoretical principles, and mathematical relations of chemistry. (Lecture 3 hours.)

**171. Physical Chemistry Laboratory (3) F, S**
Prerequisites: Chemistry 5, 5L, Chemistry 170A, and Chemistry 170B which may be taken concurrently. Introduction to basic apparatus and techniques of physicochemical experimentation and research and application of the principles discussed in 170AB. Reference to chemical literature is required. (Lecture 1 hour, laboratory 6 hours.)

**172. Fundamentals of Physical Chemistry (3) S**
Prerequisites: Chemistry 1B, Physics 2B, and Mathematics 2. An introductory study of the principles of physical chemistry. Not applicable to a degree in chemistry. (Lecture 3 hours.)

**176. Chemical Thermodynamics (3) S**
Prerequisites: Chemistry 170B and consent of instructor. Derivation and application of thermodynamic relationships of particular importance in all fields of chemistry. (Lecture 3 hours.)

## GRADUATE DIVISION

**226A. Special Topics in Organic Chemistry: Physical Organic Chemistry (3) F**
Prerequisites: Chemistry 112B, and 170B or 172. Theoretical interpretations of organic structure, and the mechanisms and kinetics of organic reactions. (Lecture 3 hours.)

**226B. Special Topics in Organic Chemistry: Heterocyclic Compounds (3) S**
Prerequisites: Chemistry 112B, and 170B or 172. Properties and syntheses of the various heterocyclic sytems. (Lecture 3 hours.)

**226C. Special Topics in Organic Chemistry: Natural Products (3) F**
Prerequisites: Chemistry 112B, and 170B or 172. Materials of biochemical origin of interest to both biochemists and organic chemists. (Lecture 3 hours.)

**226D. Special Topics in Organic Chemistry: High Polymers (3) S**
Prerequisites: Chemistry 112B, and 170B or 172. Structure, preparation, and properties of polymeric materials of natural and synthetic origin. (Lecture 3 hours.)

**245A. Special Topics in Biochemistry: Proteins and Nucleic Acids (3) F even years**
Prerequisites: Chemistry 145AB, or equivalent and consent of instructor. A discussion of modern concepts of chemical and physical structure and biochemical function of large molecules.

**245B. Special Topics in Biochemistry: Enzymes (3) S odd years**
Prerequisites: Chemistry 145AB, or equivalent and consent of instructor. A detailed consideration of the enzymes and their role as catalysts in governing rates of reaction in living systems.

**245C. Special Topics in Biochemistry: Bioenergetics (3) F even years**
Prerequisites: Chemistry 145AB, or equivalent and consent of instructor. A consideration of the mechanisms of the metabolic processes by which living cells derive energy for maintenance and development.

**245D. Special Topics in Biochemistry: Biochemical Organization (3) S even years**
Prerequisites: Chemistry 145AB, or equivalent and consent of instructor. A study of the biochemical basis of growth and differentiation.

**269. Research in Chemistry (1-5) F, S, SS**
Prerequisite: Arrangement with instructor. Laboratory research supervised on an individual basis; the work to be terminated by preparation of a thesis describing the investigations.

**276A. Advanced Inorganic Chemistry (3) F odd years**
Prerequisite: Chemistry 170B. Theories of bending in inorganic compounds, with emphasis on co-ordination complexes; inorganic stereochemistry; uncommon oxidation states; study of relationship of properties to electronic structure. (Lecture 3 hours.)

**276B. Chemical Kinetics and Photochemistry (3) S even years**
Prerequisite: Chemistry 170B. Theoretical and experimental aspects of the kinetics and mechanism of thermal and photochemical reactions. Transition state theory, collision theory, photochemical excitation and dissociation, homogeneous and heterogeneous catalysis. (Lecture 3 hours.)

**276C. Molecular Structure and Spectra (3) F even years**
Prerequisite: Chemistry 170B. Rotational, vibrational, and electronic spectra, Raman spectra, X-ray diffraction, electron diffraction, dipole moments, nuclear magnetic resonance as related to the structure of molecules. (Lecture 3 hours.)

**276D. Surface and Colloid Chemistry (3) S odd years**
Prerequisite: Chemistry 170B. Nature of surfaces and surface films; surface phenomena; gaseous and liquid sorption; behavior of typical colloidal systems.

**295. Seminar in Chemistry (1) F, S**
Weekly meetings for presentation and discussion of advanced work in special fields including original research by faculty and graduate students.

**298. Thesis (1) F, S, SS**
Prerequisite: Chemistry 269. Formal written report of research accomplished in Chemistry 269 including bibliography and discussion of related material.

# DRAMA

Professors: Green, Sievers.
Associate Professor: Howarth.
Assistant Professors: Camburn, Kahan.
Instructor: Lorenzen.

## LOWER DIVISION

**10. Drama Activity (1) F, S, SS**
Participation in acting and technical play production activities. Any student who expects to participate in either afternoon or evening stage productions during the semester should enroll for drama activity. The student's specific assignments will be determined in consultation with the staff at the first meeting. Maximum credit 4 units.

**35. Elementary Acting (3) F, S**
An introduction to the problems of acting with lectures, readings, and exercises designed to heighten the student's appreciation of drama and to develop his ability to analyze and project a character by the coordinated use of voice, emotion and physical movement.

**37. Appreciation of Theater Arts (3) F, S, SS**
An organized sequence of lectures, discussions, field trips and written critiques designed to increase the general students' appreciation and understanding, and to develop standards for critical evaluation of the contemporary theater including stage, screen and television. Designed for the non-drama major. Not open to students with credit in Drama 47.

**47. Introduction to the Theater Arts (2) F, S**
Provides beginners with the background and foundation for appreciation and evaluation of the dramatic arts in contemporary theater.

**55. Elementary Stagecraft (2) F, S, SS**
Introduction to basic physical equipment of the theater, elementary scenic construction and scene painting with specific opportunities for practical experiences on actual productions. (May not be taken concurrently with Drama 77).

**56. Stage Make-up (1) F, S, SS**
A practical introduction to the techniques of applying theatrical make-up for the high school, college, or community play, with specific opportunities for practical experiences on actual productions.

**57. Rehearsal and Performance (2) F, S**
Prerequisite: Drama 35 or equivalent. A laboratory course which offers practical theater experience in preparing short scenes and one-act plays for public performance, with supervision and critical evaluations by the instructor. May be repeated once for credit except that no more than 4 units of Drama 57 and 157 may be applied for graduation credit.

**66A, B. Production of Musical Drama (2,2) S**
Preparation, rehearsal and public performance of opera, including all aspects of direction, costuming, setting and stage management with opportunity to do intensive work in the following production areas: (a) Staging; and (b) Scenery.

**77. Costume Crafts (2) F, S**
Techniques of construction of costumes and accessories for the stage, including use of fabrics, materials and equipment. Practical experience in construction of

costumes and accessories for actual productions. (Not to be taken concurrently with Drama 55).

**UPPER DIVISION**

**112. School Dramatics (3) SS**

A workshop course in the elements of play production, with emphasis upon the techniques of selecting, directing and staging the high school and junior high school play or assembly program. Not open to students with credit in Drama 122.

**121. Drama Activity (1) F, S, SS**

Participation in acting and technical play production activities. Any student who expects to participate in either afternoon or evening stage productions during the semester should enroll for drama activity. The student's specific assignments will be determined in consultation with the staff at the first meeting. Maximum credit 4 units. Not available for credit toward an advanced degree.

**122. Play Production (3) F, S**

Selecting, casting, directing and staging plays for the school or community theater. Not open to students with credit in Drama 112.

**124A, B. Stagecraft (2,2) F, S, SS**

Prerequisite: Drama 55 or equivalent. Consideration of accepted methods for building, painting, lighting and mounting stage settings with specific opportunities for limited supervision of stage crew activities on actual productions.

**126. Advanced Play Direction (3) F, S**

Prerequisites: Drama 35, 55 and 122 or its equivalent. A lecture and workshop course in which students will direct scenes illustrative of different problems and will produce a one-act play. (Lecture 2 hours, laboratory 4 hours.)

**128. Theater for Children (2) S**

Problems of presenting plays for children as an aspect of recreational and community life. Adult organizations for children's theater production will be examined, and opportunity will be provided for observation of productions of the Long Beach Children's Theater.

**129. Creative Dramatics for Children (3) F**

Theory and techniques for developing the creative capacities of children through original dramatizations; participitation and leadership in creative dramatics. Consideration of usage in the elementary school and recreational programs.

**132. Theater Management (3) F**

Prerequisites: Drama 122 or consent of instructor. An examination of the various phases of the administration, management and promotion of a producing theater organization including financing and publicizing productions and servicing audiences.

**135A, B. Fundamentals of Acting (3,3) F, S**

Prerequisite: Drama 35 or equivalent. Lecture and laboratory designed for students with some previous acting experience who wish to further develop their powers of emotional expression, voice, body movement, timing, and characterization. 135B, which concentrates on styles of acting, may be taken only by students who have completed 135A.

**136. Dance Movement for the Theater (2) F, S**

Fundamentals of movement, modern dance and choreography for the actor, teacher and director of drama and musical theater. May be repeated for credit to a maximum of 4 units.

**152. History of the Theater Arts (3) S.**
The development of the theater arts and their relation to society and the other arts in various epochs from ancient Greece to the present day.

**157. Rehearsal and Performance (2) F, S**
Prerequisite: Drama 35 or equivalent. A laboratory course which offers practical theater experience in preparing short scenes and one-act plays for public performance, with supervision and critical evaluations by the instructor. May be repeated once for credit except that no more than 4 units of Drama 57 and 157 may be applied for graduation credit.

**166A, B. Production of Musical Drama (2,2) S**
Preparation, rehearsal and public performance of opera, including all aspects of direction, costuming, setting and stage management with opportunity to do intensive work in the following production areas: (a) Staging; and (b) Scenery and Lighting.

**172. Dramatic Theory and Criticism (3) F**
The basic principles of dramatic theory and criticism through: (1) the analysis of the form and structure of selected masterpieces; and (2) the examination of the powers and limitations of systems of criticisms of past and present as instruments for analysis.

**174. History of Costume for the Stage (3) F, S**
Prerequisite: Drama 77 or equivalent. A chronological study of period fashions and textiles of the major historical periods. Particular reference to be given to the suitability and adaptation of fashions and fabrics for contemporary stage production.

**175. Projects in Stage Design (2) F, S**
Prerequisite: Drama 124B or consent of instructor. Integration of creative planning with practical realization of designs prepared for specific stage productions. May be repeated for credit for a maximum of 4 units.

**176. Stage Lighting (2) F, S, SS**
Theory and practice of modern stage lighting, including the functions of light, design of the lighting layout, properties of the various instruments, and practical experience in actual lighting.

**177. Stage Costuming (2) F, S**
Prerequisite: Drama 77 or equivalent. A study of the techniques of designing and constructing simple costumes of various historical periods for the educational theater. Integration of creative planning with practical realization of designs prepared for specific stage productions.

**180. Playwriting (2) F**
Fundamentals of play construction, dialogue and characterization for students interested in creative writing for the dramatic media. May be repeated for credit to a maximum of 4 units.

**188. Summer Theater Workshop (4-6) SS**
An opportunity for students to participate in a theater organized along professional stock company lines, in which students will be expected to devote full time to rehearsal, technical work, management, and performance. Enrollment by permission of the staff. May count toward an M.A. degree only by prior approval of the drama faculty.

**199. Special Studies in Theater Arts (3) F, S, SS**
Prerequisites: Drama major, upper division standing, grade point average of 3.0 or higher in major and consent of instructor and department chairman. Independent



7—16724

projects and research of an advanced nature in any area of the theater arts under guidance of one or more members of the department. May be repeated for a maximum of 6 units.

### GRADUATE DIVISION

**200. Seminar in Bibliography and Methods of Research (3) F**

An introduction to methodological problems involved in graduate research. Bibliographical problems and library research, location and use of original sources, special speech and drama research techniques of a survey or historical nature. A "pilot study" thesis will be required. Not open to students with credit in Speech 200.

**224. Seminar in Technical Theater (2) F**

Prerequisites: Drama 124, or the equivalent, plus study or experience in Stage Design, Lighting, or Costuming. Advanced problems in the technical aspects of theater; provides thorough working knowledge of planning, execution, and direction of technical stage production activities in the high school, college, or community theater.

**252. Seminar in Theater History and Dramatic Literature (3) S**

Prerequisites: Drama 152, English 151 and 181 or equivalent. Intensive study of one master playwright or period in the history of the theater. May be repeated once for credit.

**275. Advanced Studies in Theater Practice (3) F, SS**

Prerequisites: One year of upper division study in the area of specialization and consent of the instructor. Studies in acting, directing, design, costume, lighting, playwriting, and theater management. May be repeated for a total of 6 units, but no more than one area per semester may be attempted.

**298. Project or Thesis (1-4) F, S, SS**

Prerequisite: Drama 200, and consent of the department chairman. Preparation, completion and submission of an acceptable thesis or creative project in partial fulfillment of the requirement for the master's degree.

## ECONOMICS

Professors: Palmer, P., Powell, J. R.

Associate Professors: Simonson, Strain.

Assistant Professors: Davis, Dvorak, Puckett, Wheeler.

### LOWER DIVISION

**1A, B. Principles of Economics (3,3) F, S**

1A includes money and banking, price changes, national income analysis, business cycles. 1B includes price theory, allocation of resources, distribution of income. Transfer students with one-semester credit in the principles of economics should consult an adviser with respect to the completion of the year sequence.

**54. American Economic Institutions (3) F, S**

A survey of the development, functioning and significance of economic institutions in the American way of life. The course is designed for nonmajors who desire to get economic perspective without an intensive or technical investigation.

### UPPER DIVISION

**100. Fundamentals of Economics (3) F, S, SS**

Designed for nonmajors. Presents basic training in economics for social studies teachers or citizens who wish to exercise a reasoned judgment about economic issues

in public affairs. Content generally same as Economics 1A, B, in condensed form, with technicalities minimized. Not open to students with credit in Economics 1A or 1B.

**108. Development of European Economic Institutions (3) S**
Economic processes in the development of Western economic institutions. Particular emphasis on private property, the profit motive, the price system, free enterprise, and the corporation. Application of economic principles to the study of the development of capitalism.

**112. Intermediate Economic Theory (3) F, S**
Prerequisite: Economics 1A, B. Analysis of economic concepts and their applications to business situations. Emphasis on supply and demand analysis, costs of production, variations of competition and monopoly, revenues, prices, profits and losses, and other aspects of the operations of the business enterprise.

**113. National Income Analysis (3) F, S**
Prerequisite: Economics 1A, B. Determinants of levels of income, employment, and prices; of secular and cyclical changes in economic activity; and of the effects of public policies upon aggregative economic experience.

**114. Introduction to Econometrics (3) F**
Prerequisites: Economics 112, 113, Mathematics 1 or equivalent, and Sociology 65 or Business 110. Elementary mathematical expression of economic theory. Combined use of mathematics and statistics to solve economic problems. Use of econometric models for formulating economic policy.

**120. Government and Business (3) S**
Prerequisite: Economics 1B or 100. Basic American policy of maintaining competition to control economic behavior, with some consideration of alternative policies. Case studies of specific industries are emphasized.

**122. Economic Development (3) S**
Prerequisite: Economics 1A or 100. Principal determinants of economic development. Influence of these determinants in the past. Problems associated with the acceleration of development in poor countries and the maintenance of a suitable rate of development in rich countries.

**126. Consumer Education (3) F, S, SS**
The consumer's expenditure out of a limited income; his preferences; his budget allocation for food, clothing, housing, insurance, entertainment, etc.; efforts to influence his choice through advertising; the place of habit in purchasing; the consumer movement; and the consumer and public policy.

**130. Money and Banking (3) F, S, SS**
Prerequisite: Economics 1A or 100. The nature and functions of money and its relation to prices; the monetary system of the United States; the functions of banks, bank credit, foreign exchange and monetary control.

**136. Agricultural Economics (3) Offered on adequate demand**
Prerequisite: Economics 1B or 100. The description and analysis of the continuing economic problems which face the American farmer, such as: financing, marketing, overproduction, conservation, pricing, and regionalism. An investigation is made of the organizations and government policies which have arisen to aid the farmer in meeting these and other problems.

**137. International Economics (3) F**

Prerequisite: Economics 1A and 1B, or 100. International trade and exchange rate theory. Types of trade control: tariffs, quotas, exchange manipulation, monopolies. Basic U.S. and European commercial policies since 1930.

**138. Social Insurance (3) S**

Analysis of institutions developed as protection against major hazards to family income, including death, sickness or disability, retirement, and unemployment, with particular reference to economic effects of existing or proposed social insurance systems.

**141. Business Cycles (3) F, S**

Prerequisite: Economics 1A or 100. The business cycle, its characteristics and economic consequences; forecasting general business conditions; proposals for modifying the business cycle.

**145. History of Economic Thought (3) F**

Prerequisite: Economics 1A and B or 100. The evolution of economics as a science. Doctrines of the different schools of thought by a study of the contributions of outstanding economists.

**147. Comparative Economic Systems (3) F, S**

A study of the three primary economic systems: socialism, communism and capitalism. Emphasis is placed upon the making of economic decisions, the organization of production, the mechanism of exchange, the banking and investment institutions, the status of labor and the distribution of income.

**151. Public Finance (3) F**

Prerequisite: Economics 1A, B, or 100. The sources of revenues and types of expenditures of our federal, state and local governments. Emphasis on government taxing and spending policies and their effect upon production, employment, price level and distribution of income.

**154. Economics of Transportation (3) F**

Prerequisite: Economics 1B or 100. The study of the economic, institutional, and historical factors determining the transportation system of the United States, the various agencies of transport, their rates and rate structure. Problems and policies of railroad, highway, water, air and pipeline transportation. Current development of a national policy for transportation.

**165. Labor Economics (3) F, S**

Prerequisites: Economics 1AB or 100. Manpower resources and their utilization, with particular reference to labor unions, collective bargaining, and related public policies. Effects of these institutions on production, employment, prices, and patterns of income distribution.

**167. Labor Legislation (3) S even years**

Prerequisite: Economics 165. The legal institutions aimed at control of relations between employers and employees, with particular reference to the changing legal status of labor unions. Emphasis on analysis of the economic effects of public policies.

**192. Public Utilities (3) F**

Prerequisite: Economics 1B or 100. The theory of public utility rate-making. Valuation and the rate of return. Rate-making techniques. Special problems of electric, gas, telephone and urban transit utilities. Federal and state regulatory

agencies. The Tennessee Valley Authority and other regional multiple-purpose projects, with special emphasis on the power problems of the West.

### GRADUATE DIVISION

**230. Monetary Theory (3) S**

Prerequisite: Economics 130. An investigation of the evolution of monetary theory and experiments in monetary policy. An analysis is made of the relationship of money and its velocity upon income and employment, with an emphasis upon the monetary policy for the correction of economic instability.

**299. Advanced Price Analysis (3) F even years**

Prerequisite: Consent of the instructor. The examination of selected theoretical problems in economic analysis. Typical problems are those involved in: the theory of demands; the pricing of the factors of production; the analysis of bilateral monopoly, imperfect competition, particular equilibrium, and general equilibrium.

## EDUCATION

### AUDIO-VISUAL

Professors: Cockrum, Gramlich.

Associate Professors: Brent, Timmons, Vaughan.

Assistant Professor: Johnson, R.

### EDUCATIONAL ADMINISTRATION

Professors: Sehmann, Van Dyke, Williams, S., Young, W.

### EDUCATIONAL PSYCHOLOGY AND SOCIAL FOUNDATIONS

Professors: Christensen, Johnson, C., Martinson, Tilden, Warner.

Associate Professors: Bassham, Crossan, Fogg, Graetz, Hamel, Orpet, Poole, Revie, Shaver, Stacker.

Assistant Professor: Glasser.

Lecturer: Blackman.

### ELEMENTARY EDUCATION

Professors: Burk, Nagle, Perry, L., Phearman, Thompson, O.

Associate Professors: Johnston, Johnstone, Myers, Rolfe, Roster.

Assistant Professors: Canfield, Gensley, Krich, Jackman, Leigh, Mugge, Pollach, Reince, Schulze.

Lecturer: Bennett.

### SECONDARY EDUCATION

Professors: Anderson, R., Fisher, Garver, Gorow, Kinsman, McNaughton, Moore, W.

Assistant Professor: Ziff.

### UPPER DIVISION

**A. Fundamentals of Arithmetic (0) F, S, SS**

Designed to offer teachers an opportunity to review, diagnose, and correct weaknesses in fundamentals of computation and problem solving. Counts 1 unit toward the student's semester load but does not give unit credit toward graduation. Open to lower division as well as upper division students.

**5. Fundamentals of Spelling (0) F, S, SS**

Designed to develop teacher competencies in spelling and handwriting. Individual difficulties and deficiencies are diagnosed. Remedial processes are employed to develop fundamental skills. Counts 1 unit toward the student's semester load but does not give unit credit toward graduation. Open to lower division as well as upper division students.

**103. Principles and Curriculum of Elementary Education (2) F, S, SS**

An introduction to the field of elementary education, kindergarten through the eighth grade, with emphasis upon the scope, function, and place of the elementary school in American society. Considerable stress upon accepted principles of teaching and trends in curricular organization, including the practices and administration of, and teaching in, the modern rural and urban elementary school.

**104. Principles and Curriculum of Secondary Education (3) F, S, SS**

The development, scope, function and place in the system of public education of elementary and secondary schools. Consideration of rural and urban schools, vocational education, adult education, special school programs, auxiliary agencies, and the teacher as a professional person. Attention to the curriculum in the secondary school: typical course offerings in the various departments, the foundations of curriculum, and the strengths and weaknesses of the various curricular alternatives.

**105. Child and Adolescent Growth and Development (3) F, S, SS**

The physical, mental, emotional, and social growth and development of the individual, especially during the first two decades of life; social forces as they affect behavior; mental hygiene and personality development; techniques of studying children and adolescents.

**107. Educational Psychology (2) F, S, SS**

Prerequisite: general psychology. The course deals with such matters as the modifiability and educability of the human organism at different levels of maturity, the nature and different kinds of learning, arranging the learning situation, motivation, individual differences, transfer, and emotional climate.

**110. Tests, Measurements and Evaluation (2) F, S, SS**

The essential principles of measurement and evaluation in the elementary and secondary schools; the determination, meaning and use of the most fundamental statistical concepts as they apply to problems dealing with measurement and evaluation; the construction, interpretation and use of standardized and, especially, teacher-made tests.

**112. History and Philosophy of Education (3) F, S, SS**

An introductory survey of the historical and philosophical foundations of education, from ancient times to the present.

**116. Organization and Administration of Distributive Education (3)**
**Offered on adequate demand**

Prerequisites: Economics 1AB, and Business 125 or equivalent. Philosophy and objectives of distributive education, Federal and State relationships in distributive education; administration of the program; techniques of program development, leadership and supervision in both the adult and cooperative programs in distributive education.

**117. Curriculum Development in Distributive Education (3) Offered on adequate demand**

Prerequisites: Economics 1AB, and Business 125 or equivalent. Curriculum construction; content organization; evaluation, preparation, and selection of instructional materials; and application of instructional techniques. This course includes the analysis of distributive education curriculums in high school, junior college, and adult programs.

**123. Kindergarten-Primary Music (2) F, S, SS**

Prerequisite: Music 36. Study of aims, teaching procedures, and the organization of materials for kindergarten-primary grades with special emphasis on singing, rhythms, and listening activities, and the use of simple instruments. Instruction in playing simple piano accompaniments and folk songs is included.

**124. Elementary School Music (2) F, S, SS**

Prerequisite: Music 36 or equivalent. Study of aims, methods, and organization of materials and activities in music for the elementary school with special emphasis on developing skills in the use of state and locally adopted music texts.

**125. Methods and Organization in Physical Education in the Elementary Schools (2) F, S, SS**

Prerequisite: Physical Education 25A, B, or equivalent, for elementary education majors; Physical Education 50 or equivalent for physical education majors. Principles, aims and objectives of physical education in the elementary schools. Practice in the teaching techniques used in elementary school physical education.

**127. Teaching Foreign Languages in Secondary Schools (2) F, S**

Methods of teaching French, German, Latin or Spanish, and of supervising cocurricular foreign language activities in secondary schools. Required for all secondary credential candidates with a foreign language teaching major, the semester before student teaching.

**128. Teaching The Social Sciences (2) F, S**

A study of the scope and content of the social sciences curriculum in the secondary school and junior college. Required for all secondary and junior college credential candidates with a teaching major in the social sciences. Concurrent with student teaching.

**132. Mental Hygiene (2) F, S, SS**

A course dealing with psychological factors that are important for the development of mental health. Emphasis is on the mental hygiene implications for teaching, group work, and interpersonal relationships in home and school. (Not open to students with credit in Psychology 132).

**139. Romance Language Workshop (4) SS**

Designed for the consideration of the problems of foreign language teachers' materials; such as films, tapes, records, foreign periodicals and departmental organs: problems of phonetics and the presentation of phonetic materials available; discussion of literary and cultural movements as related to foreign language teaching; basic Romance philology and general linquistics. Elective credit only. (Lecture and laboratory.)

**141. Improvement of Instruction in Outdoor Education (3) SS (PSS 1964)**

Prerequisite: Senior or graduate standing and consent of the instructor. The philosophy, curriculum, method and organization of the outdoor school. The course is planned primarily for those actively engaged in some phase of outdoor education.

**142. Laboratory Experiences in the Outdoor School (1) SS (PSS 1964)**
Prerequisite: Education 141 or equivalent and consent of the instructor. Laboratory experiences including group living, outdoor science and conservation, healthful living, purposeful work experiences, spiritual values and leisure time activities in the environment of an outdoor school.

**143. Foundations in Mathematics: Emphasis in Geometry (2) SS**
Prerequisites: Baccalaureate degree, valid elementary teaching credential, teaching experience. Plane and solid configurations considered as sets of points; relationships among geometric configurations; interpretations of geometrical relationships and applications at levels appropriate for grades one to eight; geometrical construction and use of various geometrical instruments; measurement and scale-drawing; basic ideas and simple applications of logic in geometry.

**144. Unifying Concepts in the Mathematics of Number (2) SS**
Prerequisites: Baccalaureate degree, valid elementary teaching credential, teaching experience. Emphasis is placed upon the unification and integration of mathematical ideals and procedures through the development of sets, number and number systems, mathematical conditions, and mathematical relations.

**145. Implications of New Mathematics for the Elementary School Mathematics Curriculum (2) SS**
Prerequisites: Baccalaureate degree, valid elementary teaching credential, teaching experience. Designed to give the student an opportunity to explore, evaluate, and utilize professional literature, recent curriculum proposals, field experiences, and demonstrations of accepted teaching procedures. Particular emphasis is given to relating his understanding to learning, curriculum improvement, teaching competence, and the continuous growth of mathematical understandings of children and youth.

**151. Reading in the Elementary School (2) F, S, SS**
Prerequisites: Education 103, 105, 107; completion of any required remedial courses. Principles, techniques, and procedures in developing a basic program in reading instruction throughout the primary, intermediate, and upper grades. Course includes: nature of the reading process, development of reading readiness, initial stages of learning to read, period of rapid progress in reading, period of refinement of reading skills, appraisal of growth in reading, history of reading instruction, and observation in elementary schools.

**153. Aero-space Education Workshops (4) SS**
This course provides opportunities to prepare instructional materials for classroom use and to become acquainted with the manner in which aero-space materials can be used to motivate learning at all grade levels. This course will not apply toward the masters degree in education.

**156. Methods and Curriculum in Home Economics Education (2) F, S**
Trends in home economics education; outstanding curricular developments; guides in developing broad programs; cooperation within the school, recent developments in methods. The class will be organized on a workshop basis to fit in with individual needs. Preparation of teaching materials for specific situation.

**158. Arithmetic in the Elementary School (2) F, S, SS**
Prerequisites: Education 103, 105, 107; completion of any required remedial courses. Objectives, content, materials, pupil experiences, and methods of instruction and evaluation in arithmetic. The nature and scope of arithmetic in the elementary school room.

**159. Social Studies and Language Arts in the Elementary School (4) F, S, SS**
Prerequisites: Education 103, 105, 107; completion of any required remedial courses. Function, nature and scope of the social studies and the language arts programs; principles and patterns of program; development of teaching units; adapting instructional and community resources to children's needs; evaluation of learnings; demonstrating units. Consideration is given to the integration of language arts and social studies, in addition to specific instructional procedures in language arts. Students who plan to take student teaching should enroll in Education 151 and Education 158 during the same semester. Observation one morning for nine weeks will be arranged in conjunction with this course.

**160. Kindergarten-Primary Methods (3) F, S, SS**
Prerequisites: Education 103, 105, 107; completion of any required remedial courses. A study of instructional materials and teaching procedures in the early elementary school; a critical analysis of current activities in the kindergarten-primary grades. Includes series of arranged observations in public schools.

**161. Principles and Curriculum in Business Education (2) F, S, SS**
A study of the major principles and trends in business education directed toward an understanding of the purposes of the business education program; the requirements for general educational and vocational curriculums; and the basic principles needed to achieve a well-integrated business education program. Designed for prospective teachers of business education subjects.

**162. Curriculum and Methods of Music Education (3) F**
Prerequisite: senior standing. Should be taken before enrolling for student teaching. Objectives, curriculum, materials, and procedures in music education; survey of current practices in teaching music in elementary and secondary schools, including a study of music in relationship to the total school program. Special attention to instrumental and vocal music program of junior and senior high schools. Student teaching procedures and problems are surveyed.

**163. Curriculum and Methods in Industrial Arts (3) F**
Objectives, curriculum, materials and procedures in industrial arts education with emphasis on current practices in teaching industrial arts and the relationship of the program to the total school program.

**164. Teaching Methods in Bookkeeping and General Business (2) F, S, SS**
Secondary school instructional methods and materials used in bookkeeping, general business and general business subjects. Preparation of a resource unit. New developments in field of business and education including use of advisory committees, cooperative programs, and current research in the field.

**165. Principles, Curriculum, and Methods in Secondary Education (6) F, S**
Development, function, place, support, organization, and responsibility of the public elementary and secondary schools; curricular offerings in department, auxiliary agencies, and special schools; and methods of instruction. Lecture, discussion, observation, and demonstration. Should be taken the semester preceding student teaching. This course combines Education 104 (3 units) and 166 (3 units).

**166. Secondary School Methods (3) F, S**
Prerequisite: Education 104. Designed for students who expect to enroll in student teaching. A study of classroom procedures and techniques in the secondary school. Observation in the public schools is required as a part of the course. Fulfills requirements for general methods for the Junior High School and General Secondary Credentials.

**167. Curriculum and Methods of Art Education (3) F, S, SS**

Prerequisite: Acceptance in a program of teacher education. Objectives, curriculum, materials, and procedures in art education; a survey of historical and current practices in art teaching with emphasis on the relationship of art to the total school program.

**168. Education of Exceptional Children (3) F, S, SS**

Prerequisites: Education 105 and 107.

The psychology and education of children who deviate from the average physically, mentally, and emotionally. Special educational services necessary to promote their maximum development. Applicable to requirements for the credential to teach exceptional children and the pupil personnel services credential.

**169. Workshop in Education of Mentally Retarded Children (6) SS**

Prerequisite: At least one year experience teaching mentally retarded children. The problems of education, psychological evaluation, medical diagnosis, and social adjustment of the mentally retarded will be considered. Observation in several community agency programs and supervised teaching will be offered.

**170. Curriculum and Methods of Teaching Mentally Retarded (2) F, SS**

Prerequisites: Education 103 or 104, 168, and 187.

Methods of teaching academic subjects to the mentally retarded; development of special skills and curriculums to meet their needs. Meets credential requirement for teaching mentally retarded children.

**171. Education of the Gifted Child (2) F**

Prerequisite: Education 105. A course dealing with the characteristics of the intellectually gifted child, and methods for meeting his needs. Methods of curriculum planning, program development, work with parents, use of community resources, and guidance will be stressed.

**173. Teaching of Speech and Drama in the Secondary Schools (2) F, S**

Should be taken the semester before student teaching. Philosophy, principles, and methods of teaching speech and drama. Includes problems of teaching the various aspects of the speech arts, course planning, evaluation of oral performances, and supervision of related extra-curricular activities.

**174. Methods of Teaching Typewriting (1) F, S, SS**

Instructional methods and new developments in teaching of typewriting. Methods for building accuracy, speed, and increasing production; work standards; classroom equipment and materials. (Meets two periods weekly.)

**175. Curriculum and Methods in Teaching Physical Education (3) F, S**

Limited to students qualified to enroll in student teaching the following semester. Designed to prepare the major and minor for student teaching at the secondary level. Two hours lecture (including tests, measurement and evaluation in physical education); and three hours laboratory experience in supervised teaching. Student is assigned to an instructor of a physical education activity course.

**176. Methods of Teaching Office Practice and Business Machines (1) F, SS**

Prerequisite: Business 102. Instructional methods and materials in teaching of office practice and business machines. Includes class organization plans, equipment needs, cooperative training, standards and evaluation.

**177. Methods of Teaching Secretarial Subjects (2) F**

Prerequisites: Business 2A, B, and English 116. Instructional methods and materials in the teaching of shorthand, transcription, business English, filing, and sec-

retarial procedure. Includes factors affecting speed building and standards and grading in shorthand and transcription.

**178. Principles of Counseling and Guidance (2) F, S, SS**
Prerequisites: Education 105 and Education 110 (or Psychology 52 and 155 for psychology majors). A survey course of the basic principles of guidance. The course includes purposes, functions, scope, and administration of the pupil personnel program; the teacher as counselor; personnel involved; evaluation of guidance services. Meets requirements for the general secondary, supervision and administration, and pupil personnel services credentials.

**180. The Teaching of English in the Secondary Schools (2) F, S**
A foundation for students preparing to teach the language arts in secondary schools. Considers the nature of language growth in the individual; the social role of language and literature; problems of reading, discovering pupil needs in the language arts; classroom experiences in reading, writing, listening and evaluation of student growth in language skills.

**182. Programmed Instruction (2) F, S, SS**
Prerequisites: Education 107, 185, or equivalents, or consent of instructor. Designed to present the principles of programmed learning and their educational implications. Laboratory practice will be provided to include programming and the manipulation of Teaching Machines. Study will include a review of research and related literature, and a survey of new developments. (Lecture 2 hours, Laboratory 1 hour.)

**183. Child Welfare and Attendance (2) F, S, SS**
Prerequisites: Education 105, 107, 178 and 184. Place and functions of child welfare and attendance services in California public schools. An introductory survey of: attendance services in the school system; forms and procedures for accounting, recording and referral services; liaison with community agencies; interview and correspondence techniques used to contact parents and children; truancy and maladjustment; miscellaneous attendance services. Meets specialized child welfare requirement for the pupil personnel services credential.

**184. Legal Aspects of Child Welfare and Attendance (2) F, S, SS**
Prerequisites: Education 105, 107 and 178. Laws and legal procedures relating to school attendance and children's welfare. A comprehensive summary of legal provisions for children found in: the California State Education Code; in the Welfare and Institutions Code, in federal statutes relating minors to Child Labor Laws; the legal status of children, legal aspects of parent-child relationships, legitimacy; adoption; guardianship, delinquency and correction. Meets general background requirement for the pupil personnel services credential.

**185. Audio-Visual Methods (2) F, S, SS**
The scope and function of audio-visual aids in teaching, with special emphasis on methods of using audio-visual materials and equipment to improve instruction; sources of materials and operation of machines.

**187. Mental Deficiency (2) F, SS**
Prerequisites: Education 105, 107, 168. Study of causes, diagnostic problems and procedures, required care, and appropriate educational provisions for mentally deficient children. Applicable to credential for teachers of exceptional children.

**213. Seminar in Current Problems and Issues in Education (2) F, S, SS**

Prerequisites: Education 297 and teaching experience. Intensive study of current developments in education. The problems and issues involved in those developments and an analysis of the factors as they pertain to classroom teachers as well as to administrators.

**214. Comparative Education (3) F, S**

A comparative study of present educational systems, educational problems and policies, found throughout the world today. The basic role education plays in the cultural, political and social development of that nation and its relationship to the United States in developing international understanding and favorable attitudes between peoples of diverse race, language and cultures in different parts of the world today.

**217. Advanced Educational Psychology (2) F, S, SS**

Prerequisites: Education 105, 107, and 168. Teaching experience desirable. Advanced study of learning problems in classroom situations. Particular stress placed upon learning needs of exceptional children, and evaluation of varied educational provisions for them.

**220. School Housing Administration (2) F, S, SS**

School planning problems; personnel involved—federal, state and local; community surveys: integrating curriculum with building and site plans; legal and financial aspects; and maintenance and operation. Enrollment in this course contingent upon the approval of a member of the Administrative-Supervision Credentials Committee.

**222. The Junior High School (2) SS**

This is a course devoted to the problems of teaching in the junior high school. The characteristics of the junior high school student, the philosophy and curriculum of the junior high school, and methods suitable to this age level will be studied and discussed. Experienced junior high school teachers will have an opportunity to pursue problems of special interest to them.

**224. The Junior College (2) F, S, SS**

Prerequisite: Consent of instructor. The history, development, philosophy, functions and objectives of junior colleges in America, with particular emphasis on California; the legal basis, methods of financing and patterns of organization of junior colleges; characteristics of late adolescents and adult students; curriculum patterns, especially General, Vocational and College-parallel; student services and community relations.

**228. Organization and Administration of Secondary Schools (3) F, S, SS**

A study of the factors involved in organizing and administering a secondary school. The role of the administrator, teacher and student personnel; curriculum organization, schedule making, student organizations, student accounting, management procedures and accreditation. Enrollment in this course contingent upon the approval of a member of the Administrative-Supervision Credentials Committee.

**231. Supervision of Instruction in Elementary Schools (3) F, S, SS**

Problems for study are concerned with principles of supervision, elementary school objectives, establishing supervisory programs, curricular development, studying pupils, evaluating the teacher, improving instruction, and the appraisal of supervision in the development of educational leadership. Enrollment in this course contingent upon the approval of a member of the Administrative-Supervision Credentials Committee.

**232. Supervision of Instruction in Secondary Schools (3) F, S, SS**
Problems for study are concerned with supervisory programs, improving instruction, evaluating teaching, studying pupils and participation in curriculum leadership. The basic problems of supervisory-teacher relationships in a democratic organization are thoroughly analyzed. Enrollment in this course contingent upon the approval of a member of the Administrative-Supervision Credentials Committee.

**234. Administration of Audio-Visual Programs (2) F**
Prerequisites: Education 185 and 196. The functions and operations of audio-visual services in schools. Relationship and mutual responsibility between the colleges and universities and the elementary and secondary schools. Functions of audio-visual materials program will include implications and problems of radio and TV; qualifications and duties of staff; selection and evaluation for purchase of materials and equipment; school plant requirements; unit cost; problem of developing the program; measures for appraising adequacy and effectiveness; in-service training. Integrated field work.

**236. Preparation and Utilization of Audio-Visual Materials II (2) F**
Prerequisites: Education 185 and 189. Techniques of slide and filmstrip production. Theory and laboratory practices in planning story boards, content outlines; basic skills necessary for copying, developing, and printing. Problems inherent in production of materials for television use.

**238. Audio Problems and Techniques (2) S**
Prerequisites: Education 185 and 189. Selection and utilization of appropriate equipment and materials, development of techniques required for reproduction of sound. Selection and placement of microphones, use of mixers, equalizers, filters, amplifiers, speakers, tapes, including dubbing, editing, micro and standard groove disc recording, with special attention in laboratory phase. Exploration of audio problems peculiar to radio and television utilization in classroom.

**240. Seminar in Audio-Visual Education (2) S**
Prerequisites: Education 185, 189 and 196. Research and literature, history, organization, leadership, theories of communication and perception, experimental developments in audio and visual equipment, analysis of experimental techniques in utilization of materials and equipment. Theory and research concerned with motivation and audience in terms of communicative and learning process. Role and contribution of audio-visual communication and materials. Research in areas of radio and television.

**242. Instructional Film Production (3) F, SS**
Prerequisites: Education 107, 185, 189, 236, or equivalents. Major emphasis is directed to the changing nature of the instructional film to meet new concepts of perception, the learner, and how people learn—Topical selection, formulation of film objectives, filming and narrative scripts, filming, direction, cutting, editing, scoring, preproduction testing, and evaluation.

**255. Problems in the Teaching of Reading (2) S, SS**
Prerequisites: Education 151 or equivalent, and teaching experience. Advanced study of teaching procedures, trends, and research in reading in the elementary school with consideration given to problems encountered in reading instruction, diagnostic techniques, and remedial procedures. Each student will study intensively a problem originating from his own experience in the classroom.

**256. Problems in Teaching Arithmetic in the Elementary School (2) F, SS**
Prerequisites: Education 158 or equivalent, and teaching experience. Exploration and review of recent research dealing with instruction in arithmetic, appraisal of

newer methods and materials. Emphasis on diagnostic and remedial problems in the teacher's own classroom.

**257. Problems in Teaching Language Arts in the Elementary School (2) F, SS**

Prerequisites: Teaching experience and a course in the teaching of language arts in the elementary school. Advanced study of teaching procedures in the language arts with emphasis on the problems confronting the teacher in the classroom at various grade levels. Techniques for improving oral and written communication, spelling and handwriting; diagnostic and remedial techniques; and evaluation of achievement and individual pupil progress in the language arts.

**260. Problems in Kindergarten-Primary Education (2) F, SS**

Prerequisites: A minimum of one year of teaching experience in kindergarten or in primary grades, and consent of instructor. Designed for experienced teachers at the kindergarten-primary level who wish to extend their professional preparation. Recent research and developments in the area of education of the young child will be considered through individual and group study. Emphasis will be placed on selection and guidance of curriculum activities and materials, and on methods and teaching problems encountered in their own classrooms.

**262. Seminar in Kindergarten-Primary Education (2) S, SS**

Prerequisites: Kindergarten-primary credential or Education 102, 105, 107, 160; teaching experience desirable. Designed to give kindergarten-primary teachers an opportunity for professional growth and competency through examination and evaluation of existing research at early childhood education level; techniques of dissemination of such research to staff and parent groups.

**265. Group Processes in Education (2) S, SS**

Prerequisite: Teaching experience for both elementary and secondary teachers. A study of recent findings regarding behavior of human beings in group situations and application of these findings to methods of instruction, to school activities and to curriculum. Studies in group dynamics and sociometric techniques will be considered. Problems of interpersonal relations within groups and between groups which differ will be considered. Presentation based on problems encountered by experienced teachers.

**270. Principles of Curriculum Development (3) F, S, SS**

A study of the psychological, sociological, and philosophical foundations of curriculum patterns, with consideration of the strength and weaknesses of each pattern; practice in techniques of discussion of curriculum problems; relationship of curriculum study and in-service education. Includes curriculum development at both elementary and secondary levels.

**271. Advanced Studies in Secondary School Curriculum (3) F, S, SS**

Prerequisites: Teaching experience, Education 104 or 165 or equivalent. Study of recent experiments, innovations, and trends in secondary school curriculum, with attention to forces, theories, and practical consideration; critical comparison with traditional programs and offerings. Group and individual examination of recent literature, research, and courses of study in the various subject fields and in aspects of curriculum such as remedial and honors courses, advanced placement programs, work experience and articulation. (Work in curriculum library.)

**272. Problems in Teaching the Social Studies in the Elementary School (2) F, SS**

Prerequisites: Education 159 or equivalent, and teaching experience. Advanced study of teaching procedures in elementary social studies with consideration of problems encountered in implementing local courses of study, defining and achieving objectives, selection and use of materials and experiences adapted to the needs

and capacities of individual pupils and the group, development of concepts, teacher-pupil planning and evaluation, dramatic play, construction, research, and education for citizenship in a democracy. Individual and group attack on problems presented by the instructor and members of the class.

**276. Techniques and Resources for Home-School-Community Relations (2) F, SS**

Prerequisites: Education 178 and teaching experience, or consent of instructor. The techniques of resources in promoting effective working relationships among the home, school, and community agencies. Emphasis on the study and use of techniques to foster close home-school relations and the effective utilization of community agencies. Meets requirement for the Pupil Personnel Credential.

**277. Seminar in Techniques of Counseling and Guidance in the Elementary School (2) F, S, SS**

Prerequisites: Education 178 or equivalent; elementary teaching experience desirable. A course designed to meet the needs of elementary school personnel who are interested in guidance. The course includes the study of both informal and standardized guidance instruments, the development and use of school records, study of special needs and counseling techniques. Recommended for master of arts candidates interested in elementary education. Meets requirement for pupil personnel services and elementary administration credentials. Not open to students who have had Education 278.

**278. Seminar in Techniques of Counseling and Guidance in the Secondary School (2) F, S, SS**

Prerequisites: Education 178 or equivalent; secondary teaching experience desirable. The tools and techniques used by the counselor at the secondary school level; selection and use of guidance instruments; interviewing; case studies; directive and nondirective counseling; group guidance. Meets requirement for the general secondary, secondary administration and pupil personnel services credentials. Not open to students who have had Education 277.

**279. Problems and Practices in Educational-Vocational Guidance (2) F, S, SS**

Prerequisite: Education 277 or 278 and Psychology 155, or consent of instructor. Current theories and research related to educational-vocational development; intensive study of case data illustrating problems and practices in guidance; informational and referral resources supplementing the school services. For M. A. and Pupil Personnel Credentials candidates. (Not open to students with credit in Education 179.)

**280. Individual Pupil Diagnosis (2) F, S**

Prerequisites: Psychology 165 and 166. The administration and interpretation of diagnostic devices including tests used in the diagnosis of clinical and learning difficulties. The diagnostic procedures considered will be applied in complete case studies. (Not open to students with credit in Psychology 256).

**281. General Case Practice and Field Work (3) F, S**

Prerequisites: Education 168, 277, or 278, Psychology 150; for school psychometrist and psychologist trainees, Psychology 165; completion of at least 6 units of work for pupil personnel services credential at the college; consent of Education Credentials Committee. Application for field work should be made by October 15 for spring semester or by March 1 for following fall semester. Practical experience with children under supervision of school counselors, child welfare and attendance workers, school psychometrists and psychologists. Opportunity provided to obtain knowledge and experience in various phases of pupil personnel work. (Not open to students with credit in Psychology 289).

**282A, B, C. Specialized Case Practice and Field Work (2-4) F, S**
Prerequisites: Education 281; completion of at least 6 units of work for pupil personnel services credential at the College; consent of Education Credentials Committee. Application for field work should be made by October 15 for spring semester or March 1 for the following fall semester. Additional case practice will be provided in each of the following areas: (a) school counseling, (b) child welfare and attendance, and (c) school psychology. Each area of specialization may be taken for four units in one semester if student is not employed full time, or for two units each during two semesters. (Not open to students with credit in Psychology 290A, B, C).

**286. Advanced Studies in Secondary School Instruction (3) F, S, SS**
Prerequisites: Teaching experience; Education 165 or 166 or equivalent. An intensive study of the current problems of teaching in secondary schools, emphasizing the application of scientific research to the solution of these problems and an analysis of new emphases, media, and techniques with their classroom application in secondary schools.

**290. Seminar in Current Problems in School Administration (2) S**
Prerequisites: A valid regular teaching credential or Education 201, 207 and 208, 297. Recent research and information in such areas as: school organization, the school program, personnel, financing, business management, professional, and community relations.

**291. Field Work in Administration and Supervision of Elementary Education (3) F, S**
Prerequisite: Approval by the Administration Supervision Credentials Committee. Written application should be made by October 15 for spring semester and March 1 for the fall semester. On-the-job participation in the solution of problems in administration and supervision. Final course in the professional preparation sequence; individual conferences arranged.

**292. Field Work in Administration and Supervision of Secondary Education (3) F, S**
Prerequisite: Approval by the Administration Supervision Credentials Committee. Written application should be made by October 15 for the spring semester and March 1 for the fall semester. On-the-job participation in the solution of problems in administration and supervision. Final course in the professional preparation sequence; individual conferences arranged.

**294. Diagnostic and Remedial Reading Techniques for Secondary Schools (3) F, S**
Prerequisite: Consent of instructor. Diagnostic, remedial and corrective treatment of reading and spelling at junior and senior high school level. Major emphasis on diagnosis of case disabilities, and the materials, techniques and methods for their correction in the classroom situation as well as in a clinical setting. Each student will be expected to study intensively a problem originating from his own experience in the classroom.

**297. Seminar (2) F, S, SS**
The definition, and methods of solution, of problems in the field of education with emphasis on the descriptive method of research and use of the library. Required of all master's degree candidates in education.

**298. Project or Thesis (1-4) F, S**
Planning, preparation, and completion of a project or thesis related to this field. Limited to graduate students who have taken or are taking Education 297. Optional.

# ENGINEERING

## LOWER DIVISION

**1. Introduction to Engineering (1) F, S**

Required of all first semester engineering freshmen. Engineering as a profession and its historical development, function, opportunities and responsibilities. Education, experience and personal characteristics necessary for success in the profession. Lectures by staff and by engineers from industry.

## UPPER DIVISION

**101A, B. Engineering Activities (0,0) F, S**

Lectures and discussions by faculty and invited speakers and occasional motion pictures. Participation by students in activities of engineering organizations. Required of junior engineering students.

**190. Special Problems (1-3) F, S**

Prerequisite: Senior standing. Assigned topics in technical literature or laboratory projects and reports on same.

**199. Professional Practice (1) F, S**

Prerequisite: Engineering senior standing. Written and oral technical reports on current engineering developments. Licensing and other problems of the professional engineer. (Lecture 1 hour.)

# CIVIL ENGINEERING

## LOWER DIVISION

Professor: Neidengard.

Associate Professors: Chambers, King, Miller, H. T.

Assistant Professors: Dudley, Gouvis, Reed, W.

**C.E. 52. Engineering Materials (2) F, S**

Prerequisites: Chemistry 1A and Physics 1A (Physics 1A may be taken concurrently). Physical and chemical properties of engineering materials. Sources of raw materials and methods of extraction, beneficiating and processing of materials for industrial use. (Lecture, 2 hours.)

**C.E. 80. Analytical Mechanics I (Statics) (3) F, S**

Prerequisites: Mathematics 3B and Physics 1A. Application of the mechanics of equilibrium to force systems using analytical and graphical solutions of problems involving structures and machines. (Lecture, 3 hours.)

**C.E. 85. Surveying and Mapping (3) F, S, SS**

Prerequisite: M.E. 12. Theory and practice of plane surveying including the use of instruments. Measurement and keeping field notes of distances, angles, elevations, traversing and plane tabling. Plotting of surveying data as related to profiling contours and topography. Study and interpretation of maps relating to civil cartography. (Lecture 2 hours, field work 3 hours.)

## UPPER DIVISION

**C.E. 127. Engineering Analysis I (2) F, S**

Prerequisite: Math. 3D, Physics 1D. Application of differential equations and infinite series to the solution of engineering problems in such areas as heat flow, vibrations, and mechanics. Emphasis is placed on the setting up of problems as well as their mathematical solution. (Lecture, 2 hours.)

**C.E. 140. Fluid Mechanics (3) F, S, SS**
Prerequisite: C.E. 80. Properties of fluids, compressible and incompressible; fluid statics; measurements of flow in pipes, open channels; fluid machinery. (Lecture 2 hours, laboratory 3 hours.)

**C.E. 145. Higher Surveying (2) F, S**
Prerequisite: C.E. 85. Surveying computations, mapmaking, photogrammetry. Public lands, route, and topographic surveying. (Lecture 1 hour, fieldwork 3 hours.)

**C.E. 148. Engineering Geology (2) F, S**
Prerequisites: C.E. 52, 85. Physical geology, application to engineering structures, projects, earth movement, and construction materials. (Lecture 2 hours, special field trips by arrangement.)

**C.E. 154. Bituminous Materials (2) F, S**
Prerequisites: C.E. 156, 157 (may be taken concurrently). Asphalts, asphalt mixtures, design of asphalt pavings and coatings. (Lecture 1 hour, laboratory 3 hours, field trips.)

**C.E. 155. Structural Design (3) F, S**
Prerequisites: M.E. 125, 126. Detailed design of structural components in accordance with typical codes and specifications.

**C.E. 156. Concrete Technology (2) F, S**
Prerequisite: M.E. 125, 126. Concrete as a construction material. Composition, proportioning, testing, characteristics and properties of cement, aggregates and admixtures. Elements of proper construction methods, form design and pavement design. Concrete specifications and inspection. (Lecture 1 hour, laboratory 3 hours.)

**C.E. 157. Soils and Foundations (3) F, S**
Prerequisites: M.E. 125, 126, C.E. 148. Soil mechanics applied to engineering structures. Soil exploration, identification, classification, drainage stability, and bearing capacity. Includes soil laboratory for soil mechanics sampling, analysis and testing. Standard experiments in soils identification and properties. (Lecture 2 hours, laboratory 3 hours.)

**C.E. 159. Engineering Reports (2) F, S**
Prerequisites: English 1 and general education speech requirement. Engineering technical report writing, preparation, presentation, techniques, and practices. (Lecture 2 hours.)

**C.E. 167. Timber Design (2) F, S**
Prerequisite: C.E. 155. Application of timber to structural design. A study of the characteristics, advantages and limitations of wood as related to structural members. The design of members and their related connectors. (Lecture 1 hour, laboratory 3 hours.)

**C.E. 168. Statically Indeterminate Structures (2) F, S**
Prerequisite: C.E. 185. Methods of determining shear, moment, and deflections in statically indeterminate structures.

**C.E. 169A. Water Supply (3) F, S, SS**
Prerequisite: C.E. 140. Impounding, transmission, treatment and distribution of public and industrial water supplies. (Lecture 3 hours, field trips.)

**C.E. 169B. Sewerage (3) F, S, SS**
Prerequisite: C.E. 140. The collection, treatment and disposal of domestic and industrial sewage and dry wastes. Analysis of treatment processes: hydraulic design. (Lecture 3 hours, field trips.)

**C.E. 180. Open Channel Flow (2) F, S**

Prerequisite: C.E. 140. The theory and analysis of flow in open channels. Effect of transitions and other structures, back water curves and energy relationships. (Lecture 2 hours.)

**C.E. 185. Structural Analysis (3) F, S**

Prerequisites: M.E. 125, 126. Determinations of shear, moment, and deflections in statically determinate beams, trusses and bents.

**C.E. 186. Hydrology (2) F, S**

Prerequisites or co-requisites: C.E. 148, 157, 158. The fundamentals of hydrology; survey procedure in developing a water source, either surface or underground; basic economy problems in land acquisition; design of the system including impounding and transmission of the supply.

**C.E. 187. Engineering Contracts and Specifications (2) F, S, SS**

Prerequisite: Senior standing. Principles of contracts and specifications, codes, drawings, and estimates. Application of business law to engineering. (Lecture 2 hours.)

**C.E. 188. Engineering Photogrammetry (2) F, S, SS**

Prerequisite: C.E. 145. Principles of aerial photographs and their interpretation as related to cartography, triangulation, highway design, soil surveys, city planning and route location. Multiplex plotter, stereoplanograph and other photogrammetry instruments and techniques to be investigated. (Lecture 2 hours, field trips.)

**C.E. 189. Reinforced Concrete (3) F, S**

Prerequisites: C.E. 156, 157. Review of theories of elasticity and composite construction. Design of beams, slab systems, columns, walls and foundations. Elements of pre-stressing, ultimate strength, earthquake analysis, and brick and concrete masonry design. (Lecture 3 hours.)

**C.E. 191. Highway Engineering (2) F, S**

Prerequisite: Senior standing in engineering. Introduction to highway planning, location, design, economics, drainage, construction and maintenance of highways, streets and pavements. Basic types of pavements and paving methods and equipment. (Lecture 2 hours.)

**C.E. 194. Hydraulic Engineering (2) F, S**

Prerequisite: C.E. 180. Introduction to the application of hydraulic principles to the design of dams, water courses, water systems and their related structures and devices.

**C.E. 197. Municipal Engineering and Transportation (2) F, S, SS**

Prerequisites: Senior standing. Analysis of local and regional design for transportation, highways, services, utilities, parks, schools, housing, and all types of major construction; relation of zoning, community safety and defense. (Lecture 2 hours, field trips.)

**C.E. 198. Engineering Economy and Administration (3) F, S**

Prerequisite: Senior standing. Evaluation of engineering projects, construction costs, amortization, depreciation, and operating costs. Industrial and professional relations and ethics. (Lecture 3 hours.)

**GRADUATE DIVISION**

**C.E. 212. Theory of Plates and Shells (3) F, S**
Prerequisite: C.E. 168. Bending properties of (1) thin plates with small deflections, (2) thin plates with large deflections and (3) thick plates for rectangular and circular plates. General theory of cylindrical shells. (Lecture 3 hours.)

**C.E. 214. Similitude in Engineering (3) F, S**
Prerequisite: C.E. 187. Problems of model design and interpretation of model tests. Dimensional analysis. Design and analysis of scaled, distorted and dissimilar models. Design of experiments. Elements of regression. (Lecture 3 hours.)

**C.E. 216. Theory and Design of Foundation Structures (3) F, S**
Prerequisite: C.E. 157. Geological, soil mechanics, and structural aspects of foundation design. (Lecture 3 hours.)

**C.E. 218A. Advanced (Determinate) Structural Analysis (2) F, S**
Prerequisite: C.E. 168. Co-requisite: C.E. 212. Advanced analysis of statically determinate structures (cables, arches, truss and frames of variable cross-section) by analytical and graphical methods. Elastic displacement. Influence lines. Williot-Morh diagram. Miscellaneous application of graphical analysis. (Lecture 2 hours.)

**C.E. 218B. Advanced (Indeterminate) Structural Analysis (3) F, S**
Prerequisite: C.E. 218A. General methods of analyzing statically indeterminate structures. Least work. Stiffness methods. Moment distribution. Slope-deflection method. Column analogy. Epitomes in structural analysis. Collapse theory. (Lecture 3 hours.)

**C.E. 222. Advanced Highway Engineering and Planning (3) F, S**
Prerequisites: C.E. 188, 197. Analysis of highway administration, economics. Highway finance planning. Location selection. Investigation of materials and design of components. Highway development in materials, construction, equipment and maintenance. Preparation of documents. (Lecture 3 hours.)

**C.E. 224. Geometry of Highway Design (3) F, S**
Co-requisite: C.E. 222. Human and physical effects on size and shape of highway elements. Design of visible roadway elements. Specification allowances for economy, appearance and safety. Development of shape criteria. (Lecture 3 hours.)

**C.E. 226. Advanced Highway Materials and Laboratory (3) F, S**
Co-requisite: C.E. 222. Selection and testing of roadway materials and foundations. Analysis of the effects of admixtures and enrichment. Placement procedures. New materials and equipment. (Lecture and laboratory 3 hours.)

**C.E. 228. Advanced Soil Mechanics (3) F, S**
Prerequisites: C.E. 157, 188. Application of soils mechanics to stability of slopes, retaining walls and foundations. Frost action. Adverse seepage effects. Theory of stress analysis, plastic equilibrium, arching. Pile theory. (Lecture 3 hours.)

**C.E. 290. Advanced Civil Engineering Problems (2-6) F, S, SS**
Prerequisite: Completion of 16 units of approved master's program. Special advanced problems selected for investigation of literature and correlated to special problems for related analysis of graduate civil engineering concepts pertaining to the candidate's major.

**C.E. 298. Project and/or Thesis (3-6) F, S, SS**
Prerequisite: Admission to candidacy for degree of master of science in civil engineering. Planning, preparation and completion of a project and/or thesis in the field of civil engineering.

## ELECTRICAL ENGINEERING

Associate Professors: Hill, J., Lewis, MacMillan, Winchell.

Assistant Professors: Cain, G., Goldman, Hostetter, Lane, Robinson, D., Williams, C.

### UPPER DIVISION

**E.E. 110. Electrical Engineering I (3) F, S, SS**
Prerequisites: Physics 1D, Mathematics 3D. Co-requisite: E.E. 111. Electric and magnetic circuits, instruments, transformers, and rotating machinery. (Lecture, 3 hours.)

**E.E. 111. Electrical Engineering I Laboratory (1) F, S, SS**
Co-requisite: E.E. 110. Laboratory study of electric and magnetic circuits, instrumentation, transformers, and rotating machinery. (Laboratory, 3 hours.)

**E.E. 130. Electrical Engineering II (3) F, S, SS**
Prerequisite: E.E. 110, 111. Co-requisite, E.E. 131. Electron tube characteristics, equivalent circuits, rectifier, amplifier, and oscillator circuits, introduction to transistors and crystal diodes. (Lecture, 3 hours.)

**E.E. 131. Electrical Engineering II Laboratory (1) F, S, SS**
Co-requisite: E.E. 130. Laboratory study of electron tubes, transistors, and crystal diodes, electronic circuits and instruments. (Laboratory, 3 hours.)

**E.E. 132. Engineering Electrical Circuits I (3) F, S**
Prerequisites: E.E. 110, 111. Analysis of linear circuits, network theorems, coupled circuits, matrices, nonsinusoidal analysis, variable frequency response, complex frequency plane, transient response. (Lecture, 3 hours.)

**E.E. 142. Fundamentals of Electron Devices (3) F, S**
Prerequisite: E.E. 132. Electrostatic and electromagnetic fields, electron ballistics, semi-conductors, characteristics of vacuum tubes, diodes and transistors. (Lecture, 3 hours.)

**E.E. 160. Engineering Electronics I (3) F, S**
Prerequisites: E.E. 130, 131, 132. Co-requisite: E.E. 161. Analysis of vacuum tube and transistor electronic devices, small and large signal amplifiers, rectifiers and oscillators. (Lecture, 3 hours.)

**E.E. 161. Engineering Electronics I Laboratory (1) F, S**
Co-requisite: E.E. 160. Laboratory study of amplifiers, rectifiers and oscillators. (Laboratory 3 hours.)

**E.E. 162. Engineering Analysis II (2) F, S**
Prerequisites: C.E. 127 or E.E. 132. A study of LaPlace transforms and other operational methods and their application to engineering problems in such areas as heat flow, vibrations and electrical circuits. (Lecture 2 hours.)

**E.E. 163. Electromagnetics (3) F, S**
Prerequisite: E.E. 132. Co-requisite: E.E. 164. Analysis of operating principles of electro-mechanical devices, concepts of energy conversion, variable frequency transformers, permanent magnets, introduction to magnetic amplifiers. (Lecture 3 hours.)

**E.E. 164. Electromagnetics Laboratory (1) F, S**
Co-requisite: E.E. 163. Laboratory study of electro-mechanical devices, transformers and magnetic amplifiers. (Laboratory 3 hours.)

**E.E. 165. Electrical Engineering Random Processes (2) F, S**
Prerequisite: E.E. 162. Elements of statistics and probability applied to data sampling and noise. (Lecture 2 hours.)

**E.E. 166. Engineering Electrical Circuits II (3) F, S**
Prerequisites: E.E. 132, 162. The application of LaPlace transforms to linear systems, equivalence of other physical systems, complex frequency, elements of non-linear circuit analysis. (Lecture 3 hours.)

**E.E. 180. Engineering Electronics II (3) F, S**
Prerequisites: E.E. 160, 161, 162. Co-requisite: E.E. 181. Analysis of detection, modulation, wave shaping circuits, non-linear waveform generation, continuation of Electronics I applied to UHF and VHF systems. (Lecture 3 hours.)

**E.E. 181. Engineering Electronics II Laboratory (1) F, S**
Co-requisite: E.E. 180. Laboratory study of detection, modulation, signal generators, UHF and VHF systems. (Laboratory 3 hours.)

**E.E. 182. Engineering Electrical Circuits III (3) F, S**
Prerequisite: E.E. 166. Filter response, introduction to distributed—constant transmission lines; transient response using LaPlace transforms; concepts of poles and zeros. (Lecture 3 hours.)

**E.E. 183. Control Systems (3) F, S**
Prerequisite: E.E. 162. Principles of analysis, block diagrams, open and closed loop systems, stability criteria, application to electromechanical servo-systems. (Lecture 3 hours.)

**E.E. 184. Control Systems Laboratory (1) F, S**
Prerequisite or co-requisite: E.E. 183. Laboratory study of control systems. (Laboratory 3 hours.)

**E.E. 193A, B. Engineering Semi-Conductor Electronics (4,4) F, S**
Prerequisites: E.E. 160, 161, 162. Small and large signal analysis and design of specific circuits. Applications of transistors, parametric amplifiers and tunnel diodes. Recent developments in semi-conductor devices. (Lecture 3 hours, Laboratory 3 hours.)

**E.E. 194. Engineering Statistics (3) F, S, SS**
Prerequisite: E.E. 162 or consent of instructor. Modern statistical methods applied to the solution of current engineering problems. (Lecture 3 hours.)

**E.E. 195. Logical Design of Digital Computers (3) F, S, SS**
Prerequisites: E.E. 130, 131, senior standing. Introduction to Boolean algebra. Simplification of Boolean functions. Memory elements equations. Digital computer memories. Input-output equipment. The arithmetic unit and the control unit. (Lecture 3 hours.)

**E.E. 196. Circuit Design of Computer Components (4) F, S, SS**
Prerequisite: E.E. 195. Analysis and design of flip-flop circuits and trigger generators. Gating circuit considerations. Design of memory devices. Component integration. Comparison of tubes, transistors and tunnel diode circuits. (Lecture 3 hours, Laboratory 3 hours.)

**GRADUATE DIVISION**

**E.E. 212. Linear Network Synthesis (3) F, S**
Prerequisites: E.E. 162, 166. The principles of synthesis of linear networks to realize specified transfer characteristics. (Lecture 3 hours.)

**E.E. 213A, B. Advanced Control Systems (3,3) F, S**
Prerequisite: E.E. 183. 213A: Compensation, theory of sampling and non-linear control systems. (Lecture 3 hours.) 213B: Synthesis, optimization and noise of control systems. (Lecture 2 hours, laboratory 3 hours.)

**E.E. 214. Information Theory (3) F, S**
Prerequisite: E.E. 182. Application of information and communication theory to systems subject to random disturbances. (Lecture 3 hours.)

**E.E. 215. Digital Computer System Analysis (3) F, S**
Prerequisite: E.E. 195. Integration of digital computer components into an overall system with emphasis on solution methods. (Lecture 3 hours.)

**E.E. 216. Analog Analysis (3) F, S**
Prerequisite: E.E. 183. Analysis of systems by analog computer, function and system simulation, problem solution. (Lecture 2 hours, laboratory 3 hours.)

**E.E. 217A, B. Applied Electromagnetic Theory (3,3) F, S**
Prerequisite: Physics 120AB. 217A: Static and time varying fields, flux mapping, current distribution, wave propagation. (Lecture 3 hours.) 217B: Wave guides, cavities, antennas. (Lecture 2 hours, Laboratory 3 hours.)

**E.E. 298. Project and/or Thesis (3-6) F, S, SS**
Planning, preparation and completion of a research project or thesis in electrical engineering.

## MECHANICAL ENGINEERING

### LOWER DIVISION

Professors: Leutwiler, Nielsen, Vivian.

Associate Professors: Arnell, Kundis, Sungu.

Assistant Professors: Healy, J., Kyle, Roman, Torby, Unt, Vandermeyden.

**M.E. 12. Engineering Graphics I (3) F, S, SS**
Prerequisite: One year of high school drawing. The principles of graphical expression through sketching, instrumental drawing, orthographic projection, auxiliary views, dimensions, working drawings. Descriptive geometry methods of points, lines, planes, warped surfaces, intersections, and development. (Lecture-laboratory 6 hours).

**M.E. 22. Engineering Graphics II (2) F, S, SS**
Prerequisite: M.E. 12. Graphical expression with emphasis on sketching, machine drawing, detail and assembly drawing, gears, cams, fastenings, piping, welding. Graphical mathematics and nomographical charts. (Lecture-laboratory 4 hours.)

**M.E. 92. Manufacturing Processes (2) F, S**
Prerequisite or co-requisite: M.E. 12. Study of the machines and equipment and processes used in modern manufacturing and fabrication operations, with field trips to industrial plants. (Lecture, 2 hours.)

### UPPER DIVISION

**M.E. 105. Analytical Mechanics II (Dynamics) (3) F, S**
Prerequisite: C.E. 80. Engineering application of fundamentals of kinematics and kinetics to problems involving translation, rotation, and plane motion. Work and energy, impulse and momentum, and mechanical vibrations. (Lecture, 3 hours.)



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**M.E. 120. Engineering Thermodynamics I (3) F, S, SS**
Prerequisites: Mathematics 3D, Physics 1B, Chemistry 1B. Co-requisite: M.E. 121. First and second laws of thermodynamics; properties of liquids, gases, and vapors; sources of energy and its conversion to work. Introduction to heat transfer and psychrometry. (Lecture, 3 hours.)

**M.E. 121. Engineering Thermodynamics I Laboratory (1) F, S, SS**
Co-requisite: M.E. 120. Measurement of thermodynamic properties. Properties of fuels, lubricants. Calorimetry. Gas Analysis. (Lecture 2 hours, Laboratory, 3 hours.)

**M.E. 123. Analytical Mechancis III. Particle and Rigid Body Mechanics (3) F, S**
Prerequisite: M.E. 105; Co-requisites: E.E. 162, Math 110A. A detailed study of particle and rigid body mechanics using vector methods and three dimensional analysis emphasizing vibrating systems, planetary and satellite motions, variable mass, the gyroscope and gyrocompass.

**M.E. 124. Engineering Metallurgy I (3) F, S**
Prerequisite: Chemistry 1B. Structure and properties of crystalline materials, interatomic forces, crystal latices, phase equilibria and transformation, nucleation and grain growth. Effects of crystal imperfections, crystal boundaries, mechanical working, heat treatment, diffusion, ferromagnetism and corrosion. (Lecture 2 hours, Laboratory 3 hours.)

**M.E. 125. Mechanics of Materials (3) F, S, SS**
Prerequisite: C.E. 80; co-requisite: M.E. 126. Application of the principles of mechanics to design of structural and machine members and connections; stress analysis of beams and columns. Properties and strength of engineering materials. (Lecture, 3 hours.)

**M.E. 126. Mechanical Properties of Materials (1) F, S, SS**
Co-requisite: M.E. 125. Laboratory course in the physical and mechanical properties of engineering materials, and the relationship of structure to these properties. (Laboratory, 3 hours.)

**M.E. 170. Engineering Thermodynamics II (3) F, S**
Prerequisites: M.E. 120, 121. Co-requisite: M.E. 171. Gas processes; relation of entropy to the second law; gas cycles; vapor cycles; mixtures of gases and vapors. (Lecture 3 hours.)

**M.E. 171. Engineering Thermodynamics II Laboratory (1) F, S**
Co-requisite: M.E. 170. Measurements of energy and power. Testing and evaluation of the performance of thermodynamic equipment. (Laboratory 3 hours.)

**M.E. 172. Machine Design I (3) F, S**
Prerequisite: M.E. 22, 105. Fundamentals of linkages, cams, gears, and gear trains. Velocity and acceleration analysis of machines. (Lecture 2 hours, design application 3 hours.)

**M.E. 173. Metallurgy II (3) F, S**
Prerequisite: M.E. 124. Heat treatment of steels and non-ferrous alloys. Properties and uses of engineering alloys, such as carbon and alloy steels, aluminum-base and copper-base alloys. (Lecture 2 hours, laboratory 3 hours.)

**M.E. 175. Advanced Mechanics of Deformable Bodies (3) F, S, SS**
Prerequisite: M.E. 125, 126. Stress concentration; photoelastic method of stress analysis. Failure theories. Fatigue. Flexure and shear of unsymmetrical sec-

tions; shear center. Deformations beyond the elastic limit. Energy methods; Castigliano's theorem. (Lecture 3 hours.)

**M.E. 176. Engineering Vibrations (3) F, S**

Prerequisite: E.E. 162. Introduction to fundamentals of mechanical vibrations; types of oscillatory motions. Study of free, forced and transient vibrations; damping, vibration isolation, vibration measuring instruments. Coupled oscillations of lumped systems; use of Lagrange's equations; Rayleigh and matrix-iteration method. (Lecture 3 hours.)

**M.E. 177. Machine Design II (3) F, S**

Prerequisites: M.E. 125, 172. Application of the principles of mechanics and physical properties of materials to the proportioning of machine elements, including consideration of function, production and economic factors. (Lecture 2 hours, design application 3 hours.)

**M.E. 178. Heat Transfer (3) F, S**

Prerequisites: M.E. 120, E.E. 162. Principles of heat transfer by conduction, radiation, and convection. Steady state conduction in one, two, or three dimension. Introduction to transient heat flow, mass transfer. (Lecture 3 hours.)

**M.E. 179. Dynamics of Machinery (3) F, S**

Prerequisite: M.E. 177. Inertia effects of machine parts; balancing of rotating and reciprocating parts; gyroscopic effects; critical speeds; energy variation in machinery; mechanical vibration. (Lecture 2 hours, design application 3 hours.)

**M.E. 192. Air Conditioning (2) F, S, SS**

Prerequisites: M.E. 120, C.E. 140. Psychrometric relations and processes; fuels; heat producing and distributing equipment; steam, hot water, air systems; fans, ducts, piping; estimating requirements. (Lecture 2 hours.)

## GRADUATE DIVISION

**M.E. 211. Stress Analysis in Design (3) F, S, SS**

Prerequisite: M.E. 175. Application of the basic equations of elasticity to experimental methods of stress analysis with applications to modern design problems. Measurement of stresses and deformations that are of significance in the engineering design of load resisting members. Two dimensional photoelastic applications. Static and dynamic applications of photostress. (Lecture 2 hours, laboratory 3 hours.)

**M.E. 212. Theory of Elasticity (3) F, S, SS**

Prerequisites: E.E. 162, M.E. 175. Fundamental equations of the mechanics of elastic bodies. Plane Problem. Bending, torsion and extension of Prismatic Bodies. Three dimensional problem. Propagation of waves in elastic media. Approximate methods. Introduction to theory of plasticity. (Lecture 2 hours, laboratory 3 hours.)

**M.E. 213. Advanced Dynamics (3) F, S, SS**

Prerequisites: M.E. 105, E.E. 162. Three dimensional kinematics of a rigid body; general dynamics of a rigid body, products of inertia and moments. Kinetic energy. Rotation of a rigid body about a fixed point and fixed axis. Gyroscopic theory. Engineering applications. (Lecture 3 hours.)

**M.E. 214. Engineering Vibrations II (3) F, S, SS**

Prerequisites: E.E. 162, M.E. 176. Theory of mechanical vibrations. Linear systems and self-excited vibrations. Methods of Newton, Lagrange, Stodola and Rayleigh-Ritz applied to distributed and complex lumped systems. Practical approximate methods of analysis. (Lecture 3 hours.)

**M.E. 221. Mechanics of Ideal Fluids (3) F, S, SS**

Prerequisites: C.E. 140, E.E. 162. Fundamental equation of continuity. Characteristics of flow patterns. Kinematics of flow. Forces on fluid elements. Equations of motions. Equations of energy and momentum. Potential theory. Vector concepts. Two dimensional motion. Source, sink, doublets, circulation. Complex variables in fluid flow problems. Moving cylinders. Theorem of Schwerz and Christoffel; Helmholtz motions. Cavitation. Drag. (Lecture 3 hours.)

**M.E. 222. Gas Dynamics (3) F, S, SS**

Prerequisites: M.E. 170, 221. Related thermodynamics. One dimensional steady flow, wave and shock motion in unsteady one dimensional and steady two dimensional flows. Small perturbation theory for wings and bodies. The influence of viscosity. Survey of experimental techniques; analogies. (Lecture 3 hours.)

**M.E. 223. Mechanics of Real Fluids (3) F, S, SS**

Prerequisites: C.E. 140, E.E. 162. Fluid motion with friction. Boundary layer concept. Deviation of the equations of motion of a compressible viscous fluid (Navier-Stokes equations). General properties of the Navier-Stokes equations. Boundary layer equations for two dimensional flow. Exact solutions of the steady-state boundary layer equations. Turbulent flow. (Lecture 3 hours.)

**M.E. 224. Analytical Thermodynamics (3) F, S, SS**

Prerequisites: E.E. 162, M.E. 170. General treatment of the thermodynamic laws. Kinetic theory and equations of states. First law. Fundamentals of classical and statistical mechanics as applied to thermodynamics. Second law. Reversibility, irreversibility, entropy. Reactive mixtures. Chemical equilibrium. Introduction to statistical thermodynamics. Partition functions.

**M.E. 225. Heat and Mass Transfer (3) F, S, SS**

Prerequisite: M.E. 178. Physical and thermal properties of fluids, molecular and eddy diffusion. Development of equations of mass, heat and momentum transfer. Application of evaporation and psychrometric unit operation. (Lecture 3 hours.)

**M.E. 298. Project and/or Thesis (3-6) F, S, SS**

Planning, preparation, and completion of a project or thesis in mechanical engineering.

## ENGLISH

Professors: Allen, R., Buckland, Cerveny, Darbee, Hermann, James, Lee, Nelson, F., Nielson, E., Rodabaugh, Stephens, Wilder, Wylder.

Associate Professors: Allen, C., Aspiz, Baker, C., Brooks, Carr, Crane, Day, Foote, Hubble, Lubbe, Lyon, Orgill, Purcell, Sawyer, Skarsten, Smith, H., Steffes, Wilford, Williams, Wilson.

Assistant Professors: Betar, Coppola, Crawford, Gilde, Mittleman, Rose, Schwab.

Instructors: Black, A., Folsom, Kim, Knafel, Lawson, Skov, Taylor.

Lecturer: Ford.

### LOWER DIVISION

**A. Fundamentals of English (0) F, S, SS**

Students who fail the English-proficiency test must pass this course before enrolling in English 1. Meets three hours a week. Counts 2 units toward the student's semester load but does not give unit credit toward graduation.

**B. Special Problems in Remedial English (0) F, S, SS**
Limited to upper division and graduate students who have failed advanced screening tests in English proficiency. Meets three hours a week. Counts 2 units toward the student's semester load but does not give unit credit toward graduation.

**R. Developmental Reading (0) F, S**
Entering students who do not make a satisfactory score in reading on the entrance examination may be advised to enroll in this course. Emphasis on increasing speed and comprehension with practice in other specific reading skills needed. Meets two periods per week. Counts 1 unit toward the student's semester load but does not give unit credit toward graduation.

**1. Composition (3) F, S**
Emphasis on good language and on the preparation of expository papers.
No student will be issued a class card for English 1 unless he has taken the Guidance and Screening tests. Classification will be indicated on the Permit to Register for all new students. Returning students must obtain a classification card from the Testing Office to be admitted to English 1.

**2. Composition (3) F, S, SS**
Prerequisite: English 1. Writing expository prose, with emphasis on the research paper.

**5A, B. English for Foreign Students (3,3) F, S**
A course for foreign students with some training abroad in academic English, but with a limited skill in American idiom, usage, and colloquial and written language structures. Four hours of lecture and laboratory activity per week. Open only to students assigned to this course by the Foreign Student Adviser.

**35. Narrative and Descriptive Writing (3) S**
Prerequisite: English 1. Practice in the basic elements of fiction writing: character sketch, plot developments, description, dialog.

**36. Persuasive Writing (3) S**
Prerequisite: English 1. Techniques of written persuasion as a communicative process. Special attention to the development of rhetorical skills in thematic presentation; use of logical and forceful argument.

**40. Appreciation of Literature (3) F, S, SS**
How to read good literature for pleasure. A non-technical study of older and modern masterpieces. Not applicable toward an English major. Not open to students who have credit for English 45, 48 or 49.

**49. Introduction to Literature (3) F, S, SS**
Prerequisite: English 1. Reading, for understanding and pleasure, of literature rich in personal and social implications. Considerable emphasis on the development of effective reading skills. This is a course in literary types. (Recommended for English majors only.)

**50. Survey of English Literature to 1760 (3) F, S**
Prerequisite: English 1. Both an introduction to the serious study of literature and a guide to lifelong reading. Representative selections from the major English writers from Beowulf to Dr. Johnson.

**51. Survey of English Literature Since 1760 (3) F, S**
Prerequisite: English 1. A continuation of English 50, but may be taken independently. Representative writers from Burns to World War II.

**53. Introduction to World Literature (3) F**
Readings from the masterpieces of world literature in translation.

**54. Folklore and Mythology (3) S**
An introduction to mythology and folklore with special emphasis on myths of Western Civilization and their application in literature.

**55. Readings in the Novel (3) S**
Prerequisite: An introductory course in literature. Reading and discussion of several novels. A study of the basic idea of each and of the artistic form in which the idea is realized.

**60. Introduction to Creative Writing (3) F**
Prerequisite: English 1. Study of the theory and techniques of fiction and poetry. Practice in creative work, with group discussions and individual conferences.

**66. Contemporary Literature (3) S**
Prerequisite: English 40 or 49. A nontechnical course in twentieth-century literature, primarily of England and the United States. Particular emphasis on poetry, drama, and short fiction since World War I.

**UPPER DIVISION**

**105. Literature of the American West (2) F**
The literary expression of the impact of the West on American culture and the development of literary symbols associated with the West.

**108. The Structure of Modern English (3) F, S**
A description of modern English with its dialect variations, using the methods of scientific linguistics; comparison of the structure of modern English with that of other modern languages.

**109. Development of Modern English (3) F, S**
The development of the English language as a guide to modern grammar and usage.

**110. Advanced Composition (3) F, S**
Prerequisite: English 1 and 2. Writing of expository prose, with special emphasis upon organization, style and diction.

**111. English Composition Workshop (3) SS**
Prerequisite: A valid junior high, secondary, junior college, or provisional credential. A practical course in the teaching of English grammar and composition. Includes observation, preparation and presentation of lessons, and grading papers, all under the supervision of college English teachers. Does not fulfill requirements for the M.A. degree in English.

**112. Children's Literature (3) F, S, SS**
Prerequisite: one college course in literature. A survey of the literature available to children, and its backgrounds. May not be taken for General Education credit.

**113. Workshop in Literature for Youth (3) SS**
Prerequisite: English 112 or 179, or consent of the instructor. An exploration of literary materials readily available to youth and a study of problems involved in presentation of literary heritage. Not to be taken for graduate credit in English or to help satisfy the requirement of 24 units of upper-division English for the major in English.

**116. Business Writing (3) F, S**
Prerequisite: English 1 and 2. Development of skills in accurate exposition and effective writing in business letters, business reports and articles.

**117. Technical Report Writing (3) F, S**
Prerequisite: English 1. Writing long and short technical reports for industry and government.

**118. Current Periodicals (3) S**
Development of the magazine and its significance in American life. Periodical types, editorial policies and literary stature, with criteria for their evaluation. Special study of magazines in a field of the student's particular interest.

**120. The Romantic Period (3) S**
A study of the English romantic movement. Readings in the major works of Blake, Burns, Wordsworth, Coleridge, Shelley, Keats, Byron and the English romantic prose writers.

**124. Survey of American Literature to the Civil War (3) F, S, SS**
Representative American writers from the first settlements to 1860.

**125. Survey of American Literature Since the Civil War (3) F, S, SS**
A continuation of 124, but may be taken independently. Representative writers from 1860 to the present.

**126. Twentieth Century American Literature (3) S**
The literature of the United States since the First World War.

**135. Literature of the Short Story (3) F**
A study of the origin and development of the short story, and analyses of works representative of various literary trends and techniques.

**137. History and Development of the English Novel to 1832 (3) F**

**138. History and Development of the English Novel Since 1832 (3) S**

**139. Medieval Literature (3) S**
A study of the dominant ideas of the medieval period reflected in the writings of that time.

**140. Shakespeare (3) F, S**
The plays of Shakespeare. Required of all English majors.

**141. The Drama of Shakespeare's Contemporaries (3) S**
Selected plays of the Tudor and Stuart Periods.

**145. Twentieth Century British Writers (3) F**
Representative prose and poetry from about 1900 to the present day.

**151. Drama Before Ibsen (3) F**
European and English drama from the Ancient Greeks to the middle of the nineteenth century.

**156. Poetry (3) S**
English and American poetry with emphasis on analysis of individual poems.

**157. Classical Background of English Literature (3) F**
Greek and Roman literature (in translation) which has enriched English literature: the interrelations of classical literature with philosophy and art.

**160. Creative Writing: Fiction (3) F, S**
Intensive work in the writing of imaginative prose, with a detailed study of published models and with emphasis on the sources of creative effort. May be repeated for credit to a maximum of 6 units by permission of instructor.

**161. Creative Writing: Poetry (3) S**
Problems of poetic expression. Group discussion and individual conferences on student exercises in verse writing. May be repeated for credit to a maximum of 6 units by permission of the instructor.

**164. English Literature 1603-1660 (3) S**
Nondramatic literature of the Seventeenth Century to the Restoration, including Milton.

**165. English Literature 1660-1740 (3) F**
Nondramatic literature of the Restoration and early Eighteenth Century.

**166. English Literature 1740-1798 (3) S**
Nondramatic literature of the middle and late Eighteenth Century.

**171. English Grammar (3) F, S**
An advanced study of grammatical principles and of significant variations from the standard forms.

**174. Nineteenth Century European Novel (3) F**
Representative European novels, excluding British, of the Nineteenth Century.

**176. European Literature to 1600 (3) F**
Development of western civilization as reflected in the writers of Continental Europe from Homer to Cervantes. Especially recommended to those planning to teach in secondary schools.

**177. Modern European Literature (3) S**
An introduction to modern European literature in translation; the major contributions of various nations; history and analysis of themes and forms, devices and genres.

**179. Literature for Adolescents (3) F, S**
Prerequisite: one college course in literature.
Designed to provide the teacher with an organized understanding of adolescent needs, individual and group, that may be satisfied by reading and to enrich the teacher's own knowledge of books and magazines suitable for adolescent interests.

**181. Modern Drama (3) S**
European, British, and American drama from Ibsen to the present.

**188. Victorian Prose (3) S**
Representative prose writers from 1832 to 1900, including particularly Carlyle, Newman, Ruskin, Arnold, Pater, Mill, Macaulay, Huxley and excluding the novelists.

**189. Victorian Poetry (3) F**
English poetic literature of the second half of the nineteenth century, including readings in the major works of Tennyson, Browning, the pre-Raphaelites, Arnold and others.

**190. English Literature 1500-1603 (3) F**
Nondramatic literature of the Sixteenth Century.

**192. Critical Studies in Major British Writer(s) (3) F, S, SS**
Prerequisites: Senior standing, 12 units of upper division English. Provides intensive study of one, two, or three major figures in English literature. May not be repeated for credit. Not open to graduate students for graduate credit. The author(s) to be studied will be announced in the schedule of classes.

**194. Critical Studies in Major American Writer(s) (3) F, S, SS**
Prerequisites: Senior standing, 12 units of upper division English, including English 124 and 125. Provides intensive study of one, two, or three major figures in American literature. May not be repeated for credit. Not open to graduate students for graduate credit. The author(s) to be studied will be announced in the schedule of classes.

**195. Chaucer (3) S**
The writing of Geoffrey Chaucer in his Middle English dialect.

**198. Principles of Literary Study (3) F**
Readings from the works of representative critics, ancient and modern with emphasis on developing a critical sense in students of literature.

**199. Directed Studies (1-3) F, S**
Limited to senior English majors, with a 3.0 grade point average in the major and to senior comparative literature majors. Independent study undertaken under the supervision of a faculty member. (Further details available in English Department office.)

## GRADUATE DIVISION

**205. Seminar in the English Renaissance (3) S**
Advanced studies in the literature of the English Renaissance, chiefly Elizabethan.

**209. Seminar in Eighteenth Century Literature (3) S**
Intensive study of social and intellectual currents as reflected in literature between 1700 and 1800.

**211. Seminar in American Realism (3) F**
The chief books of the rise of American realistic writing, with attention to the nature of realism and to the authors' criticisms of American life.

**212. Seminar in the Nineteenth Century American Literary Renaissance (3) F**
Intensive studies in American literature from ca. 1820 to ca. 1865.

**213. Seminar in Twentieth Century American Literary Thought (3) S**
An analysis of important points of view developed by American writers of the last 50 years and of the social forces conditioning the points of view.

**214. The History of English Literature (3) F**
A systematic study of the development of English literature from Anglo-Saxon times to the twentieth century. Primarily for graduate students who plan to teach English in the secondary schools.

**220. Modern English (3) S**
The English language today, its evolution, and problems of usage, in the light of recent and traditional scholarship.

**239. Seminar in Chaucer (3) F**
Advanced studies of Chaucer, his chief works, his language, and his significance to English thought.

**240. Seminar in Shakespeare (3) S**
The best writings of Shakespeare, including both plays and poetry.

**260. Seminar in Satire (3) S**
An analysis of satire as a literary type or genre from ancient to modern times; an intensive study of certain writers and problems; with emphasis on satire as social criticism.

**290. Seminar in the Age of Milton (3) F**
A study of the major works of Milton and this contemporaries in relation to the literary, political, and religious movements of the age.

**291. Seminar in Restoration Literature (3) S**
The main literary forces and figures that provided the transition from the Renaissance to English Neo-classicism; the distinctive features and figures of the time, including Dryden, Pepys, Bunyan, Butler and others.

**293. Seminar in Romantic Literature (3) F**
Selected works of the English Romantic Movement, with a consideration of the inherent artistic and philosophical questions; their place in the total body of Romantic literature; the social, intellectual and political forces conditioning the whole movement.

**294. Seminar in Victorian Literature (3) F**
An intensive study in the works of the major figures of the Victorian era, pointing up the esthetic, religious, and scientific problems of the day as they relate to each other and to literary expression.

**297. Seminar in Techniques of Literary Study (3) F, S**
The definition and methods of solution of problems in this field, with emphasis on the descriptive method of research and the use of the library. Required of all master's degree candidates in English. To be taken prior to or concurrently with 200-series courses in the Department of English.

**298. Project or Thesis (1-4) F, SS**
Planning, preparation, and completion of a project or thesis related to this field. Limited to graduate students who have taken or are taking 297. Permission of instructor. Before a student may write a creative thesis for credit in this course, he must have the prior approval of a committee of those instructors normally engaged in the teaching of the creative-writing courses. Optional.

## ENTOMOLOGY

Associate Professors: Menees, Sleeper, Stockton.
Assistant Professor: Maxwell.

### LOWER DIVISION

**55. Insects and Human Welfare (3) F, S, SS**
Prerequisite: Biology 10. General investigation on insects and close relatives; beneficial and destructive forms, emphasis on role in health and disease. Not open for credit to biological science majors. (Lecture and demonstration 3 hours.)

### UPPER DIVISION

**103. General Entomology (3) F, S, SS**
Prerequisite: Zoology 1A, B. Characteristics, structures, habits, life cycles of insects and their importance to man. (Lecture 2 hours, laboratory and field 3 hours.)

**105. Immature Insects (3) S odd years**
Prerequisite: Entomology 103. Study of morphology and taxonomy of immature insects of all major orders; emphasis on identification of larvae of economically important orders; Coleoptera, Lepidoptera, Diptera and Hymenoptera. (Lecture 2 hours, laboratory 3 hours.)

**106. Classification of Insects (3) S**
Prerequisite: Entomology 103. Survey of major groups of insects, with classification to family level. (Lecture 2 hours, laboratory and field 3 hours.)

**108. Insect Morphology (3) F**
Prerequisite: Entomology 103. Comparative anatomy of insects, structure of mouth parts, the mechanisms of feeding, locomotion, flight and reproduction. Emphasis on the relationships of musculature to external forms. (Lecture 2 hours, laboratory 3 hours.)

**110. Medical Entomology (3) F**
Prerequisite: Zoology 1A. Collection, preparation, identification, habits, life cycle and control of insects and other arthropods of medical importance. (Lecture 2 hours, laboratory and field 3 hours.)

**125. Terrestrial Arthropods (3) F odd years**
Prerequisites: Zoology 1AB. A survey of some of the common representatives of the groups of terrestrial arthropods exclusive of the insects. Emphasis on forms of local occurrence and on those which are important in gaining an understanding of relationships within the phylum and of relationships of the arthropods to other phyla.

**130. Economic Entomology (3) F**
Prerequisite: Entomology 103. Life history, habits, distribution and control of important insects of economic significance. (Lecture 2 hours, laboratory and field 3 hours.)

**134. Biological Control of Insects (3) S even years**
Prerequisite: Entomology 106. Study of natural and artificial control of pest species of insects and other arthropods through use of predators, parasites, fungi, virus, and bacterial diseases. (Lecture 2 hours, laboratory and field 3 hours.)

**138. Insect Physiology (3) S**
Prerequisite: Entomology 103 and Entomology 108. Muscle contraction, digestion, nutrition, and metabolism, circulation, excretion, reproduction, molting, endocrine glands and hormones, and enzyme systems of insects. (Lecture 2 hours, laboratory 3 hours.)

FINANCE (See Business Administration)

FOREIGN LANGUAGE (See Specific Language)

## FRENCH

Associate Professor: Baltzell.
Assistant Professors: Swensen, Thomas, Winter, H., Yperman.

### LOWER DIVISION

**1A, B. Fundamentals of French (4,4) F, S**
1A—Practice in grammar, reading, pronunciation, writing and conversation. Not open to students who have had one year of high school French.

1B—Prerequisite: French 1A or one year of high school French. Continuation of French 1A.

**60A, B. Intermediate French (3,3) F, S**

(A) Prerequisite: French 1A, B or two years of high school French or equivalent.

(B) Prerequisite: French 60A or three years of high school French or equivalent.

Readings of representative modern writers with oral and written practice and reports.

## UPPER DIVISION

**102. Advanced French I (3) F**

Prerequisite: French 60B or equivalent. Extensive reading of French writings, review of grammatical principles, and a general consolidation of the four language skills: reading, comprehension, composition and conversation.

**103. Advanced French II (3) S**

Prerequisite: French 102 or equivalent. A sequel to French 102, with continuing emphasis on extensive reading of French texts and periodicals, regular composition work based on these readings, and the development of increased mastery of the spoken language through student discussions of the readings.

**105. Survey of French Literature I (3) F**

Prerequisite: 14 units of lower division French. From the Middle Ages to the Nineteenth Century.

**106. Survey of French Literature II (3) S**

Prerequisite: 14 units of lower division French. The Nineteenth and Twentieth Centuries.

**111. Advanced French Syntax and Composition (3) S**

Prerequisite: French 102 and 103 or equivalent. Special emphasis on the writing of short compositions and commercial letters.

**112. French Literature of the Seventeenth Century (3) F, S, SS**

Prerequisite: 14 units of lower division French. A study of such classical dramatists as Corneille, Racine, Molière and of classical poetry and typical prose of the century. An examination of such literary theories as the three unities, of French classical drama and of the Court, the economic situation and the social structure.

**113. The Age of Enlightenment (3) F, S, SS**

Prerequisites: 14 units of lower division French or equivalents. A study of the most representative French writers of the 18th Century. Readings from such writers as Fontenelle, Montesquieu, Diderot, Voltaire, and Rousseau.

**114. French Romanticism (3) F, S, SS**

Prerequisites: 14 units of lower division French or equivalents. A study of the most representative French writers in the Romantic movement, from Chateaubriand to Victor Hugo, with readings in prose, drama, and poetry.

**115. Modern French Drama (3) F, S, SS**

Prerequisite: 14 units of lower division French. A survey of contemporary French Theater.

**116. Contemporary French Novel (3) S**

Prerequisite: 14 units of lower division French, or equivalent. Readings in contemporary French writers, such as Gide, Rolland, Proust, Romains, and Sartre for understanding of current literary trends.

**117. French Realism and Naturalism of the Nineteenth Century (3) F, S, SS**
Prerequisites: 14 units of lower division French or equivalents. A study of the most representative French writers in the movements of Realism and Naturalism. Readings from such writers as Balzac, Flaubert, Maupassant, and Zola.

**118. The French Short Story (3), F, S, SS**
Prerequisite: 14 units of lower division French. The most representative short story writers as Flaubert, Daudet, Maupassant, Maurois, Sartre, and Aymé.

**120A, B. French Conversation (3,3) F, S, SS**
Prerequisite: 14 units of lower division French. A functional course in conversation. Intended to meet specific, everyday situations and to provide help to those who intend to speak French in travel, work, or classroom instruction. Either half of the course may be taken first.

# GEOGRAPHY

Professors: Kennelly, Wilson, J.
Associate Professors: Anderson, B., Ericksen, Steiner.
Assistant Professors: Foster, Karabenick, Pathak.

## LOWER DIVISION

**10. Introduction to Geography (3) F, S**
An introduction to the study of geography, including maps and globes, the major physical and cultural elements of geography and the distribution of the world's population and resources.

**11. World Regional Geography (3) F, S**
An introductory regional geography of the world, treating the major countries in terms of their population, resources, economic development, physical environment, and geographic problems. Especially recommended for elementary teaching majors.

**18. Economic Geography (3) F, S**
The study of the location and organization of the world's major types of production, including agriculture, mining, forest products, fisheries, manufacturing and their associated service industries. (Formerly Geography 108.

## UPPER DIVISION

**100. Human Geography (3) F, S**
An introduction to the study of geography, including the physical and cultural elements of geography and the manner in which man's activities are adjusted to conditions in the various regions of the world. Not open to students having credit in Geography 10.

**111. Geography of the United States and Canada (3) F, S, SS**
The common social, economic, and political interests of the major human use regions of the United States and Canada. The study describes and interprets the culture patterns of each region in relation to the natural settings in which they have developed.

**118. Industrial Geography (3) F**
Prerequisite: Geography 18 or consent of instructor. A systematic study of the distribution of industrial activities, analysis of their locations and application of location theory.

**121. Geographic Materials and Projects (1) SS**
Construction and use of maps, charts, and displays related to systematic and regional concepts of geography. Not open to students having credit for Geography 124. (Laboratory, 2 hours.)

**124. Map reading and Interpretation (3) F, S, SS**
Prerequisite: At least one course in geography. An introduction to the use and preparation of maps, including the basic map elements, projections, representation of data, and practice in map preparation.

**125. Elements of Cartography (3) F, S**
Prerequisite: Geography 124 or consent of instructor. Advanced techniques in construction of maps, charts, and diagrams, including study of their construction and experience in the use of lettering guides and other cartographic tools.

**126. Field Methods in Geography (3) F**
Prerequisites: Geography 10 or 100. An introduction to field techniques, including formulation of field plans, recording direct field observation, field mapping, sampling techniques, interviewing, and compilation of data. One two-hour class period and one two-hour field period per week.

**136. Geography of Western Europe (3) F, S**
Physical and cultural geography revealed through a regional study. Present-day conditions and problems as related to the physical conditions. Comprises Western Europe, Scandinavia, and the Mediterranean.

**137. Geography of the Soviet Union and Eastern Europe (3) F, S**
A systematic and regional study of the physical, economic, and cultural geography of the Soviet Union and the satellite states of Eastern Europe.

**141. Physical Geography (3) F**
Prerequisite: Geography 10 or 100 or consent of instructor. An explanatory description of climate, landform, vegetation and soil distributions; physical location processes; distributions at world and local levels; physical interrelations, and man as an agent in physical change.

**143. Climatology (3) S**
Prerequisite: Geography 10 or 100. The elements, world patterns, and classifications of climates and the relationship of climate to the other major elements of geography.

**151. Geography of the Pacific Ocean Area (3) S**
A regional synthesis of the physical and cultural patterns of the Pacific Basin and Pacific Rim. Trans-Pacific migration patterns, social customs, economic conditions, and geo-political problems are examined. Australia and New Zealand as well as the Pacific island groups are studied.

**153. Urban Geography (3) S**
An examination of cities; their location, shape, structure, and function. Selected world population clusters, theoretical and practical application of urban planning, and the evolution of cities are studied.

**156. Political Geography (3) F, S, SS**
A study of the influence of geographic factors upon the world's major political development. Application of basic geographic concepts will be made in selected areas.

**161. Geography of Africa and the Near East (3) F, S**
The natural conditions and resources of Africa and the Near East as a background for the several types of civilization which have developed there. Recent economic trends in Africa are stressed.

**171. Geography of Asia (3) F, S**
The human and economic resources and problems of Asiatic nations are examined. Traditional land use, real and potential industrial development, political problems and the relation of these areas to current world affairs, are studied.

**181. Geography of Latin America (3) S**
A regional study of Latin America including physical environment, populations, social structure, and economic conditions with emphasis on sources of raw materials, present problems, and industrial outlook.

**185. Geography of California (3) F, S**
Physical patterns in relation to natural resources, resource utilization, transport, and population distribution. Not open to students with credit in Social Science 60 or Geography 48.

**197. Literature and Methods in Geography (3) F**
Prerequisites: Geography 10 and 124, or consent of instructor. The methods, theory, and techniques of geographic investigation. Emphasis is placed upon classical and contemporary literature in geography.

## GRADUATE DIVISION

**200. Regional Geography (3) S odd years**
Prerequisite: At least six units in geography, including Geography 10 or equivalent. The purpose of this course is to acquaint secondary school teachers with regional methods of study common to geographic research, and to utilize such techniques in developing regional concepts. An examination of research work done in various regions of the United States, and student preparation of an area study comprise the basic course work.

**208. Seminar in Economic Geography (2) F odd years**
Prerequisite: Geography 118 or consent of instructor. The fundamental resources and basic industries of the modern world. May be repeated once with consent of department adviser.

**210. Seminar in Physical Geography (3) F even years**
Prerequisites: Geography 141 and one regional geography course. Advanced study of areal variations in the physical landscape. Research methods and resources. Individual investigation of a selected local area. May be repeated once with consent of department adviser.

**211. Seminar in Cultural Geography (3) S even years**
Prerequisites: Six units in geography and consent of instructor. A systematic investigation of human occupance in its varied environmental and regional settings. May be repeated once with consent of department adviser.

# GEOLOGY

Professor: Conrey.
Assistant Professors: Dennis, Ehrreich, Lumsden.

## LOWER DIVISION

**3. Physical Geology (4) F**

Prerequisite: Mathematics 2 or waiver by placement examination. Structure, composition, origin, distribution, and modification of materials of the earth. A beginning course in geology for science majors. (Lecture 3 hours, laboratory 3 hours, field trips.)

**5. Historical Geology (4) S**

Prerequisite: Geology 3 or 50. History of the earth and evolution of plants and animals. (Lecture 3 hours, laboratory 3 hours, field trips.)

**6. Introduction to Mineralogy (4) S**

Prerequisites: Mathematics 2 or waiver by placement examination, Chemistry 1A. Origin, occurrences and associations of minerals; determination of common minerals by physical properties, blowpipe and chemical tests; study of simple crystals. (Lecture 2 hours, laboratory 6 hours, field trips.)

**8. Rocks and Minerals (3) F, S**

Prerequisite: One year of high school chemistry or Chemistry 2 or equivalent. Origin and occurrence of minerals and rocks, emphasizing California occurrences; mineral and rock uses; identification of common rocks and minerals by physical properties. (Lecture 2 hours, laboratory 3 hours, field trips.)

**50. General Geology (3) F, S, SS**

Origin and evolution of earth's features; examination of some common minerals and rocks and major fossil groups. Designed for non-science majors. Not open for credit to geology majors. (Lecture 2 hours, laboratory 3 hours.)

## UPPER DIVISION

**101. Life of the Past (2) F**

Prerequisites: Biology 10, Geology 50; not open to majors in biology, botany, zoology or geology. A history of life as obtained through study of the fossil record and the relating of evolution, stratigraphy, and paleoecology to this record.

**102. Introduction to Field Geology (3) S**

Prerequisites: Geology 103, 116, and Engineering 85 (may be taken concurrently). Principles and methods of geologic mapping; interpretation of geologic maps and aerial photographs, preparation of geologic illustrations, application of descriptive geometry and trigonometry to simple geologic problems. (Laboratory 3 hours, field 8-5 Saturdays.)

**103. Introduction to Petrology (4) F**

Prerequisites: Geology 3 and 6. Characteristics, origin, mode of occurrence, and nomenclature of rocks; laboratory determination of rock specimens with the hand lens. (Lecture 2 hours, laboratory 6 hours, field trips.)

**104. Optical Crystallography (4) S even years**

Prerequisites: Geology 6 or upper division standing in chemistry or physics. Optical properties of crystals. Laboratory study of crystals in immersion liquids and thin sections with polarizing microscope. (Lecture 2 hours, laboratory 6 hours.)

**105. Petroleum Geology (2) F even years**
Prerequisites: Geology 102 and 116. Application of geology to the exploration and production of petroleum; includes use of both surface and sub-surface geologic methods. (Lecture 1 hour, laboratory 3 hours, field trip.)

**106. Principles of Stratigraphy (2) F**
Prerequisite: Geology 103. An application of geologic, paleontologic, biologic, and climatic principles to the study of stratified rocks. (Lecture 2 hours.)

**110. Economic Mineral Deposits (3) F odd years**
Prerequisites: Geology 103, 116. Introduction to the geology, geochemistry and economics of mineral concentrations in the earth's crust.

**111. Principles of Paleontology (4) S odd years**
Prerequisites: Zoology 1A and Geology 5 or Zoology 1B. Morphologic, systematic, and ecologic aspects of invertebrate fossils; uses of fossils in stratigraphic work. (Lecture 2 hours, laboratory 6 hours, field trips.)

**112. Sedimentary Techniques (3) F odd years**
Prerequisites: Geology 3, 6; Chemistry 1B. A study of processes involved in the formation of sedimentary rocks; methods of sedimentary analyses; description and interpretation of sediments and sedimentary rocks. (Lecture 2 hours, laboratory 3 hours.)

**116. Structural Geology (3) S**
Prerequisites: Geology 103, Civil Engineering 85 (may be taken concurrently). Deformation of earth's crust, fracturing, folding and flow of rocks; graphic solution of structural problems. (Lecture 2 hours, laboratory 3 hours.)

**117. Geomorphology (3) S even years**
Prerequisite: Geology 3 or 50. Nature, evolution and classification of land forms; physiographic provinces of U.S.A. (Lecture 2 hours, discussion session 2 hours.)

**118. Advanced Field Geology (6) SS**
Prerequisites: Geology 102, 103, 106, 116. Six weeks of geological mapping at a selected area. Preparation of a geological report of the field problem which is to be turned in to the instructor not later than two weeks following the completion of the field work. (Lectures as needed, field 6 days per week, 8-5.)

**120. Introduction to Geophysics (3) S even years**
Prerequisites: Physics 2B, Mathematics 3. Introduction to geophysics; principles and processes; methods of investigation.

**130. Introduction to Geochemistry (3) S odd years**
Prerequisites: Chemistry 1B, Mathematics 3C. Abundance, migration and concentration of the elements in the earth; chemical processes in the evolution of the earth and its crust.

**148. Engineering Geology (2) F, S**
Prerequisites: Mechanical Engineering 12, Civil Engineering 52, 85. Earth processes and materials which influence the design, construction and operation of engineering works; construction materials. (Lecture 2 hours, field trips.)

**150. General Crystallography (3) F odd years**
Prerequisites: Physics 2B or equivalent, Chemistry 1B. An introduction to geometrical, structural, chemical, and physical crystallography. (Lecture 3 hours.)

**160. Current Topics in Geological Sciences (3) F, S, SS**

Prerequisite: Consent of instructor. Topics of current interest in the geological sciences selected for intensive development. Topics to be selected from such areas as (a) Geochronology, (b) Ground water geology, (c) Marine geology, (d) Meteorology, (e) Micropaleontology, (f) Oceanography, (g) Paleoecology, (h) Photogeology, (i) Planetary geology, (j) Tectonics. May be repeated for a maximum of 6 units. (3 hours.)

**199. Investigations in Geology (1-4) F, S, SS**

Prerequisite: Consent of instructor. Open only to seniors majoring or minoring in geology. Problems selected by instructor for mature analysis. May be repeated for a maximum of 4 units.

## GERMAN

Associate Professor: Walter.

Assistant Professors: Swensen, Winter, H.

Instructor: Roden.

### LOWER DIVISION

**1A, B. Fundamentals of German (4,4) F, S**

1A—Practice in grammar, reading, pronunciation, writing and conversation. Not open to students who have had one year of high school German.

1B—Prerequisite: German 1A or one year of high school German. Continuation of German 1A.

**60A, B. Intermediate German (3,3) F, S**

(A) Prerequisite: German 1A, B or two years of high school German or equivalent.

(B) Prerequisite: German 60A or three years of high school German or equivalent.

Reading of representative modern German literature and technical material. Deeper penetration into problems of German grammar.

**61A, B. Scientific German (3,3) F, S**

(A) Prerequisite: German 1A, B or two years of high school German or equivalent.

(B) Prerequisite: German 61A. Meets the preprofessional requirements of students entering science or medicine. Not applicable toward the 14 units prerequisite for upper division courses.

### UPPER DIVISION

**102. Advanced German I (3) F**

Prerequisite: German 60B or equivalent. Extensive reading of German writings, review of grammatical principles, and a general consolidation of the four language skills: reading, comprehension, composition and conversation.

**103. Advanced German II (3) S**

Prerequisite: German 102 or equivalent. A sequel to German 102, with continuing emphasis on extensive reading of German texts and periodicals, regular composition work based on these readings, and the development of increased mastery of the spoken language through student discussions of the readings.

**105. Survey of German Literature I (3) F**

Prerequisite: 14 units of lower division German. Development of German literature from the oldest extant works to the middle of the Seventeenth Century.

**106. Survey of German Literature II (3) S**
Prerequisite: 14 units of lower division German. From the middle of the seventeenth century to the present.

**108. The Golden Age of German Literature (3) F, S, SS**
Prerequisite: 14 units of lower division German. Reading and discussion of the most significant authors of the Enlightenment, the Storm and Stress Period, and the Classical Age. Writers such as Lessing, Klinger, Lenz, and especially Goethe, and Schiller will be considered.

**109. German Romanticism (3) F, S, SS**
Prerequisites: 14 units of lower division German. The development and growth of German Romanticism from its earliest proponents and representatives on through to its period of fruition and expansion. Emphasis will be placed upon the close relationships of Romanticism with music and philosophy. Reading and discussion of authors such as Novalis, Tieck, Hoffmann, Holderlin, Schlegel, Eichendorff, Chamisso, Heine, Schopenhauer, Wagner, Nietzche.

**110. German Drama in the Nineteenth Century (3) F, S**
Prerequisite: A minimum of 14 hours in lower division German courses. A study of the German drama from Tieck to Hauptmann with emphasis upon Kleist, Grillparzer and Hebbel.

**111. Advanced German Syntax and Composition (3) S**
Prerequisite: German 102 and 103 or equivalent. Emphasis on the writing of reports and essays.

**113. German Realism (3) F, S**
Prerequisite: 14 units of lower division German. A study of selected prose, poetic, and dramatic writings of German Realism (1830-1890) against the background of the historical, philosophical and cultural movements of the times.

**114. The German Novelle (3) F, S, SS**
Prerequisite: 14 units of lower division German. Reading and discussion of German Novellen, as set up in theory and practice as a specific literary genre, by such significant authors as Goethe, Tieck, Kleist, Spielhagen, Fontane, Heyse, Stefan, Zweig, Karfka and Thomas Mann.

**115. Literary Movements in Modern German Literature (3) F, S, SS**
Prerequisite: 14 units of lower division German. Reading and discussion of short stories and novels of outstanding writers in the period between 1880-1950, such as Gerhart Hauptmann, Arthur Schnitzler, Herman Hesse, Franz Karfka, Robert Musil.

**116. The Modern German Novel (3) S**
Prerequisite: 14 units of lower division German. A study of the development of the German novel from Goethe to Karfka and Mann against a background of the literary, philosophical and historical currents of the times.

**118. Contemporary German Drama (3) F, S, SS**
Prerequisite: 14 units of lower division German. The development of the German drama from Naturalism to the present day. Reading and discussion of significant playwrights of the 20th Century, such as Gerhart Hauptmann, Wedekind, Toller, Brecht, Zuckmayer, Durrenmatt and Frisch.

**120A, B. German Conversation (3,3) F, S, SS**
Prerequisite: 14 units of lower division German. A functional course in conversation, intended to meet specific, everyday situations and to provide help to those who intend to speak German in travel, work or classroom instruction. Either half of course may be taken first.

# HEALTH EDUCATION

Associate Professor: Torney.

Assistant Professors: Beegle, Farber, Irwin.

## LOWER DIVISION

**20. Health Education and Safety (2) F, S, SS**

Development of modern health knowledge, habits and attitudes; concerns mental health, alcoholism, narcotics, nutrition, public safety, communicable diseases, and family life.

## UPPER DIVISION

**125. Public School Health Program (3) F, S, SS**

Prerequisite: Health Education 20. Organization, administration philosophy, and legal aspects of school health education including health service, healthful school living, material and methods of health instruction, and techniques of health counseling. Role of teacher, health co-ordinator, nurse, and other specialized personnel. Home and community relationships. (Required for health and development credential for school nurses.)

**126. Methods and Materials of School Health Education (3) S, SS**

Prerequisites: Health Education 20 and 125. Methods in school health education; selection of materials, use of various resources, tests, measurements and evaluation.

**127. Community Health Problems (3) F**

Prerequisite: Health Education 20. Community aspects of pertinent health problems and the organization of health resources; emphasis on philosophy, services, administration, and interrelationships of public, private, and voluntary health agencies as they function in the community.

**128. Health Protection (3) F**

Prerequisite: Health Education 20 or permission of instructor. Intensive study of the following subject-matter areas: environmental health, civil defense, housing and health, occupational health, consumer health, and related protection agencies.

**129. School Health Counseling (2) S**

Prerequisite: Health Education 125. Basic principles involved in school health counseling as related to personal and group health problems. The role and relationships of pupil, teacher, nurse, parent, physician, and health educator are discussed, as well as relationships of school-community environment.

**130. Stimulants and Depressants (2) F**

Prerequisite: Health Education 20 or permission of instructor. Intensive study of the following subject-matter areas: narcotics and addiction, alcohol and alcoholism, tobacco, related drugs and laws affecting these substances.

## GRADUATE DIVISION

**200. Trends in School Health Education (2) F even years**

Prerequisites: Health Education 125 or consent of instructor and Physical Education 297 for all physical education master's degree candidates (may be taken concurrently). Enables students to explore recent research in basic content areas of health education in the public schools. Includes new developments in such areas as mental health, dental health, chronic and degenerative disease, and family life education.

**220. Evaluation and Measurement in School Health Education (2) S**

Prerequisite: Education 110 and Health Education 125 or consent of instructor and Physical Education 297 for all physical education master degree candidates (may be taken concurrently). Theory and analysis of measurement and evaluation as they apply to school health education. The construction, administration, measurement and evaluation of health knowledge tests, attitude scales and practice inventories.

**225. Curriculum Development and Construction in School Health Education (3) F odd years**

Prerequisites: Health Education 125, and student teaching or teaching experience in health education or consent of instructor, and Physical Education 297 for all physical education master degree candidates (may be taken concurrently). Principles of curriculum construction as they apply to school health education on both the elementary and secondary levels. Includes formulation of aims and objectives; scope and sequence of health instruction; survey of materials for evaluation such as health knowledge tests, attitude scales, and practice inventories; source materials such as health education tests, pamphlets, films, posters, etc. from voluntary, private, and public health agencies and commercial agencies.

**227. Problems in Teaching Health Education in Elementary and Secondary Schools (2) S**

Prerequisites: Health Education 125 and student teaching or teaching experience in health education or consent of instructor, Physical Education 297 (may be taken concurrently). Meets current professional needs of health education teachers. Experience and problem-solving in teaching and learning methods and materials.

## HISTORY

Professors: Ahlquist, Hardeman, Kimball, Lindgren, Melom, Peters, Wilde.

Associate Professors: Asher, Lipski, Lund, Nichols, Ragland.

Assistant Professors: Brownsword, Hodge, Huggins, McFaul, Raack, Tarr.

Instructors: Walzer, Woody.

Lecturer: Gilbert, C.

### LOWER DIVISION

**4A, B. Western Civilization (3,3) F, S**

The political, economic, social, cultural, religious, and intellectual history of Western Civilization from its origins to the present. Stresses persons, ideas, movements, and institutions that have had the greatest impact upon the modern world.

**5A, B. History of England and Great Britain (3,3) F, S**

A survey and analysis of the cultural, economic, and political growth of Great Britain and the Commonwealth from earliest times to the present. Emphasis is placed on the evolution of Anglo-American institutions and cultural heritage.

**7A, B. History of the United States (3,3) F, S**

Survey of the political, social, economic, and cultural development of the United States from discovery to the present. Attention given to the rise of the new nation, sectional and national problems, disunion and reconstruction, rise of industrial America, the United States as a world power, welfare democracy, and postwar

problems. Meets the graduation requirement in United States history. Not open to students having credit in History 8A, B, or History 51.

**8A, B. History of the Americas (3,3) F, S**

A comprehensive study of the colonizing activities of the Spanish, Portuguese, French, Dutch, and English in Latin America and Anglo-America; the movement for independence among colonial peoples of the western hemisphere; the social, intellectual, political, and economic developments of the Latin American republics, Canada, and the United States. Meets the graduation requirement in United States history. Not open to students having credit in History 7A, B, or History 51.

**19A, B. History of Asia (3,3) F, S**

Historical development of the Indian and Chinese civilizations and of their extensions in Indonesia, Indo-China, Japan, Korea and Central Asia; relations between East and West; contemporary problems in Asia.

**UPPER DIVISION**

**105. Europe in the Nineteenth Century (3) F**

The apogee of European power, influence, and confidence. Recovery from French Revolutionary and Napoleonic disturbances, reaction and revolution, nationalism, the unification of Germany and Italy, the triumph of liberalism, the challenge of socialism, the outburst of imperialism, the alliances and alignments leading to World War I.

**107A. United States, Colonial Period (3) F**

Discovery and settlement of the new world; European institutions in a new environment; development of colonial government; economy, and social institutions; European dynastic rivalry and colonial America.

**107B. United States, Age of Revolution (3) S**

The clash between British attempts to control and tax the colonies and colonial distaste for both; growth of an independent spirit; the American Revolution; problems of the new nation; the Constitution.

**108A, B. Economic History of the United States (3,3) F, S**

A survey of American economic development from its European backgrounds to the present. Emphasis will be placed on agriculture, transportation, labor, manufacturing, capital accumulation and corporate structures.

**109A. United States: Early National Period (3) F**

Establishing the federal government; origins of the party system; the foundations of American foreign policy; an expanding economy; the changing social scene; the spread of democracy; national self-discovery.

**109B. United States: Jacksonian Democracy and Sectional Crisis (3) S**

Social and economic expansion; the rebirth and development of political parties; the politics of slavery; Manifest Destiny and the Mexican War; growth of sectional feeling; the disruption of American democracy.

**110. Civil War and Reconstruction (3) F, S**

Sectional rivalry, manifest destiny, mid-century divisive forces, Civil War, and reconstruction.

**111. Hanoverian England (3) S**

The Revolution of 1688, rise of party and cabinet government, Whig Supremacy, Johnsonian England, Second Hundred Years War, agricultural and industrial revolutions, evangelical and humanitarian movements, England and the French Revolution, reaction and reform.

**112. Tudor and Stuart England (3) F**
The New Monarchy; Renaissance and Reformation; rise of commercial capitalism; foundations of empire; age of Elizabeth I and Shakespeare; experiment in Divine Right Monarchy; triumph of Puritan, Parliament, and Common Law; the age of the Puritan and Milton; the Restoration; and the beginnings of party and cabinet government.

**113A, B. British Empire and Commonwealth (3,3) F, S**
British expansion overseas from the earliest times to the present. 113A deals with Irish Plantations, Elizabethan Sea Dogs, Trading Companies and Settlement colonies, Mercantilism, wars for trade and commerce, Fall of the First Empire. 113B deals with Rise of Crown Colonies and the Colonial Office, Humanitarianism and Free Trade, Evolution of Canada, New Zealand, Australia, and South Africa toward dominion status, British rule in India and tropical lands, rise of colonial nationalism.

**114. Britain Since Victoria (3) F**
British history from the accession of Queen Victoria to the present. Special emphasis on economic and social conditions, intellectual ferment, the advance of democracy, the rise of labor and socialism, and Britain's changing world position.

**116. Constitutional History of England (3) S**
The origin and evolution of the basic English political and legal institutions from the earliest times to the present.

**118. Africa Before Partition (3) F**
Egyptian, Greek, and Roman influence; early African states; the Muslim invasion, Islamic influences, and Arab settlements; Ethiopia; Mamluk Egypt and the Barbary states; early Portuguese and Dutch activities; the era of firearms and the slave trade; Christian missions and the 19th Century explorations.

**119. Modern and Contemporary Africa (3) S**
The conquest of Africa by European states, contrasting colonial systems as they evolved, anti-colonial movements and progress towards self-government or independence, problems of economic and political development, and race tensions in areas of white settlement.

**125A. Ancient Greece (3) F**
A history of the Greeks and the Greek world from the earliest times to the Roman Conquest.

**125B. Roman History (3) S**
A history of Rome and the Roman world from the Eighth Century B.C. to the Fifth Century A.D.

**126A. Early Middle Ages (3) F**
A history of Western Civilization from the fall of the Roman Empire in the West to the Crusades. Germanization of the West, evolution of Christian institutions, Slavic expansion, Byzantinization of the Eastern Empire, Islamic civilization, Carolingian age, feudal and manorial institutions.

**126B. High Middle Ages (3) S**
A history of Western Civilization from the Crusades to the end of the Middle Ages. The revival of trade, the growth of towns and of capitalism; the origins of modern political institutions; and medieval learning and art.

**130A. United States: The Flowering of Industrialism (3) F, S**
An examination of the growth of American industry from the post-Civil War period to the close of the 19th Century, the effect of industrialism on the busi-

nessman, farmer, laborer, and politician, the rise of the city and the characteristics of immigration.

**130B. United States: The Progressive Period and the Twenties (3) F, S**
An examination of the progressive movement from Theodore Roosevelt's administration; its various manifestations and accomplishments on the city, state, and national levels. A study of the rise of America to world power. An analysis of the 1920s from an economic, social, and political point of view.

**131. United States: The Great Depression, War and Its Aftermath (3) F, S**
Depression and the beginnings of welfare democracy; United States in World War II; post-war problems and world affairs.

**133A, B. American Intellectual History (3,3) F, S**
Main intellectual currents in American History as expressed in political and economic thought, theology, philosophy, literature and science. This includes comment on the economic background and the interaction between ideas and social structure.

**135A, B. Social History of the United States (3,3) F, S**
The development of American society from the beginnings of settlement to the present, with particular emphasis upon the modification of European institutions in the American environment. Includes social structure, nature of the family, ethnic tensions, Americanization of the immigrant, the changing character of urban and rural life, and the social background of major political events.

**140. Europe Since 1914 (3) F, S**
World War I; outstanding changes in Europe after the first World War with particular stress on the rise of Fascism in Italy, Nazism in Germany, Communism in Russia, and Social Democracy in Scandinavia and Great Britain; the failure of the League of Nations and the collapse of collective security, World War II; the United Nations; postwar problems.

**141A. Europe During the Renaissance (3) F**
Europe from the waning of the middle-ages to The Reformation. The revival of classical learning; secularization of life; commercial and financial revolutions; the great voyages of discovery; humanism in the arts and letters; origins of the modern dynastic state-system.

**141B. The Reformation Age in Europe (3) S**
A history of Europe from Luther to the end of the Thirty Years' War. The medieval background; the revolt of Luther and other reformers; Catholic response; the religious wars; rise and decline of Iberian hegemony; the test of power and the Westphalia settlement.

**142. The Age of Absolutism (3) F**
Europe from the age of Louis XIV to the rise of the Enlightened Despots. The growth of absolute monarchy on the Continent, the development of rationalism, the evangelical revival, and international commercial rivalry.

**143. The French Revolution and Napoleon (3) S**
The end of the Old Regime and the French Revolution. The decline of the feudal monarchy, the failure of enlightened despotism, the rise of revolutionary thought, the French Revolution, and Napoleonic imperialism.

**147A, B. Constitutional History of the United States (3,3) F, S**
A study of constitutional history in the chronological framework of American history from colonial beginnings to post-World War II. Emphasis is on the sources

of constitutional change in America—social, economic, intellectual, political—and on the ways constitutional government have influenced American society.

**150A, B. History of the Westward Movement (3,3) F, S**
An analysis of the frontier experience of the American people; expansion across the American continent and its influences on American ideas and institutions; special attention will be given to explorations, movement of populations, effects of sectionalism, and the geographical bases for American development.

**155A, B. Diplomatic History of the United States (3,3) F, S**
American foreign relations since the Revolution, giving special attention to the concepts of manifest destiny, isolationism, and the Monroe Doctrine; the increasingly important role of the United States in international affairs.

**158. History of the South (3) F**
Survey of the economic, social, intellectual, and political development of the South from colonial times, with emphasis on the period from 1820 to the present.

**161. The A B C Powers (3) F**
The history of Argentina, Brazil, and Chile, with brief attention to Uruguay and Paraguay; their role in the Americas and in the world.

**162. History of Mexico (3) S**
A study of Indian Mexico; the Spanish conquest; the war of independence; the age of Santa Ana; the Period of Reform; the Reign of Diaz; the Revolution of 1910; the Period of Reconstruction; contemporary Mexico with its cultural, social, political, and economic trends.

**163. Latin American Peoples (2) F, S**
An integrated study of the land, history, people's government, economics, way of life and international relationships of the Latin American nations, trends in terms of broad groups with stress laid on important similarities and outstanding differences among the Latin American peoples. Not open for credit to majors in history.

**164. The Caribbean Area (3) F**
A history of the West Indies, Central America and northern South America. The economic, political, and cultural development of these regions and their relations with the United States.

**167. Modern Latin America (3) F, S**
The history of the independent Latin American nations, with emphasis on common characteristics and developments which have emerged in the 20th Century.

**173. Imperial China (3) F**
The background of the establishment of the Chinese empire, development and crystallization of traditional institutions, expansion and contraction of the empire, impact on adjacent areas, and the rise and fall of dynasties. Emphasis on institutions and attitudes which produced the greatest impact on recent Chinese history.

**174. Modern China (3) S**
The impact of the west and disintegration of the traditional order in the nineteenth century, revolutionary changes in the twentieth century, nature and problems of the Republic, and the rise and establishment of communist power.

**175. History of Japan (3) S**
Survey of history of Japan from earliest times to the present. Emphasis on the period since 1868, the westernization of Japan, and the persistence of traditional attitudes and institutions influencing Japan's role in the modern world.

**177. Foundations of Russia (3) F**
Foundations of the Russian state in Kiev; rise of Moscow; westernization and expansion of Imperial Russia. Emphasis on the evolution of autocracy, orthodoxy, and serfdom.

**178. Modern Russia (3) S**
Era of great reforms and revolutionary movements; downfall of Imperial Russia; establishment of the Soviet regime; chief political, social, economic and cultural developments in the Soviet era; role of the Soviet Union in world affairs.

**179. Russian and Soviet Cultural History (3) F**
Cultural development of Russia from Peter the Great to the present. The major conservative, liberal and radical trends of thought. The conflict between Russian tradition and Communism.

**182. Modern Balkan and Near Eastern History (3) S**
Era of Turkish rule in the Balkans and the Near East. Independent development of Yugoslavia, Bulgaria, Rumania, Greece and Albania. Modernization of Turkey. Soviet impact on the Balkans and the Near East.

**185. Early California History (3) F**
Spanish and Mexican periods of California history. Political, economic and social development of California from its discovery and occupation by the Spanish to the middle of the 19th Century.

**186. Recent California History (3) S**
American period of California history; political organization, progressivism, recent political, social and cultural developments.

**199. Historians and Historiography (3) F, S**
Introduction to historical methods with a discussion of major historians and problems of historical interpretation. Required of history majors. To be taken in the senior year.

## GRADUATE DIVISION

**204. Seminar, the United States to 1900 (3) F, S**
Prerequisite: Six units of upper division United States history. Selected topics in the political, economic, diplomatic, social, and intellectual history of the United States, from the Colonial period to the Spanish-American War. May be repeated for a maximum of 6 units.

**209. Seminar in Twentieth Century United States (3) F, S**
Prerequisite: Six units of upper division United States history. The problems of modern America with reference to the special interests of the students in either domestic or international affairs since the Spanish-American War. May be repeated for a maximum of 6 units.

**210. Seminar in European History (3) F, S**
Prerequisite: Consent of instructor. Directed reading and research in the political, economic, social and cultural history of Europe. May be repeated for a maximum of 6 units.

**211. Seminar in British and Empire History (3) F, S**
Prerequisite: Consent of instructor. Analysis of topics of special interest in the history of Britain and British foreign policy, of the Empire, and of the Commonwealth. May be repeated for a maximum of 6 units.

**298. Project or Thesis (1-4) F, S, SS**
Planning, preparation and completion of thesis in history for the master's degree.

# HOME ECONOMICS

Professors: Bates, Z., Gillaspie.

Associate Professors: Hoff, Hupfield, Nelson, N., Palmer, C., Vanderwarf.

Assistant Professors: Baker, D., Buckwalter, Kefgen, Morgenroth.

### LOWER DIVISION

**50. Introduction to Home Economics (1) F, S**

Designed to increase the student's understanding of home economics in higher education as a "home-centered" liberal education from which a variety of opportunities for professional specialization may arise. Required of all freshmen and sophomore home economics majors.

### UPPER DIVISION

**171. Procedures and Demonstration Techniques (2) F, S**

Prerequisite: Speech 30 or 50 or equivalent. Procedures in presenting subject matter in the various areas of home economics including principles and techniques of demonstration. (Lecture, laboratory.)

**190. Special Studies (2) F, S**

Prerequisites: Home economics major, senior standing. Investigation and discussion of significant problems and issues in home economics. Emphasis in contemporary literature relating to home economics, individual investigation, and group discussion of selected problems.

## CHILD DEVELOPMENT AND FAMILY RELATIONS

### LOWER DIVISION

**66. The Preschool Child (3) F, S**

Prerequisites: Psychology 51, Sociology 50 (may be taken concurrently), or equivalent. A study of the patterning of behavior in home and nursery school, and the interaction of parents, children and teachers. Not open to students with credit in Home Economics 130. (Lecture, laboratory.)

### UPPER DIVISION

**102. Individual Child Study (Preschool years) (3) SS**

Prerequisites: Psychology 51, Education 105 or consent of instructor. Designed for homemaking teachers. Study of an individual child in a family and community setting as a basis for formulating guidance practices in the home. Evaluating current materials in child care and development for use at the secondary level.

**131. Field Work with Preschool Children (2) F, S**

Prerequisite: Home Economics 66 or Education 105 or consent of instructor. Participation in group care of young children in nursery schools. Analysis of nursery curriculum and techniques in terms of basic objectives of various programs. (Lecture, laboratory.)

**165. Family Life Education (3) F, S, SS**

Concepts of family development and interaction in the modern American family with special emphasis on leadership opportunities for professional persons. Not open to students with credit in Sociology 153.

**195. The Family in the Community (3) F, S**
Prerequisites: Psychology 51 and Sociology 50 or Education 105, or consent of instructor. Exploration of key concepts underlying contemporary American family life and community agencies serving the urban family.

## FAMILY FINANCE AND MANAGEMENT

### LOWER DIVISION

**53. Management of the Modern Home (2) F, S**
Management theory related to consumer problems; food, clothing, shelter, time, energy, money.

### UPPER DIVISION

**144. Home Management (3) F, S**
Principles and philosophy of management in the home; decision making as affected by family values, standards, goals, resources, and socio-economic conditions.

**145. Home Management Project (3) F, S**
Prerequisites: Home Economics 144, 147 or equivalent. Analysis of family goals and values in a rapidly changing culture; principles and concepts of management developed through field work with families. Individual and group conferences arranged.

**146. Household Equipment Technology (3) F, S**
Scientific principles underlying the selection, care and operation of household equipment. (Lecture, laboratory.)

**147. Personal and Family Economics (3) F, S**
Theory and procedures in planning, controlling and evaluating resources.

## FOOD AND NUTRITION

### LOWER DIVISION

**51. Food Selection and Meal Preparation (2) F, S**
Food selection and buying; meeting individual and family food needs; principles of food preparation, family meals. Not open to home economics majors. (Lecture, laboratory.)

**52. Basic Nutrition, Food Buying, and Meal Preparation (2) F, S**
Basic principles of human nutrition; application to the selection of an adequate diet; preparation of various types of food and some opportunity for the planning, preparing, and serving of simple meals. Designed for nurses and elective students. (Lecture, laboratory.)

**70. Principles of Food Preparation (3) F, S**
Prerequisites: Chemistry 1A or 2; 108 (may be taken concurrently) or equivalent. Scientific principles and techniques in food preparation; factors that contribute to quality of food products; judging quality of prepared foods. (Lecture, laboratory.)

### UPPER DIVISION

**105. Fundamentals of Nutrition (3) F, S**
Prerequisites: Anatomy and Physiology 50, Home Economics 70 or equivalent. Foundations of nutrition and its relation to health; application to feeding the individual and family.

**110. Meal Management (2) F, S**

**110A. Meal Management (1) F, S**

Prerequisite: Home Economics 105 or equivalent. Analysis of factors which influence meal plans, food selection, preparation and service in relation to management of time, energy and money. Home Economics 110A is an extension of Home Economics 110. The extra work involved will be concerned with meal planning, etc. for institutions or other large groups. Required of students in the dietetic program.

**120. Techniques for Teaching Foods (3) SS**

Prerequisite: Consent of instructor. Suggested techniques for teaching foods on the meal basis in the 50-minute class period in the junior or senior high school. Emphasis on use of the all-purpose room; time management; arrangement of equipment in the units; work simplification; and demonstration techniques; freezing as related to meat preparation; appealing food experiences for teen-agers as related to nutrition.

**128. Experimental Foods (3) F, S**

Prerequisite: Home Economics 105 or equivalent. Scientific principles and experimental procedures as applied to food processes. (Lecture, laboratory.)

**136. Quantity Food Production (3) F, S**

Prerequisite: Home Economics 105 or consent of instructor. Principles of menu planning, food purchasing and preparation for large groups; cost control. Experience in large quantity food production. (Lecture, laboratory.)

**137. Food Service Management (3) F, S**

Prerequisite: Business 53A or consent of instructor. Principles, organization, and management of the food service department; selection, layout and maintenance of institution food service equipment.

**150. Nutrition and Health (3) F, S, SS**

An intensive study of nutrition including evaluation of current trends in food and nutrition. Designed for students in health education, elementary and secondary education, social service, and other elective students. Not open to home economics majors.

**161. Advanced Nutrition (3) F, S**

Prerequisite: Home Economics 105 or equivalent. Metabolism of protein, fats, carbohydrates, minerals, and vitamins; interrelationships of nutrients; procedures for determining nutritional requirements of individuals; cultural aspects of food as they relate to nutrition.

**162. Recent Developments in Food and Nutrition (3) F, S, SS**

Prerequisites: Must be preceded by courses in food and nutrition, consent of instructor. Analysis of recent developments and current research in the areas of food and nutrition.

**170. Diet in Health and Disease (3) F, S, SS**

Prerequisites: Home Economics 105 or equivalent; Anatomy and Physiology 50, or consent of instructor. Nutritional requirements of specific phases of normal growth and development; dietary modification for abnormal and disease conditions.

## HOUSING AND HOME FURNISHINGS

### LOWER DIVISION

**54. Planning and Furnishing the Modern Home (3) F, S**
Guides in planning, furnishing, and managing an attractive home as the center of family life. Not open to home economics majors. (Lecture, demonstration.)

**78. Housing Design (2) F, S**
The architectural, constructural, and artistic factors of housing as related to family needs.

### UPPER DIVISION

**101. Decorating and Furnishing Today's Home (3) SS**
The study of color and the fundamentals of design as applied to the home. Homemaking teachers will develop projects for home furnishings units on the secondary level. Other students will work on related projects. (May not be substituted for Home Economics 141.)

**140. Housing: Study of Environmental Factors (2) F, S**
The problems of developing effective housing and communities for families in various cultural situations. The sociological, financial, psychological, and legislative factors of housing are investigated.

**141. Interior Design and Furnishings (3) F, S**
Prerequisites: Art 53 or 11, Home Economics 107 (may be taken concurrently), or consent of instructor. The study of design principles as applied to interiors; the analysis of materials and elements used in home furnishings. (Lecture, laboratory.)

**142. Advanced Interior Design and Furnishings (3) F, S**
Prerequisite: Home Economics 141 or consent of instructor. Advanced study of home furnishings design with emphasis upon functional planning for residences. Includes applied interior design, historic periods, interior lighting, color theory, and textiles.

**143. Recent Developments in Housing and Home Furnishings (2) F, S**
Prerequisite: Home Economics 140, 141, or consent of instructor. Recent trends in materials, construction, and care of housing and home furnishings. Research in the evaluation and care of new products.

## TEXTILES AND CLOTHING

### LOWER DIVISION

**61. Clothing Contruction and Consumer Problems (2) F, S**
Principles of clothing construction and their application; consumer problems; textiles. Not open to home economics majors. (Lecture and laboratory.)

**62. Principles of Clothing Selection (2) F, S**
Prerequisite: Art 53 or equivalent (may be taken concurrently). Analysis of principles of apparel selection in relation to the economic and aesthetic aspects of clothing.

**75. Fundamentals of Clothing Design (3) F, S**
Prerequisite: Home Economics 60 or equivalent. Analysis of theories and methods of clothing construction. (Lecture, laboratory.)

## UPPER DIVISION

**107. Textile Selection (3) F, S**
Prerequisites: Home Economics 62; Chemistry 1A or 2, 108 (may be taken concurrently) or equivalents; or consent of instructor. Recent developments in textiles; natural and synthetic fibers, yarn and fabric construction, dyes and finishes as they influence fabric selection, performance and care.

**115. Creative Pattern Design (3) F, S**
Prerequisite: Home Economics 75 or equivalent. Experimental approach to analysis of factors influencing clothing synthesis and design. (Lecture, laboratory.)

**175. Advanced Textiles (3) F, S, SS**
Prerequisite: Home Economics 107 or equivalent. Investigation of chemical and physical structure of fibers and physical properties of yarns and fabrics in relation to fabric serviceability.

**176. Current Trends in Clothing, Textiles and Fashion Design (2) F, S**
A study of new textile developments; new techniques in teaching clothing; principles and application of fashion design.

**177. Costume Design and Draping (2) F, S**
Prerequisite: Home Economics 115 or consent of instructor. Creating original design through French draping. (Lecture, laboratory.)

**179. Psychological, Sociological and Economic Aspects of Clothing (2) F, S, SS**
Prerequisites: Home Economics 62, Psychology 51, Economics 1A or 100, Sociology 50 or 52 (or equivalents), or consent of instructor. Analysis and interpretation of psychological, sociological and economic influences on the selection of individual and family clothing.

## GRADUATE DIVISION

**215. Curriculum Development in Home Economics (3) F, SS**
Prerequisite: Teaching experience in home economics at the secondary or college level. An advanced course in current philosophies and principles basic in the analysis of curricular programs in education for home and family living for various maturity levels. Reorganization of curricular materials.

**220. Evaluation in Home Economics (3) S, SS**
Prerequisite: Education 156 or equivalent. For secondary and college teachers. Philosophy of evaluation as it relates to creative teaching. Selection, development, use and interpretation of evaluation devices.

**225. Family Development in the Home (3) Offered on adequate demand**
Prerequisite: Home Economics 195. The literature of Family Development and trends in the training of family relations specialists.

**230. Seminar in Housing and Home Furnishings (3) Offered on adequate demand**
Prerequisite: Home Economics 142 or 143 or consent of instructor.

**235. Seminar in Family Finance and Management (3) Offered on adequate demand**
Prerequisite: Home Economics 145 and 147, or Home Economics 145 and Economics 126.

**240. Seminar in Child Development (3) Offered on adequate demand**

**245. Seminar in Clothing and Textiles (3) Offered on adequate demand**
Prerequisite: Home Economics 115, 175 or consent of instructor.

**250. Seminar in Foods and Nutrition (3) Offered on adequate demand**
Prerequisites: Advanced courses in foods and nutrition or consent of instructor.

**255. Seminar in Home Economics Education (3) F, S, SS**
Prerequisites: Education 156, teaching experience, and consent of instructor.

**260. Seminar in Organization and Administration of Home Economics (3) F, S, SS**
Prerequisites: Home Economics 215, 220, teaching experience, and consent of instructor.

**265. Trends and Perspective in Home Economics (3) F, SS**
Prerequisites: Home Economics 225 and consent of instructor. A study of changing aspects of this field in philosophy, curricular organization, subject areas, and methods within the framework of recent changes in educational planning.

**297. Research Methodology in Home Economics (3) F, S, SS**
Problems in the field of home economics and education with emphasis on the descriptive method of research and use of the library. Required of all master's degree candidates in home economics.

**298. Project or Thesis (1-4) F, S, SS**
Prerequisite: Home Economics 297. Planning, preparation and completion of a project or thesis related to the home economics field.

## INDUSTRIAL ARTS

Professors: Dean, Grainge, Powell, P.

Associate Professors: Farr, Genevro, Lathrop, Nicholson, Rawson, Ryan, Torres.

Assistant Professors: Bonde, Macon, Patcha, Robinson, H., Schmidt, Smith, D., Trout.

### LOWER DIVISION

**1. Introductory Wood (2) F, S, SS**
A survey of basic wood processes, practices and apparatus. With emphasis on the understanding of current principles and procedures. (Laboratory included.)

**3. Wood Finishing (2) F, S**
The study of the chemical constituents of oleoresinous, plastic, synthetic and animal base finishes and the various coated and polishing abrasives, emphasis on selection usage and techniques of application. (Laboratory included.)

**11. General Metals I (2) F, S, SS**
The properties of ferrous and non-ferrous metals characteristics of hand and machine tools, and the basic processes of forging, foundry, art metal, machining, sheet metal and welding. (Laboratory included.)

**21. General Electricity (2) F, S, SS**
Basic principles of electricity, Direct and Alternating current theory, batteries, rotating machinery, and test equipment. (Laboratory included.)

**30. Industrial Drawing I (2) F, S, SS**
Basic principles of instrument and freehand drawing. Use and care of drawing instruments, lettering, sketching, pictorials, orthographics, and working drawings. (Laboratory included.)

**35. Introductory Graphics (3) F, S, SS**

Prerequisite: Industrial Arts 30, or equivalent. The use of graphical techniques as a means of presenting data. Graphical representation will include multiview, basic machine and schematic drawings. Representation of data with graphs and the solution of arithmetical problems graphically. (Laboratory included.)

**41. Graphic Arts I (2) F, S, SS**

Principles of elementary typographic design and layout, type composition, and presswork. Discussions and activities emphasize letterpress and offset lithographic printing processes. (Laboratory included.)

**56. Automotive I (2) F, S, SS**

Principles of operation of the various components and the economics of selection and use of the modern automobile. Practical experience in maintenance and repair at the owner-operator level. (Laboratory included.)

**60. Exploratory Woodwork (2) F, S, SS**

A study of general woodworking designed to provide a broad background of information related to woodworking processes involving both hand and machine tools. Skills and safe work habits are developed through individual solutions to given problems. Certification of safety instructions will be provided. Not open to industrial arts majors. (Laboratory included.)

**61. Exploratory Metalwork (2) F, S, SS**

A study of metalworking in the areas of bench work, forging, casting, art metal, sheet metal and welding processes. This course is designed: (1) to give a broad background and understanding in the technology of materials; (2) to develop skills through individual solutions for given problems; and (3) to develop safe habits in working with metals and equipment associated with metal work. Not open to industrial arts majors. (Laboratory included.)

**62. Home Mechanics (2) F, S**

Experiences in solving maintenance and improvement problems in the home. Simple home repairs will be performed with emphasis on the use and care of common tools and materials. Not open to industrial arts majors. Recommended for students in home economics. (Laboratory included.)

**70. Development of Industry and Technology (2) F, S, SS**

The development of modern industry and technology from prehistoric times to the present. Discovery, invention and application of man's development in technology will be stressed. (Lecture and field trips.)

**80. Industrial Arts Orientation (1) F, S**

An evaluation of students' academic, social and mechanical aptitudes and abilities determined through standardized tests. Personal cumulative records started. Orientation in industrial arts philosophy, credential requirements and opportunities in teaching included. (Required course for all industrial arts majors.)

**100. Wood Technology (2) F, S, SS**

Prerequisite: Industrial Arts 1, or equivalent. The applications, implications and values of wood and woodworking in our technological society, with emphasis upon understanding through study and experiment. (Laboratory included.)

**101. Machine Wood (3) F, S, SS**

Prerequisite: Industrial Arts I, or equivalent. Basic principles and study of the proper care, selection, maintenance of power equipment, with emphasis on safety and proper technique and use of power machines as they relate to the industrial arts program. (Laboratory included.)



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**105. Upholstery (2) S**
Methods of upholstery practices and use of tools and equipment employed in the process of upholstery. (Laboratory included.)

**106. Furniture (2) F, S, SS**
Prerequisite: Industrial Arts 101, or equivalent. Analysis of characteristics and principles of furniture designs, with emphasis on selection and construction of furniture, employing advanced hand and machine tool operations. (Laboratory included).

**107. Carpentry (2) F, S**
Prerequisite: Industrial Arts I, or equivalent. The planning and techniques of estimating construction costs of building with the study of techniques involved in laying out and framing a structure. (Laboratory included.)

**108. Boat Construction (2) S**
Prerequisite: Industrial Arts 101, or consent of the instructor. The interpretation of line drawings and specifications, the design and construction of forms, molds and hulls of straked, molded plywood and fiberglass systems. (Laboratory included.)

**110. General Metals II (2) S, SS**
Prerequisites: Industrial Arts 1A, 11. A continuation of General Metals I with emphasis on related information, design, development and tooling principles for metal products. (Laboratory included.)

**111. Machine Shop I (3) F, S, SS**
Basic principles and practices in machining operations including bench, drilling, lathe, milling, grinder, and shaper work with emphasis on several practices and tool set-ups applicable to the industrial arts program. (Laboratory included.)

**112. Machine Shop II (3) F, S, SS**
Prerequisite: Industrial Arts 111, or equivalent. A continuation of Machine Shop I with emphasis on advanced machining and tooling operations, basic machine design, and machine, tool and cutter maintenance. (Laboratory included.)

**115. Sheet Metal (2) S, SS**
Basic principles of pattern layout and development properties of coated metals, and hand and machine tool operations in sheet metal construction. (Laboratory included.)

**116. Patternmaking and Foundry (2) F, SS**
Prerequisite: Industrial Arts 1 or equivalent. Basic principles and practice in the making of wood patterns, molding and casting of non-ferrous metals. (Laboratory included.)

**117. Forging and Welding (2) F, SS**
Oxy-acetylene and electric welding principles and practice, welding equipment, and principles of ferrous metalurgy. (Laboratory included.)

**118. Art Metal (2) S, SS**
Principles, practices, and concepts in the design and construction of art metal objects, with emphasis on non-ferrous materials. (Laboratory included.)

**119. Welding II (2) S, SS**
Prerequisite: Industrial Arts 117 or equivalent. The principles and practice of fusion, brazing and resistance welding processes with emphasis on alloy metals. (Laboratory included.)

**121. Electronics I (3) F, S, SS**
Prerequisite: Industrial Arts 21, or equivalent. Basic Electronic theory. Vacuum tubes and their characteristics; nature and function of circuit components, circuit analysis and use of test equipment. (Laboratory included.)

**122. Electronic Circuits and Systems (3) F, S, SS**
Prerequisites: Industrial Arts 121, 127, or equivalent. Analysis of electronic and electromechanical systems and circuits, relays, gaseous rectifiers, multivibrators, photo electric circuits, and timing devices. (Laboratory included.)

**125. Audio Systems (2) F, S**
Prerequisite: Industrial Arts 121 or equivalent. Audio amplifier design and testing, speaker enclosure design, recording and reproduction of high fidelity sound including sterophonic applications. (Laboratory included.)

**126. Amateur Radio Licensing (2) S**
Prerequisite: Industrial Arts 121, or equivalent. Code practice and theory to prepare student to sponsor amateur radio in schools; to qualify for federal amateur radio license. (Laboratory included.)

**127. Electronics II (3) F, S, SS**
Prerequisite: Industrial Arts 121, or equivalent. The theory of solid semiconductor materials, unilateral and amplifying devices. Circuit analysis relative to component functions and failures. Advanced study and use of test equipment. (Laboratory included.)

**128. Television and FM Principles (2) F, S, SS**
Prerequisite: Industrial Arts 121, 127, or equivalent. The theory of FM and TV systems. Analysis of circuit operation and service techniques of modern receivers. (Laboratory included.)

**130. Industrial Drawing II (3) S, SS**
Prerequisite: Industrial Arts 30, or equivalent. Theories and graphic solutions in rotation, isometric, oblique projections. Intersections, curved surfaces, developments, space problems of angle and distance. (Laboratory included.)

**131. Architectural Drawing (2) F, SS**
Prerequisite: Industrial Arts 30, or equivalent. The study of architectural principles, conventions, and codes. Special techniques and methods used in developing working drawings and specifications for a residence. (Laboratory included.)

**132. Technical Sketching (2) F, SS**
The principles and practice of freehand sketching of projects on paper and on the blackboard. (Laboratory included.)

**133. Small Boat Design (2) F**
Prerequisite: Industrial Arts 30, or equivalent. Development of lines and table of offsets, displacement and buoyancy calculations, developable surfaces, sails planning, engine placement, preparation of specifications. (Laboratory included.)

**134. Architectural Design (2) S**
Prerequisite: Industrial Arts 131, or equivalent. The design and study of structures that are architecturally accepted. An extended study of pictorial drawing. Designs will be based on studies of styles, building codes, and site development. Models are required of approved designs. (Laboratory included.)

**135. Machine Drawing (2) S**

Prerequisite: Industrial Arts 30, or equivalent. The sketching and drawing of machine parts in detail and in assembly. Use of nomenclature, standard tables and empirical formulae. (Laboratory included.)

**136. Industrial Arts Design (2) S**

Prerequisite: Industrial Arts 30, or equivalent. Utilization of design principles, sketches, working drawings, renderings, and models in the development of functional design for industrial arts projects. (Laboratory included.)

**137. House Construction (1) F, S**

Designed for the homemaker desiring knowledge of materials and methods used in house construction. Not open to industrial arts majors.

**140. Graphic Arts II (3) S, SS**

Prerequisite: Industrial Arts 41, or equivalent. Advanced typographic design and layout. Discussions and activities emphasize the silk screen printing, gravure printing, and bookbind-areas. New techniques and developments in the graphic arts are introduced. (Laboratory included.)

**141. Duplicating Methods for Teachers (2) F, S, SS**

The study of the principles and utilization of duplicating machines and methods commonly found in school systems and how they may be used in preparing instructional materials. (Laboratory included.)

**142. Design and Composition of Printing Forms (2) F, SS**

Prerequisite: Industrial Arts 41, or equivalent. Principles of printing layout, type estimating, and typographical specifications. Experience is offered in designing typical display and commercial printing forms. (Laboratory included.)

**145. Graphic Arts Handicraft (2) F, SS**

Methods of producing printing designs with minimum equipment and facilities. Activities and projects are specifically designed for recreation and junior high school graphic arts instructional programs. (Laboratory included.)

**147. Graphic Arts Photography (2) F, S, SS**

Prerequisite: Photography 10 or equivalent. Photographic theory and operations related to graphic arts. Study of process camera in making line and halftone negatives. Darkroom, printing and finishing operations presented. (Laboratory included.)

**148. Photo-Offset Lithographic Presswork (2) F, S, SS**

Prerequisite: Graphic Arts 1 or equivalent. Principles and techniques of preparing original copy, processing lithographic negatives and plates, and operating offset printing presses. (Laboratory included.)

**149. Letterpress Presswork (2) F, S, SS**

Prerequisite: Graphic Arts 1 or equivalent. Principles and techniques of locking-up forms and plates for letterpress presses and in operating platen and cylinder printing presses. (Laboratory included.)

**151. Auto Engines (3) F, S, SS**

Prerequisite: Industrial Arts 56, or equivalent. Design and theory of construction and operation of engines. Types of materials used and tolerances of component parts. Testing, trouble diagnosis and rebuilding of an engine. (Laboratory included.)

**152. Automotive Electricity (2) F, S, SS**
Prerequisite: Industrial Arts 21 or 56, or equivalent. Principles and theory of operation of electrical system components that are common to automotive type vehicles. Latest methods of testing and trouble shooting are stressed. (Laboratory included.)

**153. Auto Chassis (2) F, SS**
Prerequisite: Industrial Arts 56, or equivalent. Theories of design and operation of chassis units affecting stability, power flow, suspension and steering. Common to most automotive type vehicles. Includes testing, trouble diagnosis, and modern methods of servicing. (Laboratory included.)

**154. Auto Tuneup (2) F, S, SS**
Prerequisite: Industrial Arts 152, or equivalent. Theories of design and operation of fuel system components. Multiple carburetion, progressive carburetion, and fuel injection are studied. Techniques for trouble shooting and engine tuneup using advanced type testing equipment. (Laboratory included.)

**155. Automatics (2) F, S, SS**
Prerequisite: Industrial Arts 152, 153, or equivalents. Theories of design and operation of fluid couplings, torque converters, automatic transmissions, and power activated units. Latest methods of testing, servicing and repair are stressed. (Laboratory included.)

**156. Auto Body Repair (2) F, S, SS**
Prerequisites: Industrial Arts 56 and 117, or equivalents. Techniques and practices of body rebuilding, refinishing and styling. (Laboratory included.)

**160. Industrial Arts for Elementary Teachers I (2) F, S, SS**
Developing and fabricating teaching aids and integrated hand work units for elementary schools. Basic skills in the use of simple construction materials and tools. (Laboratory included.)

**162. Industrial Arts for Elementary Teachers II (2) S, SS**
Prerequisite: Industrial Arts 160, or equivalent. Further studies in integrating construction with the social studies, science and other areas of the elementary school program. A wide variety of tools and materials are used. (Laboratory included.)

**164. Teaching Aids (2) F, S, SS**
The planning, development and construction of teaching aids for the individual student and/or teacher. (Laboratory included.)

**166. Shop Maintenance (2) F, S, SS**
Prerequisite: for majors only in the senior year. Systems used in the maintenance of records, tools and equipment. (Laboratory included.)

**170. Industrial Crafts I (3) F, SS**
A study of the materials of industry through creative experiences in the crafts media. Historical and industrial related information is included. (Laboratory included.)

**171. Industrial Crafts II (3) S, SS**
Prerequisite: Industrial Arts 170. Advanced studies of industrial crafts media. Emphasis on ceramics and lapidary. (Laboratory included.)

**174. Model Making (2) S**
Individual or team research and development of mock-ups and models. Activities include technical applications of mathematical, scientific and industrial principles

and concepts. Consideration is given to design, industrial production methods and exploration of mechanisms and materials. (Laboratory included.)

**175. The Comprehensive General Shop (3) F, S, SS**
Experiences in planning, organizing and teaching a multiple activity program of industrial arts combined with utilization of tools, materials and processes as applied to public school practice.

**180. Safety Education (1) F, S, SS**
The study of safety as it applies to the industrial arts education program with an analysis of accidents in relation to causes, prevention and liability.

**181. Organization and Management of Industrial Arts Facilities (2) F, S, SS**
The study of area planning problems with emphasis on general architectural specifications, auxiliary spaces and selection of tools, equipment and supplies. Plans and specifications for an instructional area are developed by each student. (Laboratory included.)

**182. History of Industrial Arts Education (2) F, S, SS**
The study of historical and present-day development in industrial arts education with emphasis on educational movements and leaders in the field.

**190. Problems in Teaching Industrial Arts Education (2) F, S, SS**
Must be taken concurrently with Education 193I. A comprehensive course including research in the development of instructional units and evaluative devices and methods. Program organization and administration for the beginning teacher is emphasized.

**192. Special Problems in Industrial Arts Education (1-5) F, S, SS**
Advanced work within an area of specialization done on an experimental or research basis. The area will be designated by letter at the time of registration as: (a) woodworking; (b) metalworking; (c) electricity and electronics; (d) industrial drawing; (e) graphic arts; (f) automotive; (g) industrial crafts; (h) professional.
NOTE: May be taken only by consent of the instructor.

**195. Advanced Technical Studies (2) F, S, SS**
Prerequisite: Consent of instructor. Advanced work done within an area of specialization designed for the present industrial arts teacher who wants upgrading in his field of concentration. Covers new industrial processes and materials that may be related to teaching in the secondary schools. (Laboratory included.) May be repeated for a maximum of 4 units.

## GRADUATE DIVISION

**200. Techniques of Research in Industrial Arts (2) F, S, SS**
The selection, definition and methods of solution of problems in industrial arts with emphasis on the experimental, descriptive techniques, project and library techniques. Required of all masters candidates in industrial arts. Not open to students who have credit in Industrial Arts 297.

**212. Modern Concepts in Industrial Education (3) F, S, SS**
Concepts and objectives of industrial education; relationship of industrial education to general education; state and federal legislation affecting industrial education; types of modern industrial schools and their relationship to industry; cooperative and apprenticeship training programs.

**220. Supervision and Administration in Industrial Arts Education (3) F, SS**
The study of supervisory and administrative procedures as applied to unit, limited general, and comprehensive general shop programs.

**221. Curriculum Construction in Industrial Arts Education (3) F, SS**
The selection and organization of curricula and development of courses of instruction to be used in industrial arts education.

**222. Evaluation in Industrial Arts Education (3) S, SS**
The development of methods, techniques and devices for evaluating pupil progress, program effectiveness, physical facilities and industrial materials. Emphasis on scientific development of evaluation devices.

**223. Techniques in Teaching Industrial Arts Education (3) S, SS**
The selection, organization and utilization of instructional material for teaching industrial arts courses.

**296. Seminar (2) F, S, SS**
Prerequisite: Industrial Arts 200. The presentation and discussion of advanced problems in industrial education including original research of graduate students.

**298. Project or Thesis (1-4) F, S, SS**
Planning, preparation and completion of a project or thesis related to this field. Limited to graduate students who have credit in Industrial Arts 297 or who are currently enrolled in or have credit in Industrial Arts 296. Optional.

## INDUSTRIAL TECHNOLOGY

Professor: Kleintjes.

Assistant Professor: Darm.

Instructor: Young, J.

### UPPER DIVISION

**113. Machine Technology (2) F, S, SS**
Prerequisite: To be taken concurrently with Industrial Technology 139. Modern machine tools and their functions in present day manufacturing processes. Emphasis is placed on the machineability of materials; application of tools, jig and fixture principles; feeds, speeds and coolants; gaging and testing techniques which are used in machine operations. (Laboratory included.)

**114. Applied Metallurgy (2) F, SS**
Prerequisites: Chemistry 1A or Chemistry 2 and General Physics 2B. A survey of the field of metallurgy. Chemical and physical composition as applied to the preparation of metals for commercial uses. Various alloys are studied by alloy diagrams. (Laboratory included.)

**115. Heat Treating (2) Offered on adequate demand**
Prerequisite: Industrial Technology 114. A study of heat treating processes of ferrous and nonferrous metals.

**116. Pattern and Foundry (2) Offered on adequate demand**
Patterns, patternmaking, foundry practices and casting techniques used in industry. (Laboratory included.)

**117. Welding (2) Offered on adequate demand**
Prerequisite: Industrial Technology 114. The various welding processes, safe practices, weldability of metals, welded design, and stresses. (Laboratory included.)

**119. Quality Inspection (3) F, S**
Prerequisite: Industrial Technology 167. Quality assurance practices in industry including samples, tolerances, metrology, destructive and nondestructive testing,

surface quality, mechanical, physical and chemical properties control systems. (Laboratory and field trips included.)

**120. Electronic Circuit Analysis (2) F, S**

Prerequisites: Physics 2B, Mathematics 3B and Industrial Arts 121 or equivalent. An expansion of fundamental electronic circuits including stability and corrective networks, bridges, cathode followers, magnetic amplifiers and a study of equivalent circuits.

**121. Electronic Testing and Troubleshooting (2) F, S**

Prerequisites: Physics 2B, Mathematics 3B, Industrial Arts 121 or equivalent. A course designed to familiarize the students with modern test instruments and concepts. Logical troubleshooting of industrial electronic circuits emphasized. (Laboratory included.)

**122. Electronic Production Techniques (2) S**

Prerequisite: Industrial Technology 124. Practice and theory of production techniques used in industry including circuitry, modular design, military specifications and environmental testing. Field trips will be arranged. (Laboratory included.)

**123. Industrial Electronic Automation (2) F, SS**

Prerequisite: Industrial Technology 124. Advanced problems in the field of electronic automation pertaining to industrial production. Servo-mechanisms, feedback amplifiers, synchros, thyratron controlled circuits and magnetic amplifiers are covered. (Laboratory included.)

**124. Computer Circuits (2) F, SS**

Prerequisite: Industrial Technology 125. Basic analog and digital types, emphasis on digital systems with functional diagrams, decimal, binary, and coded numbers, switching logic diode and vacuum tube circuits and memory devices. (Laboratory included.)

**125. Transistor Theory (2) S**

Prerequisites: Industrial Technology 120, 121. Fundamental definitions and concepts. Types and characteristics of transistors with basic circuit applications. (Laboratory included.)

**130. Industrial Drawing Geometry (3) S**

Space relations of points, lines, plane surfaces, and their application to the graphic solution of space problems. (Laboratory included.)

**131. Construction Cost Estimating (3) F**

Prerequisite: Permission of instructor. Principles in making quantity surveys and labor estimates for the building trades.

**132. Building Codes (2) F**

Theory and application of laws and codes as they affect architectural construction.

**133. Landscape Design and Drawing (3) F**

Principles of landscape design and the application of these principles in solving landscape design problems, designing of several small home plots. (Laboratory included.)

**134. Utilities Design (2) Offered on adequate demand**

Prerequisites: Industrial Arts 131 and Industrial Technology 132. Survey of utilities and their application in homes and industry. Planning and drawing of specific problems. (Laboratory included.)

**135. Site Analysis and Development (3) S**
Prerequisite: C.E. 85 or equivalent, Physics 2B. Current practices in site analysis and development including soil mechanics, mapping, earth movement and placement, equipment utilization and proposal preparation. (Laboratory and field trips included.)

**137. Kinematics and Machine Design (3) S**
Prerequisite: Introductory Graphics. Velocities and accelerations, problems in drafting involving linkages, cams, gears, relative linear velocities, introduction to elementary stress analysis. (Laboratory included.)

**139. Tool Design (3) S**
Prerequisites: Industrial Arts 135 and Industrial Technology 170 or consent of instructor. Must be taken concurrently with Industrial Technology 113. Basic principles pertaining to tool design. The use of drawings to study fixtures and jigs. Typical tooling problems will include workings drawings, production plans and tool drawings. (Laboratory included.)

**167. Materials and Processes of Industry (2) F, S**
Prerequisites: Physics 2B, Chemistry 2. Manufacturing processes of wood products, nonmetallic minerals, ferrous metals, nonferrous metals and miscellaneous products such as rubber, plastics and industrial finishes. (Laboratory included.)

**168. Foremanship and Supervision (2) F, S**
Prerequisite: General Psychology. Types of industrial organizations and supervisory systems; responsibilities, duties and qualifications of the supervisor.

**169. Industrial Safety (2) F, S**
Industrial safety, including scope, history, economic factors, objectives, responsibility, organization, and present-day trends.

**170. Mechanics of Materials (2) F, S**
Prerequisites: Mathematics 3B, Physics 2B, or equivalent. Structural shapes of members, and the mechanical, physical, and other properties of engineering materials. Timber, laminated wood, concrete, cast iron, steel, nonferrous metals, and plastics. Analysis of failures, stresses and deformation of structural and machine members.

**171. Production Analysis (2) S**
Prerequisites: Industrial Technology 119, 167. Study of machine utilization and operator manipulation with emphasis on improvement of methods for purposes of maximum production economy and maintenance of standards.

**172. Production Technology (2) F**
Prerequisites: Industrial Technology 171. Modern manufacturing processes and equipment; operation sequence planning; economic aspects of equipment selection, tooling and processing a product from design to final assembly for production.

**195. Senior Problem in Industrial Technology (1-3) F, S, SS**
Prerequisite: Senior standing in industrial technology and consent of instructor. Advanced work of a technical nature within an area of specialization done on an experimental or research basis. The problem involved must have industrial significance.

# JOURNALISM

Professor: James.
Associate Professors: Gayer, Steffes.

## LOWER DIVISION

**49. Yearbook and School Magazine Fundamentals (2) F, S**

A foundation for students desiring to participate in the production of yearbooks or school magazines. Includes a study of, and practice in, planning and layout, copy, methods of printing, covers and binding, and financing. (Lectures and laboratory demonstrations.) Journalism 59 may be taken concurrently.

**50. Introduction to Journalism (3) F, S**

A survey of fundamentals. Develops an understanding of news structure and the role of newspapers, radio and television in mass communication. Recommended as a general elective. (Lecture, discussion, and some practice in fundamentals.)

**52. Press Photography (2) S**

Introduction to press cameras and photography, with emphasis on news values in pictures. Some darkroom techniques are included. Valuable for reporters, free-lance writers, and prospective teachers who may be asked to supervise publications or school publicity. (Lecture, demonstrations, and practical assignments.)

**55. News Writing and Reporting (2) F, S**

Exploring news sources; news gathering and writing of various kinds of news copy for press and radio. (Lecture and laboratory.)

**58. Newspaper Activity (1,1) F, S, SS**

Prerequisite: Any previous or concurrent journalism course. Participation in the publication of the College semi-weekly newspaper—*The Forty-Niner*. Maximum credit 2 units.

**59. Yearbook Activity (1,1) F, S**

Participation in the publication of the College yearbook—*The Prospector*. (May be taken concurrently with Journalism 49.) Maximum credit 2 units.

## UPPER DIVISION

**108. Newspaper Production (2,2) F, S, SS**

Prerequisite: Any previous or concurrent journalism course. Advanced practice in reporting, feature writing, copy reading, editing, news photography, and other journalistic activities through participation in the publication of the College newspaper. (Theory one hour, laboratory and assigned field work three hours.) Maximum credit 4 units.

**109. Yearbook Production (2,2) F, S**

Prerequisite: Any previous or concurrent journalism course. Practical experience in page layout, copy editing, art, photography, and related activities in yearbook publications. Especially valuable to prospective teachers who may be given supervision of school annuals. (Theory one hour, laboratory and assigned field work three hours.) Maximum credit 4 units.

**118. School Newspapers (1,1) F, S, SS**

Prerequisite: Any previous or concurrent journalism course. Limited practice in school newspaper techniques—reporting and feature writing, copyreading, proofing and news editing. Laboratory activity. Maximum credit 2 units.

**128. Journalism for Teachers (3) F, S, SS**
A survey course for prospective advisers and for teachers of English who may wish to utilize journalistic writing as a form of composition. Special attention given to problems of school publications and publicity.

**150. Copyreading and News Editing (3) F, S, SS**
Study and practice in the technique of correcting copy and proof; writing various kinds of news copy; page makeup and headlines; guarding against libel. Recommended as a general education elective and for students interested in publications.

**158. Feature Writing (3) F, S**
Study and practice in the techniques of writing feature stories with a view toward potential markets such as magazines, syndicates, and Sunday supplements. (Not available to students having credit for English 158.)

**160. Newspaper Advertising (3) F, S**
A study of advertising principles, layout and copy writing as they apply to the professional newspaper. Theory of retail and national display advertising, classified advertising, and legal advertising. Practice in the preparation of advertising from the newspaper's point of view.

**161. Public Relations and the Press (3) F, S, SS**
The techniques of public relations, with emphasis on educational public relations for teachers and school administrators. Included will be a study of various press and public relations tools; techniques of publicity, and planning of a public relations program.

**199. Special Projects in Journalism (1-3) F, S, SS**
Prerequisite: Consent of the department. Research in the field of journalism and/or internships in newspaper or magazine situations, public relations, advertising, or other related fields. (May be repeated for a total of 3 units.)

## LATIN

Professor: Nelson, F.

### LOWER DIVISION

**1A, B. Fundamentals of Latin (3,3) F, S**
1A. A beginning course with emphasis upon the rapid mastery of a reading knowledge of Latin.

1B. Prerequisite: Latin 1A or one year of high school Latin. Continuation of Latin 1A.

**60A, B. Intermediate Latin (3,3) F, S**
60A. Prerequisite: Latin 1AB, or two years of high school Latin, or equivalent. Reading and translation of classical and post-classical texts of literary or historical value.

60B. Prerequisite: Latin 60A or three years of high school Latin. A continuation of 60A.

### UPPER DIVISION

**101. Virgil (3) F**
Prerequisite: Two years of college Latin or its equivalent. Translation and literary study of Virgil's poetry. Not open to students who have credit in Latin 61A.

**102. Plautus (3) S**

Prerequisite: Two years of college Latin or its equivalent. Recommended: A working knowledge of French, Spanish, Portuguese or Italian as well. Translation and literary study of representative plays. Special attention to the Latin vocabulary of everyday life as it survives in the Romance languages. Not open to students who have credit in Latin 61B.

MARKETING (See Business Administration)

# MATHEMATICS

Professors: Albrecht, Kulik.

Associate Professors: Dennemeyer, Mardellis, Smith, A. Wenjen.

Assistant Professors: Benson, Black, S., Ewell, Eylar, Fatt, Froyd, Lyche, Madison, E., Riley, Stone, E., Verdina.

Instructor: Conroy.

Lecturer: Williams, J.

## LOWER DIVISION

**1. Intermediate Algebra (3) F, S, SS**

Prerequisite: One year of high school algebra. Study of linear and quadratic equations, factoring, fractions, exponents, radicals, and variation.

**2. Trigonometry (2) F, S, SS**

Prerequisite: Mathematics 1, or equivalent determined by examination in algebra. Trigonometric functions and applications. Complex numbers and logarithms.

**3A. College Algebra and Elementary Functions (4) F, S, SS**

Prerequisite: At least 3½ years of high school mathematics including at least 2 years algebra and ½ year trigonometry, to be confirmed by qualifying examination. A critical study of the algebra of real and complex numbers for students who intend to study calculus. Exponential, logarithmic, trigonometric, and polynomial functions, binomial theorem, progressions, and selected topics. (Lecture 3 hours, problem session 2 hours.)

**3B. Analytic Geometry and Calculus I (4) F, S, SS**

Prerequisite: Mathematics 3A or equivalent as determined by examination. Analytic geometry of the plane. The notion of limit. Differentiation and integration of polynomial functions and applications. (Lecture 3 hours, problem session 2 hours.)

**3C. Analytic Geometry and Calculus II (4) F, S**

Prerequisite: Mathematics 3B. Extension of work in analytic geometry. Differentiation and integration of transcendental functions. (Lecture 3 hours, problem session 2 hours.)

**3D. Analytic Geometry and Calculus III (4) F, S, SS**

Prerequisite: Mathematics 3C. Solid analytic geometry and introductory vector analysis in three dimensions. Functions of two and more variables. Partial derivatives and multiple integrals. Introduction to infinite series and linear differential equations. (Lecture 3 hours, problem session 2 hours.)

**6A, B. Fundamentals of Mathematics (3,3) F, S, SS**

6A. Prerequisites: One year of high school algebra, one year of high school geometry, passing of placement test. Meets elementary education credential re-

quirements. The theory of the structure, arithmetic, and algebra of the real number system. Not open for credit to mathematics majors.

6B. Prerequisite: Mathematics 6A. Elements of logic and the basic concepts of informal geometry; introduction to trigonometry. Not open for credit to mathematics majors.

**7. Unified Introductory Mathematics (4) F, S**

For secondary school teachers who desire a content course covering algebra, plane geometry, and trigonometry. Not open for credit for students who have taken either Mathematics 1 or 2. (Lecture 4 hours.)

**8. Survey of Analytic Geometry and Calculus (4) F, S**

Prerequisite: Mathematics 7 or Mathematics 2. Topics in analytic geometry and calculus of special interest to secondary mathematics teachers. Not open for credit for those students who have taken Mathematics 3B. (Lecture 4 hours.)

**9. Mathematical Calculations (2) F, S, SS**

Prerequisite: Mathematics 2, which may be taken concurrently. Use of slide rule, graph paper, tables, methods of approximation, basic trigonometry and triangle problems.

## UPPER DIVISION

**100. College Geometry (3) F**

Prerequisite: Mathematics 3B or 8. Similar figures, harmonic points and lines, properties of the triangle, coaxial circles, inversion, poles and polars, cross-ratio, involution, and other topics developed since the time of Euclid, as well as a brief introduction to non-Euclidean geometries.

**101. Introduction to Concepts of Analysis (3) F, S**

Prerequisite: Mathematics 8 or Mathematics 3C. Treatment of those aspects of the real number system and of the calculus which will broaden the mathematical knowledge of teachers. (Lecture 3 hours).

**102. Introduction to Mathematical Logic (3) F**

Prerequisite: Mathematics 3B or Mathematics 8. The symbolic methods of propositional calculus, general theory of inference, the transition from formal to informal proofs, theory of definition, elementary set theory, and axiomatic method. (Lecture 3 hours).

**108. Theory of Algebraic Equations (3) F, SS**

Prerequisite: Mathematics 3C or 8. A study of complex numbers, general theorems on algebraic equations, the discriminant, location and approximation of roots of equations, solution of the cubic and quartic determinants and their application to simultaneous linear equations, symmetric functions.

**110A, B. Applied Mathematics I and II (3,3) F, S**

Prerequisite: Mathematics 3D. First semester: ordinary differential equations, functions of several variables, algebra and geometry of vectors, vector field theory. Second semester: applications of partial differentiation, Taylor's formula, infinite series, complex variables.

**113. Linear Algebra (3) S**

Prerequisite: Mathematics 3D. Vector spaces. Linear transformations. Matrices and matrix algebra. Characteristic vectors and characteristic values; Cayley-Hamilton theorem. Quadratic forms; diagonalization of matrices and reduction of quadratic forms.

**114. Introduction to Higher Algebra (3) F, S**
Prerequisite: Mathematics 3D. Group, rings, fields, algebra of classes, transfinite arithmetic.

**119. Ordinary Differential Equations (3) F, S**
Prerequisite: Mathematics 3D. Linear equations of first and second order. Variation of parameters; the Wronskian. Fundamental existence theorems. Systems of equations. Hypergeometric equation; solution of series. Classical functions defined by differential equations. Applications in physics and engineering.

**120. Introduction to Partial Differential Equations (3) S**
Prerequisite: Mathematics 110A, or 119 and 124. Linear first and second order equations; characteristics, elliptic, hyperbolic, and parabolic equations. Introduction to the boundary and initial value problems of mathematical physics.

**121A, B. Fourier Series and Laplace Transform (3,3) F, S**
Prerequisite: Mathematics 119 or 110A. Math 121A deals with the theory of Fourier Series and its application to boundary value problems. Math 121B deals with the theory of the Laplace transform and its application to linear problems in electrical, mechanical, and thermal systems.

**122A, B. Advanced Calculus (3,3) F, S**
Prerequisite: Mathematics 3D; Mathematics 101 is recommended. Rigorous analysis of the calculus and its foundations, functions of one variable, and of several variables.

**124. Vector Analysis (3) F**
Prerequisite: Mathematics 3D. The algebra and calculus of vectors; applications to geometry. Vector and scalar fields; gradient, divergence, and curl. Applications in mechanics and electromagnetism. Introduction to tensor analysis.

**125. Introduction to Mathematical Statistics (3) F**
Prerequisite: Mathematics 3D. Probability, distribution of one variable. Sampling theory, correlation, regression. Tests for goodness of fit; tests of hypotheses. Small samples.

**126. Complex Variables (3) S**
Prerequisite: Mathematics 122A. Theory and application of complex variables. Analytic functions, integrals, power series and application.

**127. Coding for Digital Computers (3) S**
Prerequisite: Mathematics 3D. A basic course designed to provide an understanding of how problems are solved on a modern stored program digital computer. Historical background of the digital computer. Binary arithmetic; coding fundamentals; loops in computing; flow charting; subroutines; floating decimal point methods; introduction to programming interpretative methods.

**129. Numerical Calculus (3) S**
Prerequisite: Mathematics 119. Mathematical methods of computation suitable for desk or large scale digital calculating machines. Polynomial interpolation. Numerical integration and differentiation. Numerical solution of differential equations. Linear algebraic systems and the elements of matrix inversion.

**130. Projective Geometry (3) S**
Prerequisite: Mathematics 3D. Homogeneous co-ordinates. Projectivities. Collineations and correlations. Polarities. Projective properties of conics. Linear and quadratic transformations. Introduction to differential geometry.

**190. History of Mathematics (3) S**
Prerequisites: Mathematics 3B or 8 and 100. Designed to trace the continuous growth and development of mathematical thought and practices from the primitive origins to the present. Fundamental concepts, methods, and developments are studied; the evolution of areas in mathematics is traced. Recommended for all mathematics majors and minors preparing to teach.

**195. Topics in Modern Mathematics (3) S**
Prerequisites: Mathematics 114, 122A. Consent of instructor and senior or graduate standing. Selected topics of current interest from the mathematics literature.

## GRADUATE DIVISION

**210A, B. Foundations of Mathematics (3,3) F, S**
Prerequisite: Graduate standing, major in mathematics. Axiomatic method in modern mathematics, fundamental concepts of algebra, geometry, topology, and analysis.

**215A, B. Theory of Functions (3,3) F, S**
Prerequisite: Mathematics 122A and 126. First Semester: Axiomatic development of real and complex numbers; elements of point set theory; differentiation and analytic functions; Classical integral theorems; Taylor's series, singularities, Laurent series, calculus of residues. Second Semester: Multiple valued functions, Riemann surfaces; analytic continuation; maximum modulus theorem; conformal mapping, with applications; integral functions; Gamma function, zeta function, special functions.

**221A, B. Higher Algebra (3,3) F, S**
Prerequisite: Mathematics 114 (Mathematics 113 is recommended). Groups, rings, fields. Galois fields and related topics.

**222. Real Variables (3) S**
Prerequisite: Mathematics 122A. Set functions; absolutely continuous functions; Lebesgue measure; measurable sets and functions; Lebesgue integral; integrable functions; Radon-Nikodym Theorem; Fubini's Theorem.

**231. Topology (3) S**
Prerequisite: Mathematics 122A. A study by analytic methods of the geometric properties which are invariant under bicontinuous transformations.

**245. Advanced Applied Mathematics (3) S**
Prerequisite: Mathematics 122AB. Topics in applied mathematics such as integral transform techniques, applications of conformal mapping, calculus of variations and partial differential equations and boundary value problems.

**269. Directed Field Study (1-6) F, S**
Prerequisite: Graduate standing and the approval of a graduate advisor. Problems similar to those experienced by mathematicians in industry will be studied.

**295. Seminar in Mathematics (2) S**
Prerequisite: Graduate standing. Weekly meetings for presentation and discussion of advanced work in selected topics including original research by faculty and graduate students.

**298. Thesis (1) F, S, SS**
Prerequisite: Completion of at least one 200-level mathematics course. Formal report of research or project in mathematics.

# MICROBIOLOGY

Professors: Kazan, Swatek.

Assistant Professors: Manclark, Raj, Russell, R.

## LOWER DIVISION

**50. Microbiology (3) F, S, SS**

Prerequisite: Biology 10. Role of unicellular and microscopic organisms in nature; classification, morphology, life processes and inter-relationships with other organisms. Not open for credit to majors in microbiology. (Lecture and demonstrations 3 hours.)

**55. Man and Disease (3) F**

Prerequisite: Biology 10 or Zoology 1A. Study of the cause and prevention of the common diseases of man. (Lecture 3 hours.)

**60. General Bacteriology (4) F, S**

Prerequisite: Biology 10 or Zoology 1A and Chemistry 1B. Introductions to micro-organisms, their morphology, metabolism, and cultural characteristics. (Lecture 2 hours, laboratory 6 hours.)

**65. Microbiological Techniques (1-2) F, S**

Prerequisite: Microbiology 60. Experience in preparation of cultural media, sterilizing procedures, and maintenance of reagents used in microbiological laboratory. (Time arranged.)

## UPPER DIVISION

**100. Bacterial Anatomy and Cytochemistry (2) F, S**

Prerequisites: Microbiology 60; Chemistry 108 or 145A (may be taken concurrently). Bacterial cell anatomy and its chemical composition; cellular physiology as related to growth, nutrition, physico-chemical environments, and phenotypic and genotypic adaptations. (Lecture 2 hours.)

**101. Medical Bacteriology (5) S**

Prerequisites: Microbiology 60 and Chemistry 1B. Pathogenic bacteria of man and animals; emphasis on isolation and identification of micro-organisms by morphological and cultural characteristics; their reaction to various antibiotics. (Lecture 3 hours, laboratory 6 hours.)

**107. Immunology and Serology (4) F**

Prerequisites: Microbiology 101, Chemistry 108 or consent of instructor. Principles of immunity. A study of the immune response in vivo and in vitro; immunohematology, forensic serology, syphilis serology, and the principles and uses of serologic methods for the qualitative and quantitative evaluation of the immune response. (Lecture 2 hours, laboratory 6 hours.)

**110. Viruses (2) S**

Prerequisite: Microbiology 60, Chemistry 1B and Chemistry 108. Consideration of principles in virus and rickettsial diseases of man and animals. (Lecture 2 hours.)

**111. Virology Laboratory (2) S**

Prerequisite: Microbiology 110 (may be taken concurrently). Laboratory study of the bacterial and animal viruses. Techniques for growth, titration of infectious units, cytopathological changes produced by the viruses. Physical and chemical prospectus of the viruses will be studied. (Laboratory 6 hours.)

**115A, B. Medical Mycology (2,2) F, S**
Prerequisite: Microbiology 60 and Chemistry 1B. Introduction to pathogenic fungi commonly responsible for mycotic infections of man. (Lecture 1 hour, laboratory 3 hours.)

**119. Mycology (3) S**
Prerequisite: Microbiology 60. Structural development and classification of the important genera and species of fungi. (Lecture 2 hours, laboratory 3 hours.)

**120. Public Health Microbiology and Diagnostic Procedures (4) S even years**
Prerequisite: Microbiology 101. Standard methods for the examination of food, water, sewage, and dairy products. Diagnostic procedures for viral richettsial, spirochaetal, bacterial, and mycobacterial agents of public health importance. (Lecture 2 hours, laboratory 6 hours.)

**125. Industrial Microbiology (3) S**
Prerequisite: Microbiology 140, consent of instructor. Role of micro-organisms in selected industrial processes; emphasis on bacteria, yeasts and molds. (Lecture 2 hours, laboratory 3 hours.)

**130. Hematology (3) S**
Prerequisite: Six units of biological science. The physiology and pathology of blood; preparation of blood for counts, hemoglobin determination, and related procedures. (Lecture 2 hours, laboratory 3 hours.)

**135. Public Health and Sanitation (2) SS**
Prerequisite: Six units of biological science. Public health and sanitary problems in the community; emphasis on problems such as communicable disease control, narcotic addiction and nutritional deficiencies, under jurisdiction of local or national public health agencies. (Lecture 2 hours.)

**140. Bacterial Physiology (3) F**
Prerequisite: Microbiology 100, consent of instructor. The metabolic and chemical activities of the bacteria as related to problems of growth, reproduction, and maintenance of life. (Lecture 3 hours.)

**141. Bacterial Physiology Laboratory (2) F**
Prerequisites: Microbiology 140; Chemistry 145A (may be taken concurrently). Laboratory techniques used in the study of bacterial physiology. (Laboratory 6 hours.)

**145. Microbial Taxonomy (3) F odd years**
Prerequisites: Microbiology 60, Zoology 1AB, Chemistry 108. The principles and theories of naming organisms. Advanced laboratory procedures in differentiation of micro-organisms. (Lecture 1 hour, laboratory 6 hours.)

**150. Advanced Hematology (2) Offered on adequate demand**
Prerequisite: Microbiology 130 or laboratory technologist's license. Investigation into blood cell formation in bone marrow and the reticuloendothelium system; response of these cells to disease processes. (Lecture and demonstration, 2 hours.)

**155. Microbiology of Soil and Sea (3) F**
Prerequisites: Microbiology 100, 115AB or 119, Chemistry 108. Survey of the interaction of micro-organisms in the soil and sea. Emphasis on elements, cycles and metabolic conversion of environmental materials. (Lecture 1 hour, laboratory 6 hours.)

**160. Microbial Genetics (2) S**

Prerequisites: Microbiology 60, Zoology 1B, Chemistry 145A, consent of instructor. The biochemical and cytological bases of microbial genetics; a study of the nature, replication, and modification of genetic material. (Lecture 2 hours.)

**161. Microbial Genetics Laboratory (2) S**

Prerequisite: Microbiology 160 (may be taken concurrently). Laboratory study of microbial genetics. (Laboratory 6 hours.)

**165. Principles of Immunobiology (3) S even years**

Prerequisites: Microbiology 107, Chemistry 145AB, consent of instructor. An integrated biological and chemical consideration of immunology. A study of host-parasite-relationships and the immune response of antigens and antibodies, their physical, chemical, and biological properties and the mechanisms, dynamics, and kinetics of the antigen-antibody reaction. (Lecture 1 hour, laboratory 6 hours.)

**168. Medical Parasitology (3) F, SS**

Prerequisites: Six units of biological science including Zoology 1A. Survey of parasitic protozoa and helminths of animals; emphasis on human parasites. Identification of fresh and preserved specimens. Not open to students who have credit in Zoology 168. (Lecture 2 hours, laboratory 3 hours.)

**191. Supervised Field Experience (1-8) F, S, SS**

Prerequisite: Permission of instructor. Actual experience in clinical and public health laboratories, supplemented by regular conference with supervisor. (Time arranged.)

**195. Proseminar in Microbiology (2) F**

Prerequisites: Senior in microbiology, consent of instructor. Faculty and student presentation and analysis of current topics in microbiology.

**198. Laboratory Techniques (2) S**

Prerequisite: Consent of instructor. Experience for advanced students in organization and techniques of a microbiology laboratory. (Conference 1 hour, laboratory 3 hours.)

**199. Investigations in Microbiology (1-3) F, S, SS**

Prerequisite: Consent of instructor. Research in a specific subject in microbiological sciences to be approved and directed by a faculty member.

# MUSIC

Professors: Dallin, McGarrity, Peterson, Squire, Winslow.

Associate Professors: Gibson, Helm, Neiswender, Pooler, Tyndall.

Assistant Professors: Becker, C., Farhat, Musafia, Reynolds, Stroud, Tickner, Whitaker.

## LOWER DIVISION

**Music Activities:** Opportunities for experience in ensemble groups of various kinds are available to all students in the following courses: Music 1, 2, 3, 7, 9, 10, 12, 16, 101, 102, 103, 107, 109, 110, 112, 116. Before enrolling in a music activity the student should make application to the director of the organization in which he wishes to participate. Music activity courses may be repeated for credit. A total of no more than 8 units may be counted toward degree requirements.

**R. Semester Recital (0) F, S**
Recital attendance and performance on principal instrument or voice. Required of undergraduate music majors each semester.

**1. A Cappella Choir (1) F, S, SS**
See above note on Music Activities.

**2. College Chorus (1) F, S**
See above note on Music Activities.

**3. Madrigal Singers (1) F, S**
See above note on Music Activities.

**7. Symphony Orchestra (1) F, S, SS**
See above note on Music Activities.

**9. Forty-Niner Band (1) F**
See above note on Music Activities.

**10. Concert Band (1) F, S, SS**
See above note on Music Activities.

**12. Chamber Music (1) F, S**
See above note on Music Activities.

**15. Individual Instruction in Voice, Piano and Other Instruments (1-2) F, S, SS**
Individual instruction in voice, piano, organ, harp, and the various instruments of the band and orchestra is available to both beginning and advanced students. Students must consult with the head of the Music Department before registering.

Registration for individual instruction must be made through the college if credit is desired. For each unit of college credit, the student must enroll for 16 one-half hours in individual lessons per semester.

Individual instruction is $1-$5 per lesson. Studio organ practice fee is $10 per semester. This fee must be paid in advance to the Business Office.

**16. Piano Ensemble (1) F, S**
See above note on Music Activities.

**21A, B, C, D. Class Piano (1,1,1,1) F, S, SS**
Fundamentals of piano techniques, tone production, rhythm, sight-reading, interpretation and keyboard facility for those who have little or no previous piano experience. Designed to meet the piano requirement for music majors and minors. The classes proceed progressively, providing the student with four semesters of piano study.

**22A, B. Piano for Elementary Teachers (1,1) F, S, SS**
Designed to fulfill the needs of the classroom teacher. Emphasis on learning of simple accompaniments used in classroom song books and reading simple piano scores from the teacher's manuals. Some study of simple folk songs and appropriate chordings.

**23A, B, C, D. Class Voice (1,1,1,1) F, S, SS**
Fundamental techniques of solo and ensemble singing. Problems of tone production, breathing, diction, repertoire, and song interpretation. Designed to meet the voice requirement for music majors and to provide voice instruction for education majors and teachers in service who would like to develop their ability in this area.

**25. Clarinet (1) F, S, SS**
No prerequisite.

**27. Trumpet (1) F, S, SS**
No prerequisite.

**29. Violin (1) F, S, SS**
No prerequisite.

**31. Percussion (1) F, S, SS**
No prerequisite.

**32. Violin and Viola (1) F, S, SS**
Prerequisite: Music 29 or equivalent, or consent of instructor.

**33. Flute and Saxophone (1) F, S, SS**
Prerequisite: Music 25 or equivalent, or consent of instructor.

**34. French Horn, Trombone, Baritone, Tuba (1) F, S, SS**
Prerequisite: Music 27 or equivalent, or consent of instructor.

**36. Exploring Music (2) F, S, SS**
Required for all elementary education majors. An orientation course in basic musical knowledge, skills, and competencies designed primarily to provide musicianship background for work in elementary school music. Special emphasis given to the reading of elementary school music materials.

**38. Music Theory for Classroom Teachers (3) S**
Prerequisites: Music 21A and 21B or equivalent, and Music 36. Meets the needs of elementary education majors with a concentration in music. Functional music theory for elementary education majors with a music concentration.

**41. Musicianship I (2) F**
Scales, intervals, melodic and harmonic dictation, sight singing and keyboard. To be taken concurrently with Music 42.

**42. Harmony I (3) F**
Diatonic harmony, chord choice, and part writing. To be taken concurrently with Music 41.

**43. Musicianship II (2) S**
Prerequisites: Music 41 and 42. Continuation of Music 41. To be taken concurrently with Music 44.

**44. Harmony II (3) S**
Prerequisites: Music 41 and 42. Continuation of Music 42. Simple chromatic alteration, and modulation to closely related keys. To be taken concurrently with Music 43.

**51. Violoncello and Contrabass (1) F, S, SS**
No prerequisite.

**52. Oboe and Bassoon (1) F, S, SS**
Prerequisite: Music 25 or equivalent, or consent of instructor.

**65A, B, C. Opera Workshop (1) S**
Preparation, rehearsal and public performance of traditional and contemporary opera, with emphasis in the following areas: (a) principal roles; (b) chorus; (c) orchestra. Each area may be repeated to a maximum of two units.

**80. Musicianship III (2) F**
Prerequisites: Music 43 and 44. Continuation of Music 43. To be taken concurrently with Music 81.

**81. Harmony III (3) F**
Prerequisites: Music 43 and 44. Continuation of Music 44. More complex chromatic alteration, and modulation to more remote keys. To be taken concurrently with Music 80.

**83. Counterpoint (3) S**
Prerequisites: Music 80 and 81. Principles of eighteenth century tonal counterpoint in two, three, and four parts.

**86. Community and Recreational Music (2) F, S**
No prerequisites. Singing for fun. Survey and singing of song materials used in camps, scouting, schools, church youth groups, banquets and other social gatherings. Techniques of song leading. Recreational listening materials.

**90. Music in General Culture (3) F, S**
A nontechnical course designed to increase interest and pleasure in music through the development of basic understandings, the broadening of the student's experience in music and through growth in appreciation of music in relation to general culture. Primarily for non-music majors.

**91. Listener's Approach to Music (3) F, S, SS**
A nontechnical course open to all students except music majors. Introduction to the materials, forms, and styles of music with extensive listening.

**92. Piano Accompanying (2) S**
Prerequisite: Piano major or satisfactory audition for the instructor. Designed for students desiring proficiency and experience in piano accompanying for singers, instrumental soloists and music ensembles.

**95. Field Study in Music (6) SS**
A field study tour of six weeks in Europe affording opportunity for comparing the implications and relations of music to the other arts among the respective peoples and countries visited.

## UPPER DIVISION

***101. A Cappella Choir (1) F, S, SS**
See above note on Music Activities.

***102. College Chorus (1) F, S**
See above note on Music Activities.

***103. Madrigal Singers (1) F, S**
See above note on Music Activities.

**104. Analysis and Composition I (2) F, S**
Prerequisite: Music 81 or equivalent. Analysis of elements of musical structure in representative compositions. Beginning composition, melodic invention, transitions, elaboration of musical ideas into satisfactory compositions.

***107. Symphony Orchestra (1) F, S, SS**
See above note on Music Activities.

***109. Forty-Niner Band (1) F**
See above note on Music Activities.

***110. Concert Band (1) F, S, SS**
See above note on Music Activities.

* Not available for credit toward an advanced degree.

***112. Chamber Music (1) F, S**
See above note on Music Activities.

**115. Individual Instruction in Voice, Piano and Other Instruments (1-2) F, S, SS**
Individual instruction in voice, piano, organ, harp, and the various instruments of the band and orchestra is available to both beginning and advanced students. Students must consult with the head of the Music Department before registering.

Registration for individual instruction must be made through the college if credit is desired. For each unit of college credit, the student must enroll for 16 one-half-hour individual lessons per semester.

Individual instruction is $1-$5 per lesson. Studio organ practice fee is $10 per semester. This fee must be paid in advance to the Business Office.

***116. Piano Ensemble (1) F, S**
See above note on Music Activities.

**121. Introduction to Organ Technic (2) F, SS**
Prerequisite: Music 21D, or its equivalent. Acquaints pianists with organ-playing technic; registration, pedal technic, repertoire, and beginning methods; practical application in performance of simple compositions, accompaniments, and hymns.

**134. Voice Class for Teachers (1) S**
A course in basic vocal techniques. Consideration of vocal problems particularly applicable in teaching music in the public schools.

**144. Analysis and Composition II (2) F, S**
Prerequisite: Music 104 or equivalent. Continuation of Music 104. Analysis of larger cyclic forms and contrapuntal compositions. Continued study in composition.

**145. Piano Methods (2) F, S**
Modern procedures in piano teaching through review of graded materials and literature on methods, creative work, technical procedures, interpretation, teaching students of various grades.

**147. Children's Literature in Music (2) F, S, SS**
A survey of materials designed for listening activities of children, together with methods of presentation.

**150. Instrumental Conducting (2) S**
Principles and techniques in instrumental conducting with experience in score reading. Three periods per week.

**152. Studies in Chamber Music (2) S**
The study and performance of chamber music of representative periods and composers for various string, wind, and vocal ensembles.

**153. Organ Literature (2) S**
Organ literature from the Renaissance to the present.

**154. Symphonic Literature (2) F**
Prerequisite: Music 91 or equivalent. A survey of the symphony and symphonic poem from their inception to the present time. Intended for music majors, but any qualified student may enroll.

**156. Music of the Theater (2) F 1965**
A consideration of foundations or dramatic music with principal illustrations taken from operatic works from Monteverdi to Berg.

* Not available for credit toward an advanced degree.

**157. Keyboard Literature (2) F**
Prerequisite: Music 163 or equivalent. Designed to acquaint student with functions, implications, and development of music composed for such keyboard instruments as piano, harpsichord, and clavicord. Open to non-music majors by consent of instructor.

**159. Song Literature (2) S**
Prerequisite: Music 163 or 180 or equivalent. An intensive survey of music for solo voice composed after 1600. Vocal proficiency not required. Open to non-music majors by permission of instructor.

**160. Choral Conducting (2) F**
Principles and techniques of choral conducting. Problems of choral organization. Study and interpretation of choral materials, using the class as a laboratory group. Three periods per week.

**163. History of Music I (3) F**
For music majors and minors. A chronological study of music from the earliest times to the contemporary scene. Selected readings, recordings, and scores will be intensively studied.

**164. History of Music II (3) S**
Continuation of Music 163.

**165A, B, C. Opera Workshop (1) S**
Preparation, rehearsal and public performance of traditional and contemporary opera, with emphasis in the following areas: (a) principal roles; (b) chorus; (c) orchestra. Each area may be repeated to a maximum of two units.

**167. Advanced Woodwind Instruments (2) F**

**168. Advanced Brass Instruments (2) S**

**169. Advanced String Instruments (2) S**

**170. Advanced Piano (2) F, S**

**171. Advanced Voice (2) S**

**174. Orchestration I (2) F, S**
Prerequisite: Music 81 or equivalent. Range, characteristics, and technical limitations of orchestral instruments. Studies in setting given material for strings, mixed groups, and small orchestra.

**175. Orchestration II (2) S**
Prerequisite: Music 174. Advanced studies; unbalanced groups and full orchestra; planning the score in terms of color, contrast, balance, climax; elaboration of basic material.

**176. Studies in Musical Analysis I (2) F, SS**
Prerequisite: Music 144. Continuation of the analysis aspect of Music 144. Intensive individual and class analysis of representative compositions of various periods and styles.

**178. Materials of Modern Music (3) S, SS**
Prerequisites: Music 80, 81 and 83. A detailed study of melodic, harmonic, rhythmic, and contrapuntal materials of twentieth century music. Analysis of representative compositions and writing in typical contemporary styles.

**179. Problems in Teaching Elementary School Music (2) SS**
Prerequisite: Education 124 (Music 141), or equivalent or consent of instructor. Study of the procedures, methods, and materials used in elementary school music education. Presentation and survey of all phases of listening, performing, and creative music activities used in the general elementary school program with special reference to state and locally adopted music texts.

**180. Music in Western Civilization (3) F, S, SS**
Designed for the general student without technical background. Lectures, readings and intensive listening to music provide the core of the work in this course.

**181. Church Music (2) F 1965**
Traces the history of western church music noting its roots in the Jewish and Greek cultures. The course makes use of source materials representative of the many historical periods. Concludes with a survey of church music of the United States.

**182. Band Pageantry and Entertainment Music (2) S, SS**
Prerequisite: Music 174 or equivalent, or consent of instructor. Types of music and entertainment typical of band performance, including: standard marching maneuvers; how to design, diagram, and write correlating music for outdoor band formations; handling a drum-major's baton for commands and twirling; music for shows; music for dance band; music for pep bands and miscellaneous small combinations.

**183. Organists' Practicum (2) S**
Prerequisites: Music 121 or equivalent, or consent of instructor. Analyzation and performance of selected organ works; playing from worship and liturgical church services; problems of organ construction and maintenance.

**184. Instrumental Organization and Literature (3) F, S, SS**
Survey of procedures for organization and development of instrumental programs and literature for performing groups.

**185. Advanced Choral Conducting and Literature (2) F, S, SS**
Prerequisite: Music 160 or consent of instructor. Critical study of choral technique, style and interpretation. Choral schools and composers since the sixteenth century. Survey and analysis of contemporary secular and sacred choral compositions. Class used as laboratory group.

**187. Music Cultures of the World (3) F, S**
Musical cultures of the world (excluding Western art music); the role of music in society and its relationship to other arts. Consideration of scale structure, instruments, musical forms, and performance standards.

**188. Workshop in Composition (2) F, S, SS**
Problems in composition. Prerequisite: nine units of harmony or consent of instructor.

**189. Composition (2) F, S, SS**
Prerequisite: Music 144 or equivalent. Free composition for piano and various instrumental combinations.

**193. Problems in Arranging for High School Musical Organization (2) SS**
A practical approach to the problem of making musically satisfying arrangements for the average high school group.

**195. Field Study in Music (6) SS**
A field study tour of seven weeks in Europe affording opportunity for comparing the implications and relations of music to the other arts among the respective peoples and countries visited.

**198. Senior Recital (1) F, S**
Study of the standard literature for solo instrument or voice and performance of a balanced program in solo recital. Enrollment restricted to music majors passing the qualifying examination.

## GRADUATE DIVISION

**206. Seminar in Instrumental Music Teaching (2) F, SS**
Prerequisite: Graduate standing in music, consent of instructor. Principles, procedures, and materials used in teaching instrumental music in the public schools. Special attention given to methods and materials used in teaching instrumental classes. Actual playing of certain instruments in class.

**210. Advanced Instrumental Conducting (3) S, SS**
Prerequisite: Music 150 or consent of instructor. Process of interpretation, securing proper orchestral sound, organizing routine of orchestra, and program making.

**260. Studies in Homophonic Music (3) F, S, SS**
Prerequisites: Music 104 and 144 or equivalent. Intensive analysis and synthesis of homophonic forms and techniques with emphasis on those of the Twentieth Century.

**261. Studies in Polyphonic Music (3) F, S, SS**
Prerequisites: Music 83, 104, and 144 or equivalent. Intensive analysis and synthesis of the forms and techniques of polyphonic music from the Middle Ages to the present.

**265. Music of the Renaissance (3) F, S, SS**
Prerequisites: Music 104, 144, 163, 164; or equivalent background and consent of the instructor. Some aspects of medieval music. Stylistic analysis and relationships of music to other phases of the cultural scene.

**266. Music of the Baroque Period (3) F, S, SS**
Prerequisites: Music 104, 144, 163, 164; or equivalent background and consent of the instructor. Stylistic analysis and inquiry into cultural background.

**267. Music of the Classic Era (3) F, S, SS**
Prerequisites: Music 104, 144, 163, 164; or equivalent background and consent of the instructor. Elements of rococo music, stylistic analysis, and inquiry into the thought of the eighteenth century.

**268. Twentieth Century Music (3) S even years**
Prerequisites: Music 104, 144, 163, 164; or equivalent background and consent of the instructor. Stylistic analysis of music, inquiry into aesthetic and socioeconomic problems of contemporary music, survey of new music.

**269. Music of the Romantic Era (3) F odd years**
Prerequisites: Music 104, 144, 163, 164; or equivalent background and consent of the instructor. Stylistic analysis and relationships of music to general culture from Beethoven to end of nineteenth century.

**276. Advanced Studies in Musical Analysis (2) F, SS**
Prerequisite: Music 176. Intensive analysis of special problems in musical organization. Emphasis on individual projects and systematic reporting of investigations.

**278. Advanced Composition (2) F, S, SS**
Prerequisite: Music 189 or equivalent. Free composition in the more extended forms for various combinations of instruments including full orchestra and band.

**297. Seminar (2) F, SS**
The definition, and methods of solution, of problems in the field of music with emphasis on the descriptive method of research and the use of the library. Required of all master's degree candidates in music.

**298. Project or Thesis (1-3) F, S, SS**
Planning, preparation, and completion of a project or thesis related to this field. Limited to graduate students who have taken or are taking 297. Optional.

## NURSING

Professor: Walsh.

Assistant Professors: Hoffman, Kaufman, Pentecost, Sucher.

Instructor: Wullschleger.

### LOWER DIVISION

**10. Introduction to Nursing (1) S**
Nursing as a profession. Attitudes, ethics and responsibilities expected of nursing students.

**50. Fundamentals of Nursing (5) F, S**
Prerequisites: Chemistry 2, Physics 10, Anatomy and Physiology 40A, Home Economics 52. Principles and practices of nursing techniques including safe administration of drugs in patient-side nursing in hospital and community agencies. Mental and public health aspects correlated. Health needs of patients stressed. (Lecture 2 hours, laboratory 9 hours.)

**53. Community Health Patterns (2) F, S**
Introduction to health and social agencies and their relationship to community nursing needs. Not open to students who have had Nursing 153.

**55. Maternal and Child Health I (6) F, S,**
Prerequisites: Nursing 50, 53, Home Economics 52. Nursing care including drugs, nutrition, and health teaching for the expectant mother and newborn infant. (Lecture 2 hours, laboratory 12 hours.)

### UPPER DIVISION

**101. Family Health, Safety, and Home Nursing (1) F, S, SS**
Designed to provide understanding and limited experience in using the practical skills of home nursing, health, and home safety. Open to home economics majors only. Not open to students with credit in Home Economics 135.

**126. Maternal and Child Health II (6) F, S**
Prerequisites: Nursing 55, Chemistry 108, Education 105, 107. Nursing care of diseases of infancy and childhood. Correlation of drugs and nutrition. Emphasis on child care in nursery schools and outpatient clinics. (Lecture 2 hours, laboratory 12 hours.)

**140. Medical-Surgical Nursing I (6) F, S**
Prerequisites: Nursing 50, 53, Education 105, 107, Microbiology 60, Chemistry 108. Nursing care of general medical and surgical conditions of the individual

patient. Theory and practice correlated including health teaching, nutrition, and drugs for comprehensive nursing. (Lecture 2 hours, laboratory 12 hours.)

**141. Medical-Surgical Nursing II (6) F, S**
Prerequisites: Nursing 140 and Chemistry 108. Nursing care in specialized medical and surgical conditions. Principles of aseptic technique stressed. Theory and practice including nutrition and drugs for comprehensive nursing. (Lecture 2 hours, laboratory 12 hours.)

**149. Nursing Studies (2) S**
Students to select a nursing problem and apply appropriate techniques and methods in the investigation and solution of this problem.

**160. Mental Health Nursing (6) F, S**
Prerequisite: Nursing 141. Mental health concepts in nursing and care of mentally ill in hospitals and homes with rehabilitation stressed. Theory and practice offered in mental hospital. (Lecture 2 hours, laboratory 12 hours.)

**165. Adult Clinical Nursing (6) F, S**
Prerequisites: Nursing 126, 141. Principles and practices of nursing concepts of adult level problems in a changing society. Emphasis on nursing problems in long term illness and rehabilitation. (Lecture 2 hours, laboratory 12 hours.)

**174. Teaching in Nursing (2) S**
Prerequisites: Education 104, 105, 107, 165 or equivalent. Principles and methods of teaching in programs in inservice education and of auxiliary personnel in hospitals will be considered.

**179. Trends in Nursing (2) F, S**
Consideration of the development of modern nursing and its evolution until the present day. Emphasis on factors effecting its progress. Current problems, studies and trends in the field of nursing service and nursing education, as well as in social legislation, professional organization, and developments influencing nursing.

**180. Concepts of Team Nursing (2) F, S**
The philosophy, concepts, principles, and implementation of team nursing as it is effectively employed in modern nursing. In addition to regular lectures students will be required to participate in laboratory practice. Forty-eight hours of field experience to be arranged.

**182. Legal Aspects of Nursing Practice (2) F**
Prerequisite: Political Science 50 or 132. Legal responsibilities of registered nurses, legal control of nursing practice, discussion of court cases which involve nurses.

**184. School Nursing (2) F, S**
Prerequisite: Nursing 154. The field of health education as it applies and is implemented in the philosophy, function, current acceptable practices, goals and trends in the school nursing program. Techniques, materials, methods of health counseling. (Formerly Nursing 152.)

**185. Epidemiology (2) S**
Prerequisites: Nursing 141 and Sociology 180. The community health implications of communicable and non-communicable diseases.

**186. Public Health Nursing (8) S**
Prerequisites: Nursing 53, 126, 141, Sociology 180. Provides knowledge and understanding of basic principles and good current practice in public health nursing. Field experience offered in agencies, homes, public schools, and occupational health agencies. (Lecture 3 hours, laboratory 15 hours.)

**191. Supervised Field Experience (4-8) F, S**

Designed to provide the prospective school or hospital nurse with an opportunity to participate, under supervision, in the various activities related to the selected field. Approval must be secured the previous semester from the nursing staff adviser. Provision for weekly conferences to supplement field experience.

## PHILOSOPHY

Professors: Wegener, Wiley.

Associate Professor: Strickler.

Assistant Professors: Bonis, Massey, Maue, Perry, D., Ringer.

### LOWER DIVISION

**51. Introduction to Philosophy (3) F, S**

A cursive survey of the field of philosophy, defining its scope and basic principles, and briefly analyzing the major problems of philosophy and the theories attempting to solve them.

**65. Introductory Ethics (3) F, S**

A study of the concepts of right and wrong and the application of moral principles to problems of everyday life. The philosophy of conduct as related to the individual and to society. (Not open to students with credit in Philosophy 151.)

**75. Elementary Logic (3) F, S**

The elements of clear, straight, orderly thought. Accurate use of language. Inductive reasoning and the establishing of scientific hypothesis; deductive reasoning and the logic of the syllogism. (Formerly Philosophy 105.)

**90. Readings for Philosophical Analysis (3) S**

Prerequisite: One lower division philosophy course. Designed to follow Philosophy 51 and to supplement the introductory study of philosophical texts, both ancient and modern, which are noteworthy for the subtlety, complexity and importance of their thought. Designed primarily to develop the student's capacity to discover for himself a competent, and yet difficult, thinker's point of view.

### UPPER DIVISION

**101. History of Early Philosophy (3) F**

Origin, development and inter-relations of the major schools of philosophic thought, from Thales to the beginning of the Renaissance. The systems of Socrates, Plato and Aristotle, and their influence on European philosophy through the medieval period.

**102. History of Modern Philosophy (3) S**

From the Renaissance to the twentieth century. Development of modern scientific processes, and the philosophical systems of empiricism, rationalism, idealism, etc.

**110. Philosophy of the State (3) F**

A comparative study of the ideologies of democracy, individualism, socialism, cooperativism, communism, and authoritarianism, in terms of their underlying philosophical principles and beliefs.

**120. Philosophies in America (3) S**

Prerequisite: One lower division philosophy course. Background and development of philosophical ideas in America: Puritanism, pragmatism, logical empiricism, naturalism, humanism, the cultural interpretations of value, and the impact of science.

**131. Philosophy of Science (3) F**
Prerequisite: Nine units of natural science. Intensive work with writings from scientists and philosophers with an examination of the problems, methods, and fundamental concepts of the sciences. An analysis of the relationships of the sciences to each other, to mathematics, and to philosophy. The impact of scientific ideas on other areas of thought.

**140. Aesthetics (3) F**
Prerequisite: One lower division philosophy course. Art as a cultural phenomenon, emphasizing the relation of the fine arts to one another, the relation of the fine arts to the practical arts, and the relation of art in general to science and the good life. An exploration of the philosophic bases of criticism and creativity.

**145. Philosophy in Literature (3) F**
A study of philosophical expression in literature—discovery of the foundational ideas and exploration of their meaning and application.

**150. 19th Century German Idealism (3) S**
Prerequisites: Two courses in philosophy, other than Philosophy 75. An examination of the development of absolute idealism, from its roots in Kant's Critical Philosophy to its culmination in the system of Hegel and his followers, and the voluntarism of Schopenhauer and Nietzsche.

**155. Trends in Contemporary Philosophy (3) F**
Prerequisite: Six units of philosophy or consent of instructor. The dominant patterns of philosophical thought in our own age. Contemporary attitudes in terms of their philosophical bases.

**158. Development of Existentialism (3) F**
Prerequisites: Six units in philosophy. A study of the development of existentialism from Kierkegaard to Sartre based upon both primary and secondary readings.

**160. Epistemology (3) S**
Prerequisite: Philosophy 51 or 75. The most significant theories concerning the method whereby we acquire knowledge. An examination of authoritarianism, scepticism, mysticism, rationalism, empiricism, and pragmatism.

**165. Advanced Ethics (3) F**
Prerequisite: Philosophy 51 or Philosophy 65. A concentrated study of selected ethical systems based in the main on Primary source materials.

**168. Religions of the World (3) F**
A comparative study of the origin, history and tenets of the leading occidental and oriental religions; emphasizes Christianity, Judaism, Islam, Hinduism, Buddhism, Taoism, Confucianism, and Shinto.

**170. Philosophy of Religion (3) F, S**
An objective study of the nature and function of religion and of fundamental religious concepts and ideals.

**175. Metaphysics (3) S**
Prerequisite: Six units of philosophy or permission of instructor. Basic problems of ontology and cosmology: the ultimate nature of reality, exploring such positions as Idealism, Materialism, Dualism, Pragmatism, and Organism; the nature of the universe, examining the concepts of matter and energy, space and time, evolution and casuality.

**180. Advanced Logic (3) S**

Prerequisite: Philosophy 75. An intensive study of induction, a review of deduction, and an introduction to symbolic logic.

**184. Plato (3) F**

Prerequisites: Six units in philosophy. An intensive study of the philosophy of Plato based primarily on readings from his dialogues.

**185. Aristotle (3) F**

Prerequisites: Six units in philosophy. An intensive study of the philosophy of Aristotle based primarily on readings in his works.

**195. Special Problems (3) S**

Prerequisite: Six units of upper division philosophy courses. A senior course designed for majors. Devoted to the exploration of special and significant philosophy problems. May be repeated for a maximum of six units.

## PHOTOGRAPHY

Assistant Professor: Schmidt, M.

### LOWER DIVISION

**10. Basic Photography (2) F, S, SS**

A beginning course to familiarize students with the fundamentals of photography. Units on cameras, exposure meters, films, darkroom technique, lighting, portraiture, optics and cinematography. Printing-out, papers, contact and projected prints. (Laboratory included.)

### UPPER DIVISION

**110. Advanced Photography (3) F, S, SS**

Prerequisites: Basic Photography 10. Practical application of advanced camera and laboratory techniques. Microphotography, macrophotography, and photomicrography. Special lens applications, distortion and perspective control, Infra Red photography, reversal processing, specialized development, print toning, salon prints, panoramas and murals. An introduction to color photography. Advanced assignments directed toward students major field of study.

## PHYSICAL EDUCATION

### MEN'S

Professors: Crowe, Klafs, McConnell, Montgomery.

Associate Professors: Arnheim, Bok, Boring, Clegg, DeLotto, Kidd, Patterson, Pestolesi, Reed, D., Rose, J., Schwartzkopfe.

Assistant Professors: Bartlett, Miller, F., Perry, R., Schultz, J., Wuesthoff.

Instructor: Pullman.

Lecturer: Campbell.

### WOMEN'S

Professors: Crogen, Ericson, D., Reid.

Associate Professors: Brunner, Deatherage, Fornia, Johnson, L., Lyon, M., Mangano, Purdy, Stock.

Assistant Professors: deMille, Garry, Royal, Schaafsma.

## LOWER DIVISION

**1, 2, 3, 4. Physical Education Activity (½) Men, Women, F, S**

Selected activities; games, sports, aquatics, and rhythmic activities designed to provide an opportunity for students to meet their health, physical and recreational needs and interests. Required of all lower division students. Read the following information carefully.

### General Education Requirement in Physical Education

All lower division students except those over 25 years of age must successfully complete four consecutive semesters of physical education activity courses starting with the first semester of attendance (summer session activity courses excluded) as partial fulfillment of the general education requirements for the bachelor's degree. Upper division students who have completed the general education requirement in physical education may elect additional activities. A total of eight activity units is allowed toward graduation.

All new or re-entering students must be classified by the college Health Officer as a part of the registration procedure.

Classification will be according to the following system:

Class A—No restrictions
Class B—May participate in all except one or two specified activities
Class C—Will be assigned to adapted or other physical education activities suitable to individual needs
Class D—No physical activity

Students claiming medical exemption will present to the Admissions Office a verification from the college Health Officer.

Assignment to physical education activities is elective in that students may select from a variety of activities within each of three required areas. This provides opportunity for students to have experiences in the areas of aquatics (unless excused by waiver test); individual and dual recreational activities; fundamental movement, and combatives (for men). One semester of the student's physical education may be completely elective in that he may select an activity from any of the three required areas or the fourth area which contains purely elective activities. Physical education majors and minors satisfy this requirement through the lower division pre-professional activity courses.

General Education physical education activity areas for men and women are as follows:

**PE 1 Required**

Elementary Swimming
Intermediate Swimming (or substitution of)
Advanced Swimming, Life Saving and Water Safety
Synchronized Swimming

**PE 2 Required**

Golf
Archery
Fly and Spin Casting
Social, Folk and Square Dance (PE 3 for Women)
Tennis
Badminton
Paddle Tennis

**PE 3 Required**

Wrestling (M)
Tumbling (M)
Gymnastics (M)
Trampoline (M)
Weight Training and Conditioning (M)
Social, Folk and Square Dance (PE 2 for Men)
Beginning Modern Dance
Intermediate Modern Dance
Posture and Carriage (W)
Stunts, Tumbling and Gymnastics (W)
Handball (M)

**PE 4 Elective**

Softball (M or W)
Basketball (M or W)
Flag Football (M)
Volleyball
PE 10 (M)
PE 25A, B

**10. Intercollegiate Team Sports (1) F, S**

Enrollment subject to approval of the coach of the sport in season. A student may apply one semester of Physical Education 10 to the four-semester general edu-

cation requirement in physical education activities (P.E. 4). However, he must enroll concurrently in a section of Physical Education Activity until squad membership has been verified by the coach. Physical Education Activity may then be dropped at the student's discretion. Those enrolled in Physical Education 10 for credit who fail to qualify for the squad must withdraw from the course.

**13. First Aid (2) F, S, SS**

The theory and practice of first aid for the injured. Successful completion of course requirements leads to the American National Red Cross "Standard" and "Advanced" first aid certificate. Authorization for the "Instructor's" certificate is possible for teachers and prospective teachers. (Most school systems require all elementary and secondary teachers either to have a valid standard first aid certificate, or to acquire one during their first year of teaching.)

**25A. Games for the Elementary Schools (1) F, S, SS**

**25B. Rhythms for the Elementary Schools (1) F, S, SS**

Instruction and practice in the fundamental game and rhythm skills commonly taught in the elementary schools. May be substituted for one semester of general education physical education activity (PE 4) by elementary education majors. Required prerequisite to Education 125 for elementary education majors. Not open to Physical Education majors.

**30. Introduction to Physical Education (2) F, S**

The origin and development of the professions of health, physical education and recreation with emphasis upon their significance and function in contemporary American culture. Includes a critical examination of professional leadership responsibilities and the ethical concepts upon which they are based. Analytical review of recent research and current trends. Required in the physical education degree program. Not open to transfer students who have completed a comparable course.

**50. Fundamental Rhythms (1) S**

Designed to acquaint men and women physical education majors and minors with fundamental rhythms, folk, square, social and modern dance. Provides opportunities for developing acceptable performance as preparation for techniques of teaching.

**51. Modern Dance (1) F**

Designed to give prospective teachers of physical education a comprehensive background in the skills, techniques, and creative materials of modern dance. Emphasizes participation, analysis, and valuation through movement.

**55. Advanced Swimming, Life Saving and Water Safety (2) F S, SS**

Prerequisite: Satisfactory completion of Physical Education 1 intermediate swimming course or waiver test. Advanced swimming skills, life saving and water safety, including the opportunity to qualify for the American National Red Cross Senior Life Saving Certificate and Water Safety Instructors Certificate.

**56. Aquatics (1) F, S**

Instruction and practice in the fundamental skills basic to successful performance in aquatics. Open only to physical education majors and minors.

**58. Tennis, Badminton, Paddle Tennis (1) Men F**

Instruction and practice in the fundamental skills basic to successful performance in these activities. Open only to physical education majors and minors.

**59. Baseball, Softball, Handball (1) Men S**
Instruction and practice in the fundamental skills basic to successful performance in these activities. Open only to physical education majors and minors.

**60. Football and Soccer (1) Men F**
Instruction and practice in the fundamental skills basic to successful performance in these activities. Open only to physical education majors and minors.

**61. Basketball, Volleyball, Speedball (1) Men F**
Instruction and practice in the fundamental skills basic to successful performance in these activities. Open only to physical education majors and minors.

**62. Track and Field (1) Men S**
Instruction and practice in the fundamental skills basic to successful performance in these activities. Open only to physical education majors and minors.

**63. (A) Wrestling and (B) Gymnastics (1) Men S**
Instruction and practice in the fundamental skills basic to successful performance in these activities. Open only to physical education majors and minors.

**65. Tennis, Badminton, Paddle Tennis (1) Women F**
Instruction and practice in the fundamental skills basic to successful performance in these activities. Open only to physical education majors and minors.

**66. Individual Sports for Women (1) S**
Designed to acquaint women physical education majors and minors with stunts, tumbling and gymnastics. Provides opportunities for developing acceptable performance as preparation for techniques of teaching.

**67. Golf, Archery (1) Coeducational S**
Instruction and practice in the fundamental skills basic to successful performance in these activities. Open only to physical education majors and minors.

**70. Team Sports for Women (1) F**
Designed to acquaint women physical education majors and minors with the strategy, skills and rules of basketball, softball and volleyball. Provides opportunities for developing acceptable performance as preparation for techniques of teaching.

**71. Field Sports for Women (1) S**
Hockey, soccer, speedball, speed-a-way. Designed to familiarize women physical education majors and minors with the above field sports, including the strategy, skills and rules of each activity. Provides opportunities for developing acceptable performance as preparation for techniques of teaching.

**72. Sports Officiating for Women I (1) F**
Designed for women physical education majors to develop proficiency in officiating volleyball, field sports (hockey, soccer, speedball and speed-a-way), tennis and badminton. Open to all qualified women students.

**73. Sports Officiating for Women II (1) S**
Designed for women physical education majors to develop proficiency in officiating basketball, softball and aquatic events. Open to all qualified women students.

## UPPER DIVISION

**106. Principles and Administration of Physical Education (3) F, S**
A study of the principles, aims, and objectives of physical education and the relationship to administrative problems in the secondary school physical education program.



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**111. Police Defense Tactics (2) S**

Prerequisites: Wrestling or consent of instructor. Self-defense tactics including gymnastics, wrestling, jiu jitsu and judo fundamentals. Disarming techniques and special problems as related to law enforcement field operations. Open only to police science majors.

**123. Applied Principles of Kinesiology and Physiology of Exercise (4) F, S**

Prerequisite: Human anatomy and human physiology. The structure, function, and mechanical principles relating to human motion and an analytical application thereof. The physiological effects of exercise and training and the significance of these effects for health and physical performance. Not open to students with credit in Physical Education 120 and 133.

**130. Orientation and Guidance in Physical Education (0) F**

Required of all transfer students who have completed, in another institution, a course comparable to Physical Education 30, Introduction to Physical Education. Designed to orient and guide students who transfer from other institutions. Includes degree and credential requirements, responsibilities of physical education majors, and motor ability evaluations.

**135. Corrective Physical Education (2) F, S**

Prerequisite: Physical Education 123 or equivalent. Analysis and evaluation of aims, techniques, and procedures in developmental, preventive, and corrective measures. A study of the basic problems and methods of procedure for teaching adapted physical education classes.

**136. Field Work in Corrective Therapy (3) F, S, SS**

Prerequisites: Physical Education 123, 135 and consent of instructor. For the Physical Education major who desires advanced experience in therapeutics. Planning and executing courses in corrective therapy for physically handicapped individuals. Experience at the Long Beach Veterans Administration Hospital under the professional direction of Chief of Physical Medicine and Rehabilitation and the technical direction of the Chief of Corrective Therapy, or at other suitable community agencies. (May be applied toward corrective therapy certification.)

**140. Special Events in Physical Education (1) F**

Principles and procedures in the conduct of special events commonly related to the physical education program. Special emphasis upon standards, organization and administration, and resource materials.

**149. Techniques of Teaching European Folk Dance (2) S**

Prerequisite: Successful performance in these activities demonstrated through performance tests or course work. Designed to enable prospective teachers of physical education to develop techniques for teaching fundamental rhythms, singing games, folk dance (European, English, Scandinavian, etc.) and simple music analysis.

**150. Techniques of Teaching Rhythmic Activities (2) F, S**

Prerequisite: Physical Education 50 or acceptable equivalent. Enables prospective teachers of physical education to develop techniques for teaching fundamental rhythms, American folk and square dance, and social dance.

**151. Techniques of Teaching Modern Dance (2) S**

Prerequisite: Physical Education 51 or acceptable equivalent. Enables prospective teachers of physical education to develop techniques for teaching modern dance, including elementary principles of choreography, program planning and dance accompaniment.

**158. Techniques of Teaching Individual and Dual Sports (2) Men F**
Prerequisites: Physical Education 58, 59 and 67, or acceptable equivalents. Tennis, archery, paddle tennis, badminton, golf, handball. Provides an opportunity for prospective teachers of physical education to experience and demonstrate proficiency in organizing, teaching and officiating these activities.

**159. Techniques of Teaching (A) Wrestling and (B) Aquatics (2) Men S**
Prerequisites: Physical Education 56 and 63. Designed to provide an opportunity for prospective teachers of physical education to experience and demonstrate proficiency in organizing, teaching and officiating these activities.

**160. Techniques of Teaching Team Sports I (3) Men F**
Prerequisite: Physical Education 60 or equivalent. Football and soccer. Designed to enable prospective men teachers of physical education to experience and demonstrate proficiency in organizing, teaching, and officiating these activities.

**161. Techniques of Teaching Team Sports II (3) Men F**
Prerequisite: Physical Education 61 or acceptable equivalent. Basketball, speedball, volleyball. Designed to enable prospective men teachers of physical education to experience and demonstrate proficiency in organizing, teaching, and officiating these activities.

**162A, B. Techniques of Teaching Team Sports III (3) Men S**
Prerequisites: Physical Education 62 and 63, or acceptable equivalent. 162A is track and field; 162B is gymnastics. Designed to enable prospective men teachers of physical education to experience and demonstrate proficiency in organizing, teaching, and officiating these activities.

**163. Techniques of Teaching Team Sports IV (3) Men S**
Prerequisite: Physical Education 59 or acceptable equivalent. Baseball, softball. Designed to enable prospective men teachers of physical education to experience and demonstrate proficiency in organizing, teaching, and officiating these activities.

**165. Techniques of Teaching Dual Sports (3) Women F**
Prerequisite: Physical Education 65 or acceptable equivalent. Tennis, badminton. Designed to enable prospective women teachers of physical education to experience and demonstrate proficiency in organizing, teaching, and officiating these activities.

**166. Techniques of Teaching Individual Sports I (3) Women S**
Prerequisites: Physical Education 56 and 66, or acceptable equivalent. Gymnastics (including stunts and tumbling), swimming. Designed to enable prospective women teachers of physical education to experience and demonstrate proficiency in organizing, teaching, and officiating these activities.

**167. Techniques of Teaching Individual Sports II (2) Women F**
Prerequisite: Physical Education 67 or acceptable equivalent. Archery, golf. Designed to enable prospective women teachers of physical education to experience and demonstrate proficiency in organizing, teaching, and officiating these activities.

**170. Techniques of Teaching Team Sports I (3) Women S**
Prerequisite: Physical Education 70 or acceptable equivalent. Basketball, volleyball, softball. Designed to enable prospective women teachers of physical education to experience and demonstrate proficiency in organizing, teaching, and officiating these activities.

**171. Techniques of Teaching Team Sports II (3) Women F**
Prerequisite: Physical Education 71, or equivalent. Soccer, speedball, speed-a-way, hockey. Designed to enable prospective women teachers of physical education to

experience and demonstrate proficiency in organizing, teaching, and officiating these activities.

**180. Athletic Injuries (2) Men F, S, SS**

Prerequisites: Physical Education 123, or equivalent, and senior standing. Men majors only. The prevention, care and treatment of athletic injuries. One hour lecture and one two-hour laboratory for practice in taping and bandaging athletic injuries.

## GRADUATE DIVISION

**201. Seminar in Current Trends and Issues in Physical Education (3) S**

Prerequisite: Physical Education 297 (may be taken concurrently). Identification and analysis of current trends, issues and research in physical education, with attention to the forces and causes underlying them. Not open to students having credit in Physical Education 200 or 290.

**205. History and Philosophy of Physical Education (3) F, S**

Prerequisites: Physical Education 297 (may be taken concurrently), and consent of instructor. Comprehensive study of the history and philosophy of physical education through historical research of countries and personalities which have contributed to contemporary physical education.

**206. Administration and Supervision in Physical Education (3) S**

Prerequisites: Physical Education 297 (may be taken concurrently), Education 175 or equivalent, or teaching experience (including student teaching). A course in the administrative and supervisory philosophies of physical education at the school, city, county and state levels. A study of the various facets of administration and supervision of physical education including teacher's status in liability, court decisions, funding, insurance programs, intramurals and extramurals, etc. (Not available for students having credit in Physical Education 280.)

**209. Problems in Coaching (2) S**

Prerequisites: Physical Education 297 (may be taken concurrently), one year of teaching or coaching experience, or consent of instructor. The practical issues confronting the teacher-coach, with special emphasis on problems of discipline, morale, public relations and administration.

**220. Statistical Analysis and Measurement in Physical Education (2) F, S**

Prerequisites: Physical Education 297 (may be taken concurrently), Education 110, 175 or consent of instructor. Theory and laboratory statistical analysis of construction, administration and evaluation of measuring devices used in physical education.

**233. Scientific Bases for Physical Education (3) F**

Prerequisites: Physical Education 123, or consent of instructor, Physical Education 297 (may be taken concurrently). Comprehensive study of the physiological, psychological, and sociological foundation of physical education. Recent research to be explored.

**235. Adapted Physical Education (3) S**

Prerequisites: Physical Education 297 (may be taken concurrently), Physical Education 135 or equivalent or consent of instructor. Study of the problems of atypical students in physical education. Consideration of adaptations necessary to provide satisfying and effective programs. Special attention given to specific problems of class members who are confronted with the task of organizing and administering special programs (such as adapted and corrective) in the public schools.

**251. Contemporary Dance and the Fine Arts (2) F**

Prerequisites: Physical Education 297 (may be taken concurrently), Physical Education 151, or consent of instructor. Advanced theory and practice relating contemporary dance to the fine arts. Laboratory experience included. Problems of the secondary school dance teacher to be explored.

**275. Curriculum Development and Construction in Physical Education (3) F**

Prerequisites: Physical Education 297 (may be taken concurrently), Education 175, student teaching (the latter may be concurrent), and consent of instructor. Study of present day physical education curricula in elementary and secondary school programs. Basic considerations and problems involved in constructing such programs to be developed.

**297. Research Methodology (3) F, S, SS**

Prerequisite: Undergraduate major in health education, physical education or recreation. Introduction to research methodology in the areas of health, physical education and recreation. Includes problem selection, delimitation and development. Emphasizes research writing through library technique and the descriptive method. Required of all master's degree candidates. To be taken prior to or concurrently with 200 series courses in the Division of Health, Physical Education and Recreation.

**298. Project or Thesis (2-4) F, S, SS**

Prerequisite: Physical Education 297. Planning, preparation and completion of a project or thesis related to the field of Health, Physical Education or Recreation. The project or thesis must have prior approval of the graduate committee of the Division of Health, Physical Education and Recreation.

## PHYSICAL SCIENCE

Professor: Anfinson.

Associate Professor: Atkinson.

For additional listings see Physics faculty.

### LOWER DIVISION

**12. Introduction to the Physical Sciences (3) F, S, SS**

A limited number of processes are selected for study which illustrates some of the basic principles used by scientists to interpret modern ideas of matter and energy in the physical universe. Students with a full year course in high school physics or chemistry should elect some other lower division course in chemistry, geology, or physics. Not open for credit to majors in any of the physical sciences. (Lecture 2 hours, laboratory 3 hours.)

### GRADUATE DIVISION

**212A, B. Modern Physical Science (3,3) F, S**

Prerequisites: One semester course in both modern physics and organic chemistry. Selected topics in modern physical science illustrating the trends in science and the contributions and limitations of classical and modern theories.

**297. Seminar (2) F, S**

The definition, and methods of solution of problems in this field with emphasis on the descriptive methods of research and the use of the library. Required of all master's degree candidates.

**298. Project or Thesis (1-4) F, S, SS**

Planning, preparation, and completion of a project or thesis related to this field. Limited to graduate students who have taken or are taking 297. Optional.

# PHYSICS

Professors: Appleton, Fredrickson, Roberts.

Associate Professor: Chow.

Assistant Professors: Buchner, George, Hu, Hutcherson, Salem, Shen, Yano.

Instructor: Troutman.

## LOWER DIVISION

**1A. General Physics: Mechanics of Solids (3) F, S**
Prerequisite: Mathematics 3B which may be taken concurrently. (Lecture and demonstration 3 hours, laboratory 2 hours.)

**1B. General Physics: Mechanics of Fluids and Heat (3) F, S**
Prerequisites: Physics 1A; Mathematics 3C which may be taken concurrently. (Lecture and demonstration 3 hours, laboratory 2 hours.)

**1C. General Physics: Light and Modern Physics (3) F, S**
Prerequisites: Physics 1A; Mathematics 3D which may be taken concurrently. (Lecture and demonstration 3 hours, laboratory 2 hours.)

**1D. General Physics: Electricity and Magnetism (3) F, S**
Prerequisites: Physics 1A; Mathematics 3D which may be taken concurrently. (Lecture and demonstration 3 hours, laboratory 2 hours.)

**2A, B. General Physics (4,4) F, S**
Prerequisite: Mathematics 2 which may be taken concurrently. A year course in the introduction to physics. The first semester deals with the properties of matter, mechanics, and heat. The second semester deals with electricity, sound, and light. (Lecture 3 hours, laboratory 3 hours.)

**10. Survey of General Physics (4) F**
Prerequisite: one year of high school mathematics. Designed to acquaint the student with the more important aspects of elementary physics. Emphasis on physiological physics, color, and sound. Recommended for art, music, and physical education majors. (Lecture 3 hours, laboratory 3 hours.)

## UPPER DIVISION

**105A, B. Analytic Mechanics I, II (3,3) F, S**
Prerequisites: Physics 1B and Mathematics 3D. General theory of particles and rigid bodies. Coupled oscillations. Lagrange's and Hamilton's equations. Concurrent registration in Mathematics 110A, B recommended. (Lecture 3 hours.) Formerly Physics 105 and 115.

**109. Experimental Optics (2) F**
Prerequisite: Physics 1C. Experiments in geometrical, physical and quantum optics. Elementary spectroscopy. (Lecture 1 hour, laboratory 3 hours.)

**112. Thermodynamics and Kinetic Theory (3) F**
Prerequisites: Physics 1B and Mathematics 3D. Equations of state and thermodynamic functions. First and Second Laws. Introduction to kinetic theory and statistical mechanics. (Lecture 3 hours.)

**113. Survey of Modern Physics (3) S, SS**
Prerequisites: Physics 2B and Mathematics 2. Descriptive course in atomic and nuclear physics and the quantum nature of radiation. Not open for credit to majors in physics. (Lecture 3 hours.)

**117. Electronics Laboratory (1) S**
Prerequisite: Physics 1D. Experiments in application of electron devices. Emphasis on electron tubes and transistors in amplifiers and electronic instruments. (Laboratory 3 hours.) Not available to students with credit in Physics 118.

**118. Fundamentals of Electronics (3) S**
Prerequisite: Physics 1D. Electronic phenomena in vacuum and solids applied to electron device structures; circuit models of electron tubes and transistors. Fundamental electronic circuits. (Lecture 2 hours, laboratory 3 hours.)

**120A, B. Electricity and Magnetism I, II (3,3) F, S**
Prerequisites: Physics 105A and Mathematics 110A. The laws of electricity and magnetism in vector analytic form and the formulation of Maxwell's equations in first semester. Applications of Maxwell's equations in second semester. (Lecture 3 hours.) Formerly Physics 110 and 120.

**121A, B. Quantum Physics I, II (3,3) F, S**
Prerequisites: Physics 105A, B, 112, 120A. The structure of atoms and nuclei and the nature of electromagnetic radiation. Development of fundamental Quantum Mechanical theory to analyze these structures. Formerly Physics 121 and 124.

**122. Statistical Physics (3) S**
Prerequisites: Physics 121A. Fundamental hypotheses of statistical mechanics. Applications include classical and quantum gases, electric and magnetic systems, fluctuations, and condensation.

**123A, B. Circuit Electronics, Physical Electronics (4,4) F, S**
Prerequisites: Physics 118, Mathematics 110B for 123A, Physics 121A for 123B. 123A: Development of the circuit concept by matrix and topological methods. Analysis of electronic circuit behavior and applications to communication networks and other physical systems. 123B: Physical theory of electron devices. Dependence of device behavior upon structure. Physical properties of solid state transducer materials. (Lecture 3 hours, laboratory 3 hours.) Formerly Physics 123A, B and 128A, B.

**125. Introduction to Solid State Physics (3) S**
Prerequisite: Physics 121A. Study of the properties of solids from a quantum-theoretical viewpoint. Topics include lattice vibrations, elastic constants, and thermal, electric and magnetic properties. (Lecture 3 hours.)

**127. Introduction to Mathematical Physics (3) F**
Prerequisites: Physics 105A, B, 120A. Partial differential equations of physics. Calculus of variations. (Lecture 3 hours.)

**129. Plasma Physics (3) F**
Prerequisite: Senior standing in physics or equivalent. Plasma physics, hydromagnetics, elementary gaseous electronics, transport and electromagnetic theories.

**130. Special Topics in Physics (3) F, S**
Prerequisite: Consent of instructor. Topics of interest in physics selected for intensive development. Topics to be selected from such areas as Atomic and Nuclear Physics, Astro-physics, Physics of Materials, Low Temperature Physics, Acoustics and Theoretical Physics. Undergraduate students may take for a maximum of 6 units of credit; graduate students may take for a maximum of 6 units of credit. (Lecture 3 hours.)

**131A, B. Quantum Physics Laboratory I, II (1,1) F, S**
Prerequisite: Physics 121A, B which may be taken concurrently. Selected experiments in atomic, nuclear, and solid state physics.

**169. Special Problems in Physics (1-3) F, S, SS**
Prerequisite: Consent of instructor and senior standing. Problems in physics. Problems selected by instructor for considered and mature analysis. May be repeated for credit to a maximum of 4 units.

**GRADUATE DIVISION**

**205. Graduate Mechanics (5) F**
Prerequisite: Physics 105B, Variational principles, Lagrange's equations, Hamilton's equations, canonical transformations, Hamilton-Jacobi theory, relativistic mechanics and small oscillation theory. (Lecture 5 hours.)

**210. Graduate Electricity and Magnetism and Electrodynamics (3) F**
Prerequisite: Physics 120B. Potential problems, Maxwell's equations, wave equation, retarded potentials, radiation theory, and relativistic theory of the electron. (Lecture 3 hours.)

**223. Semiconductor Physics (3) S**
Prerequisites: Physics 118 and 125, or equivalent. Bulk and boundary layer phenomena in semiconducting materials. Device applications. (Lecture 3 hours.)

**225. Solid State Physics (3) S**
Prerequisite: Physics 121B. The modern theory of solids from the standpoint of quantum mechanics. Binding in solids, energy bands, electrical, thermal and magnetic properties, imperfection, and semiconductors. (Lecture 3 hours.)

**226A, B. Quantum Mechanics (3,3) F, S**
Prerequisite: Physics 121B. Schrodinger's equation, perturbation theory, spin, atomic and molecular applications, collisions, and scattering. (Lecture 3 hours.)

**269. Advanced Special Problems in Physics (1-4) F, S, SS**
Prerequisite: Graduate standing. Theoretical and experimental problems in physics requiring intensive analysis. May be repeated to a maximum of 6 units.

**295. Seminar in Physics (1) S**
Prerequisite: Graduate standing. Weekly meetings for presentation and discussion of advanced work in selected topics including original research by faculty and graduate students. (Lecture 1 hour.)

**298. Thesis (1) F, S, SS**
Prerequisite: Physics 269. Formal report of research or project accomplished in Physics 269 including bibliography and discussion of related material.

PHYSIOLOGY (See Anatomy and Physiology)

## POLICE SCIENCE AND ADMINISTRATION

Professor: Germann.

Associate Professor: Guthrie.

Assistant Professors: Becker, H., Price.

**LOWER DIVISION**

**11. Introduction to Law Enforcement (3) F, S**
The philosophy and history of law enforcement; agencies involved in the administration of criminal justice; processes of justice from detection of crime to parole of offender; evaluation of modern police services; survey of professional career opportunities.

**51. Criminal Law (3) F**
Elements of Criminal Law with definitions and general penalties; laws of arrest, search and seizure, rights and duties of officers and citizens.

**56. Criminal Evidence (3) S**
Origin, development and philosophy of rules of evidence; tests of admissibility; weight and value of types of evidence.

**61. Administration of Justice (3) F**
General court procedure and judicial process. Principles of constitutional and civil law as applicable to police operations. Preparation for trial, courtroom testimony, moot court.

**66. Criminal Investigation (3) S**
Fundamentals of investigation; techniques of crime scene recording and search; collection and preservation of physical evidence; modus operandi processes; sources of information; interview and interrogation; follow-up and case preparation.

**71. Patrol Procedure (3) F**
Techniques of patrol and observation; handling complaints and called-for service; mechanics of arrest; techniques of field interrogation; officer's notebook procedure; essentials of police report writing.

**76. Traffic Control (3) S**
The traffic problem; accident investigation; traffic regulation; enforcement; direction; pedestrian, intersection, and parking control; records and analysis; engineering and education. Traffic law and traffic court procedure.

**81. Juvenile Control (3) F**
Techniques of handling juvenile offenders and victims; prevention and repression of delinquency; diagnosis and referral; organization of community resources. Juvenile law and juvenile court procedures.

**83. Police Safety Procedures (2) S**
Police Defense Tactics including protection against dangerous weapons, methods of disarming, use of baton, and subject control. Firearms Training including legal, moral, and safety aspects, range firing of sidearms and riot guns at stationary and combat targets.

**86. Vice Control (3) S**
The detection, repression and control of vice; gambling, narcotics, prostitution, liquor law, and sex-offender violations. Vice law and court procedures.

## UPPER DIVISION

**111. Introduction to Criminalistics I (3) F**
Prerequisite: Majors, junior standing. The scientific analysis and identification and comparison of physical evidence. Fingerprinting identification and classification; searching, photographing, lifting, filing. Photographic techniques. Forensic ballistics and explosives. Ultraviolet techniques. (Lecture 2 hours, laboratory 3 hours.)

**112. Introduction to Criminalistics II (3) S**
Prerequisite: Majors, junior standing. Applications of comparative microscopy, serology, spectrography, chemical and microchemical techniques to fibres, hairs, poisons, textiles, stains, dust, dirt, and debris. Chemical tests for intoxication and narcotic addiction. Plaster of paris and moulage impressions of tiretracks, footprints, toolmarks. Examination of questioned documents. The instrumental detection of deception (polygraph). (Lecture 2 hours, laboratory 3 hours.)

**116. Police Supervision (3) S**
Techniques of police supervision; problems of policy and procedure; field problems; instructional and disciplinary methods; motivation; supervisory investigations and reports; performance rating.

**121. Police Administration I (Line) (3) F**
The organization and management of patrol, traffic, detective, juvenile and vice units. Formulation of policy and procedure; rules and regulations; deployment; implementation of procedural and tactical planning; coordination of activity.

**126. Police Administration II (Auxiliary) (3) F**
The organizaiton and management of records, communications, detention, transportation, laboratory, and allied support units. Supply, maintenance and property units. Coordination and control.

**131. Police Administration III (Staff) (3) S**
The organization and management of personnel, fiscal, planning and research, and public relations units. Coordination and control.

**136. Specialized Problems in Police Administration (3) F**
Policy and procedure in specialized situations; labor-management disputes; minority group relations; crowd, public gathering, mob and riot control; mental cases; subversives; civil defense and disaster planning. Special problems involved in licensing, inspections, animal regulation, ambulance service, and other specially assigned police activities. The integration of public safety functions. The problem of organized crime.

**141. Comparative Police Administration (3) S**
A survey of nationwide and worldwide police philosophy and technique. Evaluation of current major hypotheses; review of recent developments and contributions by agencies and academic institutions; review of current literature in the field.

**146. Industrial Security Administration (3) On demand**
The organization and management of industrial security and plant protection units. Security, police, administrative, legal, and technical problems. Special problems of government contract security. Specialized programs in retail security, insurance and credit investigation, transportation security, and private guard and alarm services.

**156. Fire Services Administration (3) On demand**
The organization and management of fire services. Line, staff, and auxiliary functions. Problems of policy, procedure and technique. Fire service supervision. Special methods and equipment.

**166. Jail Administration (3) On demand**
The organization and management of police detention facilities. Security, custody, and discipline as applicable to pretrial detention. Operation of programs for sentenced misdemeanants. Special problems relative to first offenders, female prisoners, juveniles, narcotic addicts, sick prisoners, homosexuals, the mentally disturbed, and the alcoholic prisoner.

**171. Advanced Criminalistics (3) On demand**
Crime laboratory organization and management. Training of laboratory personnel. Transportation, storage and security of physical evidence. Preparation of courtroom exhibits. Use and care of special equipment such as X-ray and photospectrometer. Special problems of identification and classification. (Lecture 2 hours, laboratory 3 hours.)

**176. Case Studies in Police Administration (1-3) F, S**
Prerequisite: Majors only, junior standing. Individual research and study approved by major professor. May be repeated for credit not to exceed a total of 3 units.

**186. Police Internship Program I (3) F**
Prerequisite: Majors only, junior standing. Supervised work experience for the purpose of increasing student understanding of law enforcement administration and operations. Students are given internships in one of the various federal, state, local, or private law enforcement units in the immediate area. (Not open to employed law enforcement officers.)

**191. Police Internship Program II (3) S**
Prerequisite: Majors only, junior standing. Continuation of Police Science 186.

## POLITICAL SCIENCE

Professors: Hardy, L., Lien, Urquhart.

Associate Professors: Amendt, Millsap.

Assistant Professors: Chawla, Cohen, Lorch, Porter, Trombetas.

Instructors: Hayes, Perlman.

Lecturer: Belloni.

### LOWER DIVISION

**50. American Political Institutions (3) F, S, SS**
Survey of United States national, state and local governments with attention to unique aspects of California government. This course satisfies the general education requirement and the California teaching credential requirement.

**51. Issues of American Government (3) F, S**
Prerequisite: Political Science 50. Intensive study of issues associated with the concepts of democracy, limited government, federalism, separation of powers, judicial review, preservation of individual rights and world ideological conflict. Highly recommended for political science majors.

**60A, B. Introduction to Political Science (3,3) F, S**
An introduction to the principles of political science. Select foreign governments systematically treated in a comparative survey: their constitutional principles, political institutions, and governmental problems. Not open to students with credit in Political Science 60.

### UPPER DIVISION

**108. State Government (3) F, S, SS**
A study of the political structure and its operation, state-federal relations, state-local relations; particular emphasis on California.

**109. Local Government and Administration (3) S**
The organization of local government and the operations used to carry into effect the functions assigned to such units; particular emphasis upon local government in California.

**110. Introduction to International Politics (3) F, S**
The interaction of "great powers"; the influence of balance of power, imperialism, prestige, and the preservation of the *status quo* in the international sphere.

**111. Introduction to International Law (3) F**
Nature and historical development of international law. Determination of rules of international law. The international community under law. Recognition of states and governments. Jurisdiction. Settlement of international disputes. War aggression and neutrality.

**112. The United Nations and Its Problems (2) S**
The rise and present status of the machinery for international cooperation, with particular reference to the United Nations and affiliated organizations.

**114. American Foreign Policy (3) S**
Prerequisite: Political Science 110. A systematic study of the foreign policy of the United States. Contemporary problems will receive special emphasis.

**115. Foreign Policies of the Major Powers (3) F**
A systematic examination of the national interests and foreign policies of the major world powers in terms of global political problems. Recommended, Political Science 110.

**116. Contemporary Problems in International Politics (2) S**
Prerequisite: Political Science 110 or consent of instructor. An analysis of the recurring problems of contemporary international politics in terms of possible strategic-political-military solutions.

**120. Governments of Western Europe (3) F, S**
The governments of representative European democracies, with emphasis on governmental structure, functions, and political processes and their relationship to current problems.

**121. Governments of the Soviet Area (3) S**
Theoretical and practical aspects of the Soviet form of government. Government of the U. S. S. R. from its revolutionary beginning to the present day. Variations of the Soviet form in the satellite countries.

**122. Governments and Politics of the Far East (3) F**
A study of the developments in government, parties, process of elections, and political ideology of China, Japan and Korea.

**123. Governments and Politics of South Asia (3) S**
A study of the developments in government, parties, process of elections, and political ideology of India, Pakistan, Nepal and Ceylon.

**124. Governments of Latin America (3) F**
The governments of leading and representative Latin American states. Emphasis on the background and evolution of current leadership, political institutions and philosophies.

**125. Governments and Politics in the Near and Middle East (3) F, S**
A comparative study of political systems in the Near and Middle East with special emphasis on their political forms, governmental and social structure.

**130. Constitutional Development: Rights (3) F, S**
Prerequisite: Political Science 50 or 132 or equivalent. Analysis of the rights guarantees contained in the Bill of Rights and other constitutional and statutory provisions. Not open to students who have credit in Political Science 135.

**131. Constitutional Development: Power (3) F, S**
Prerequisite: Political Science 50 or 132 or equivalent. Power of the courts in interpreting and enforcing constitutional limitations in order to maintain the sepa-

ration of powers, the division of powers between the national government and the states and, establish governmental power to tax, spend, regulate commerce and conduct foreign relations.

**132. American Government (3) F, S, SS**
The formation of the Constitution, federalism, civil liberties, politics, the legislature, executive, judiciary, state and local government. This course satisfies the federal, state and local government requirement. Not open to students with credit in Political Science 50.

**134. Modern Legal Systems (3) F**
The nature of law, public and private, with emphasis upon cases and materials illustrating the development of Anglo-American legal institutions and processes. Some attention is given to theories of law or jurisprudence. A background for the professional study of law.

**140. Political Parties (3) F, S**
Organization, functions, and practices of political parties in the United States with special emphasis on California parties. An analysis of the part the political party plays in government and the importance of the two-party system in American government. Party responsibility in the United States in comparison with parties in other countries.

**141. Public Opinion and Propaganda (2) F**
A study of the forces, institutions, and instruments which mold and use public opinion; the creation, practice and distinguishing characteristics of propaganda; the techniques of measuring and predicting public opinion.

**142. The Legislative Process (3) S**
Historical development of the legislature; functions of legislatures; organization and procedure of typical legislative bodies; current legislative and legislation trends; problems and principles of lawmaking. Special emphasis on the California Legislature.

**145. Political Behavior (3) F**
Introduction to research in political behavior, emphasizing empirical methods, especially as related to voting, political participation, and techniques of political action. (The class will jointly formulate and carry out a research project.)

**160. Introduction to Political Thought (3) F**
A critical examination of Western political philosophy from Plato to the 16th century. Emphasis upon major political philosophers.

**161. Modern Political Thought (3) F, S**
A critical examination of Western political philosophy from the 16th century to the present. Emphasis upon major political philosophers.

**162. American Political Thought (3) S**
A study of American political ideas from the colonial period to the present.

**165. Contemporary Political Ideologies (3) F**
A study of the development and change in the major political ideologies of the Twentieth Century, including communism, corporatism, fascism, liberalism, and socialism.

**170A. Introduction to Public Administration (3) F**
Prerequisite: Political Science 50. Principles and practices of federal, state and local administration.

**170B. Introduction to Public Administration (3) S**
Prerequisite: Political Science 50, or consent of instructor. Continuation of Political Science 170A with emphasis on governmental budgeting, administrative law, personnel administration, and special administrative problems.

**171. Public Personnel Administration (3) S**
A survey of public personnel administration, including the growth and development of the civil service, the personnel agency, recruitment procedures, position classifications, training programs, employee organizations, and retirement systems.

**172. The Administrative Process (3) S**
An intensive study of the development of the administrative process, the forms of administrative action and judicial control of administrative agencies.

**173. Public Financial Administration (3) F**
Role of the modern budgetary process in the determination of policy, in administrative integration, in control of government operations, in intergovernmental relations, and in relation to private economy.

**174. Local Planning Law and Administration (3) F**
Prerequisite: Political Science 50. The place of planning in local government; legislative bases for planning, zoning, governmental programs in housing and urban renewal; subdivision control; long range financial planning; municipal revenues; other legal, political and governmental problems involved in planning; principal elements of planning surveys.

**190. Public Administration Trainee Program I (3) F**
Prerequisite: consent of the instructor. Internships in one of the various federal, state or local governmental units in the immediate area.

**191. Public Administration Trainee Program II (3) S**
Prerequisite: consent of the instructor. Internships in one of the various federal, state or local governmental units in the immediate area.

## GRADUATE DIVISION

**217. Seminar in International Politics (3) S odd years**
An intensive study of selected topics in international politics such as nationalism, imperialism, judicial settlement of international disputes, collective security. Each semester the course is offered, a different topic will be stressed.

**220. Seminar in Comparative Government (3) S even years**
An intensive study of the political institutions and policies of selected foreign governments. Emphasis on political parties and contemporary governmental policy.

**230. Seminar in Public Law (3) S**
Prerequisite: A political science course in the field of public law. Topics in constitutional development, regulatory adjudication and comparative administration of justice.

**234. Seminar in American Government (3) F**
An intensive study of topics and problems in American Government.

**240. Seminar in Politics (3) F even years**
An advanced and realistic study of the political activities of political parties and groups, with special emphasis on their methods of operation, use of public relations, conduction of elections, and campaign methods.

**241. Seminar in Legislation (3) S odd years**
An advanced study of the development of the legislature in the several states and the Federal Government. Each semester the course is offered, a different type of legislative problem is studied.

**260. Seminar in Political Theory (3) F**
Prerequisite: An upper division course in political theory. An analytical and critical examination of the major concepts of political theory. Special attention will be directed to the writings of Twentieth Century political theorists.

**270. Seminar in Public Administration (3) F odd years**
Topics and problems in the field of public administration. Problems of governmental organization and management as they relate to specific governmental units of administration.

**298. Thesis (1-4) F, S, SS**
Planning, preparation and completion of thesis in political science for the master's degree.

## PSYCHOLOGY

Professors: Bradley, Macfarlane, Towner.
Associate Professors: Garlington, Heintz, Hull, McClelland, Nygaard.
Assistant Professors: Adams, Boyle, Carlson, E., Creamer, DeHardt, Garcia, Hanson, Hommel, Jung, Petersen, Thayer, White, J. L.
Lecturer: Fleer.

### LOWER DIVISION

**51. General Psychology (3) F, S, SS**
An introduction to the scientific study of human behavior. Designed to provide the student with a basic background for further study and for practical application in everyday life.

**52. Elementary Statistics (3) F, S, SS**
Prerequisite: Two years of high school algebra or Mathematics 1. The calculation and interpretation of the basic statistical measures. Major emphasis on the meaning, limitations, and applicability of statistical procedures. Required of all majors in psychology. (Lecture 2 hours, laboratory 2 hours.)

**53. Principles of Psychology (3) F, S**
Prerequisite: Psychology 51. An advanced consideration of the fundamental principles of psychology intended primarily for prospective psychology majors and other students who plan to take further work in psychology. Emphasis on integration of physiological principles with the major areas of psychology and techniques of psychological measurement and experimentation. (Lecture 2 hours, laboratory 3 hours.)

**58. Psychology of Personality (3) F, S**
Prerequisite. Psychology 51. Study of psychological principles pertinent to the understanding of personality and interpersonal adjustment Discussion of research and theories of social motivation, conflict and anxiety, adjustment mechanisms, and personality change.

### UPPER DIVISION

**111. Physiological Psychology (3) S**
Prerequisite: Psychology 53. The study of the physiological aspects of behavior with special emphasis upon neurological structure and function. The experimental

evidence on which theories of psycho-physiology are based will be reviewed. (Lecture 2 hours, and laboratory 3 hours.)

**112. Sensation and Perception (3) F, S**
Prerequisite: Psychology 53. The basic phenomena of the senses, their physiological correlates and integration in complex perceptual judgments. (Lecture 2 hours and laboratory 3 hours.)

**113. Comparative Psychology (3) F**
Prerequisite: Psychology 53 or equivalent. Study of phylogenetic differences in animal behavior leading to the development of psychological principles. (Lecture 2 hours; laboratory 3 hours.)

**114. Psychology of Learning (3) F**
Prerequisites: Psychology 52 and 53. A study of human and animal learning with special emphasis on experimental evidence and techniques. (Lecture 2 hours, laboratory 3 hours.)

**115. Social Psychology (3) F, S, SS**
The ways in which personal adjustment, mental processes, and skilled performances vary as functions of differences in social experience. Includes attitudes, communication, leadership, opinion, propaganda, suggestion, and related topics. (Not available to students having credit for Sociology 115.)

**116. Language, Communication, and Persuasion (3) S**
Prerequisite: Psychology 115. Psychological processes underlying language, communication and persuasion. Learning and using language. Communication factors influencing thinking, attitudes, and personality.

**117. Principles of Group Dynamics (2) S**
Prerequisite: Psychology 115. Behavior as a function of factors operating in groups, especially in face-to-face contacts. Assessment of principles of group dynamics, with opportunities for development of skills in the use of alternative techniques for leadership, organization, and control.

**118. Experimental Social Psychology (3) F**
Prerequisites: Psychology 52, 53, 115. Critical examination of research designs, and methods for the study of problems in social psychology. Experimental projects with questionnaires, scales, interviews and observation methods, and with problems of sampling and data analysis. (Lecture 2 hours, laboratory 3 hours.)

**130. Abnormal Psychology (3) F, S, SS**
The study of abnormal behavior as it throws light on normal personality adjustment. Consideration of the role of biological, psychological and social factors in personality disorders, together with the consideration of basic principles of mental hygiene.

**131. Laboratory Psychology (3) F, S**
Prerequisites: Psychology 52 and 53. The student performs and interprets a series of laboratory experiments which illustrate the major experimental procedures used in psychological investigation. Required of all majors in psychology. Six hours per week.

**135. History and Systems of Psychology (3) F, S**
An overview of the contribution of prominent historical figures in the development of psychological theory and a brief introduction to the various areas of theoretical concentration such as: structuralism, functionalism, Gestalt, psycho-

analytic, behaviorism, etc. These theories will be reviewed in light of their importance to present day theories.

**147. Engineering Psychology (3) S**
Prerequisites: Psychology 111, 112, 149. A study of the applications of psychological principles to the design of man-machine systems. (Lecture 2 hours, laboratory 3 hours.)

**148. Personality Structure and Development (3) F, S**
Prerequisite: Psychology 130. Modern views of personality structure and functioning.

**149. Industrial Psychology (3) F, S**
The problems and procedures in industrial psychology. Emphasis on motivational effects of such programs as incentive plans, worker adjustment, group participation, job security, motion and time study, training, and supervision.

**150. Introduction to Clinical Psychology (3) F, S, SS**
Prerequisites: Psychology 155 and either Psychology 130 or Education 132. A survey of the field of clinical psychology including an introduction to diagnostic procedures and therapeutic process. Practical projects in observation, case practice, and case conference techniques.

**154. Motivation and Emotion (3) F, S**
Prerequisites: Psychology 52, 53. A discussion of the situational and physiological determiners of behavior, theories of motivation and emotion, and an introduction in the laboratory to the investigative techniques and problems in the study of motivation. (Lecture 2 hours, laboratory 3 hours.)

**155. Psychological Testing (3) F, S, SS**
Prerequisite: Psychology 52. The principles and practices of group and individual testing in the fields of intelligence, aptitude, achievement, personality, and interest. Emphasis on the evaluation of tests as measuring devices, their applicability and limitations.

**164. Theories of Learning (3) S**
Prerequisite: Psychology 114. A study of current learning theories and their experimental bases. (Lecture 2 hours, laboratory 3 hours.)

**165. Individual Intelligence Testing (3) F, S**
Prerequisite: Psychology 155. Practice in administration and interpretation of the Stanford-Binet and Wechsler individual tests. The student will administer not less than 15 Binets and 20 Wechslers to children and adults at different developmental levels.

**166. Interviewing and Case Study Methods (3) F, S**
Prerequisite: Psychology 150 and either Psychology 165 or Education 178. The study and development of the clinical techniques of observation, case history and the interview. Emphasis on diagnostic personal interviewing and the integration of clinical data in case studies.

**170. Developmental Psychology (3) F, S**
Psychological problems of human development considered with reference to data from studies of children and lower animals.

**184. Personnel Psychology (3) F**
Prerequisite: Psychology 149. The applications of psychology in personnel work. Includes selection, interviewing, training and counseling of employees. Job analysis, safety programs, attitude surveys, and rating methods will be discussed.

**185. Vocational Testing (2) S**
Prerequisite: a basic course in statistics or Education 110. Principles and practices in the field of vocational and aptitude testing. The major tests of vocational interest, academic aptitude, dexterity, and special aptitude will be administered to and scored by the students. Emphasis will be on evaluation of these tests, their applicability and limitations.

**186. Advanced Statistics-Statistical Inference (3) F, S**
Prerequisite: Psychology 52 or equivalent. A consideration of the logic and applications of statistical inference. Hypothesis testing, parametric and non-parametric methods, analysis of variance and covariance, and experimental design. (Lecture 2 hours, laboratory 2 hours.)

**187. Advanced Statistics-Correlation Analysis (3) F, S**
Prerequisite: Psychology 52 or equivalent. Correlation and prediction with continuous and categorical data, partial and multiple correlation, and introduction to factor analysis. (Lecture 2 hours, laboratory 2 hours.)

**199. Independent Study (1-3) F, S, SS**
Prerequisite: Consent of the department. The student will conduct independent laboratory or library research and write a report of the research. May be repeated for a maximum of 6 units.

## GRADUATE DIVISION

**200. Contemporary Psychology (3) F, S**
The study of modern schools of psychological thought with emphasis both on the historical contributions and on the more recent trends in system formation. An overview of the explanations necessary for a scientific definition of the field.

**211. Techniques of Physiological Psychology (3) S**
Prerequisites: Psychology 111 and 113. Development of physiological methods and animal surgical procedures in the study of behavior. (Discussion 1 hour, and laboratory 6 hours.)

**215. Seminar in Social Psychology (3) S**
Prerequisites: Psychology 115, 118, or consent of instructor. Critical examination of problems of interpersonal relations, social influence, group membership and influence, and intergroup relations.

**216. Attitude and Opinion (3) F**
Prerequisites: Psychology 52 and 115. The nature and correlates of attitudes, opinions, and related psychological processes. Project experience in the development and use of measurement techniques.

**225. Projective Techniques (3) F**
Prerequisites: Psychology 130, 148, 256, and candidacy for the master's degree in psychology or school psychologist emphasis in pupil personnel services credential or consent of instructor. Theory and practice in projective methods. Administration, scoring and elementary interpretation of the Rorschach, Thematic Apperception Test, and other projective methods for the study of personality.

**226. Interpretation of Projective Techniques (3) S**
Prerequisite: Psychology 225. Intensive study of the interpretation of projective techniques. Practice will be given in interpreting, organizing, and summarizing data from test batteries.

**231. Advanced Experimental Psychology (3) F**
Prerequisites: Psychology 131. Representative methods, techniques and apparatus requirements for selected areas of laboratory investigation. (Discussion 2 hours, laboratory 3 hours).

**235. Seminar in Psychometric Methods (3) F**
Prerequisites: Psychology 155, 186, 187. Consideration of the various areas of psychological measurement and their theoretical foundations including psychophysical and psychological scaling techniques and test methods.

**236. Seminar in Behavior Disorders of Children (3) F**
Prerequisites: Psychology 148, 150 and Education 105 or equivalent. Investigation of the etiology, classification, diagnosis and treatment of behavior disorders in children from birth through adolescence.

**240. Psychology of Industrial Relations (3) S**
Prerequisite: Psychology 149 or equivalent. The psychological techniques which have been designed to improve and facilitate human relations in industry. The student will have an opportunity to participate in, and direct, typical problem-solving sessions.

**247. Seminar in Human Factors (3) F**
Prerequisites: Psychology 147 or consent of instructor. Consideration of environment, communication, human physiological capacities, and controls in the effective operation of man-machine systems and in the development of simulation and training devices.

**248. Seminar in Personality (3) F**
Prerequisite: Psychology 148. Theories of personality structure, dynamics, and development. Critical examination of research deriving from different theoretical approaches.

**250. Clinical Psychology (3) S**
Prerequisite: Psychology 150. A consideration of clinical diagnosis and the psychotherapeutic process. Techniques of psychological interviewing will be integrated with the presentation of course material.

**255. Test Construction Theory and Practice (3) F**
Prerequisites: Psychology 155. Consideration of problems in the construction of tests for personnel selection, educational screening, personality assessment, aptitude estimating, and measurement of academic achievement. Practice in the development of tests. (Lecture 2 hours, laboratory 2 hours).

**258. Clinical Practicum (3) F, S**
Prerequisites: Psychology 225, 250, and consent of the Psychology Committee. Application for the Practicum should be made by October 15 or March 1 for the following semester. Clinical practice in varied clinical settings. Experience in individual work with clients, diagnostic procedures, staff conferences, and case management will be provided.

**264. Seminar in Human Learning (3) S**
Prerequisite: Psychology 164. A treatment of techniques and implications in theories and experimental studies of learning which are directly concerned with human applications.

**297. Seminar (2) F, S**

The definition, and methods of solution, of problems in the field of psychology with emphasis on the descriptive method of research and use of the library. Required of all master's degree candidates.

**298. Project or Thesis (1-4) F, S**

Planning, preparation, and completion of a project or thesis in psychology. Limited to graduate students who have taken or are taking Psychology 297. Required of all candidates for the master's degree.

## RECREATION

Professor: Gabrielsen.

Associate Professor: Gray.

### UPPER DIVISION

**108. Community Recreation (2) F, S, SS**

Principles and organization of community recreation. A survey of public and private agencies engaged in community-wide recreation. Field trips to be arranged.

**111. Social Games, Mixers, and Games of Low Organization (2) F, S**

Skills, conduct and supervision of recreational games and mixers. Lead-up activities to team sports.

**112. Recreation Leadership (2) F**

Theory and practice in leadership of recreational activities. Principles in planning, conducting and evaluating recreation programs in recreation agencies.

**131. Organization and Administration of Recreation (3) S**

Types of organization; program planning; finances; personnel; relationships and correlation with related agencies; construction, maintenance, and promotion of the total recreation program as it relates to administration.

**141. Outdoor Education (2) S**

The philosophy, scope, administration and activities of the camping program, including public school camping. A study of camp organization, program planning, camp counseling and leadership, and campcraft.

**145. Team Sports in Recreation (2) F**

Skills, techniques of teaching and officiating, arranging tournaments, and promoting interest in participation in basketball, softball, speedball, soccer, touch football, and volleyball. Not open to physical education majors. (Not open to students with credit in Physical Education 145.)

**146. Individual and Dual Sports in Recreation (2) S**

Skills, techniques of teaching and officiating, arranging tournaments, and promoting interest and participation in archery, badminton, golf, handball, tennis, and stunts and tumbling. Not open to physical education majors. (Not open to students with credit in Physical Education 146.)

**174. Field Work in Private Recreation Agencies (3) F**

Limited to recreation majors or consent of instructor. Supervised leadership in private and semi-public agencies. A minimum of 60 hours of supervised leadership in an approved agency required.

**175. Field Work in Public Recreation Agencies (3) S**

Limited to recreation majors or consent of instructor. Supervised leadership in public agencies. A minimum of 60 hours of supervised leadership in an approved agency required.

**176. Field Work in Outdoor Education (3) S, SS**

Prerequisites: Rec. 141 or equivalent and consent of instructor. Supervised counselorship in a school camp or other approved agency. Two week attendance at camp required.

**GRADUATE DIVISION**

**200. Trends in Recreation (2) F**

Prerequisite: Teaching or recreation leadership experience, or consent of instructor, and Physical Education 297 for all physical education master's degree candidates (may be taken concurrently). Changing concepts and conditions as they relate to contemporary programs of organized recreation.

**209. Problems in Recreation (2) S**

Prerequisites: Field work, recreation leadership experience, or consent of instructor and Physical Education 297 for all physical education master candidates (may be taken concurrently). Designed to meet current professional needs of recreation leaders. Relationship of school and community concerning problems in school recreation, community recreation, and camping programs. Problems to be developed by individual and/or groups.

**275. Field Work in Recreation Administration or Supervision (3) F**

Prerequisites: Full-time recreation leadership experience and consent of instructor. A minimum of 80 hours of supervised leadership in recreation administration or supervision in an approved public or private agency. Limited to students who expect to work in recreation administration or supervision.

## RUSSIAN

Assistant Professor: Ctvrlik.

**LOWER DIVISION**

**1A, B. Fundamentals of Russian (4,4) F, S**

1A—Practice in grammar, reading, pronunciation, writing and conversation. Not open to students who have had one year of high school Russian.

1B—Prerequisite: Russian 1A or one year of high school Russian. Continuation of Russian 1A.

**60A. Intermediate Russian (3) F**

Prerequisite: Russian 1AB or two years of high school Russian or equivalent.

**60B. Intermediate Russian (3) S**

Prerequisite: Russian 60A or 3 years of high school Russian or equivalent.

# SAFETY EDUCATION

Assistant Professor: Lorenzen.

### UPPER DIVISION

**148. Elementary and Secondary School Safety (2) F**

Content and methods of teaching safety in the elementary and secondary schools.

**149. Public Safety and Accident Prevention (2) F, S, SS**

Safety education accident reporting procedures, school safety checks, school and community organizations, pedestrian safety, bicycle safety, curriculum problems, fire prevention. (Meets requirements for the special secondary credential in public safety and accident prevention.)

**150. Driver and Traffic Safety Education I (3) F, S, SS**

Prerequisites: A valid California driver's license and an extensive driving record free from repeated accident experience and traffic law violation. Designed to prepare teachers for driver instruction programs in secondary schools through intensive study of the scope and objectives of driver education, traffic law, basic auto mechanics, the driver, and consumer education. Includes laboratory experience for improving personal driving skills.

**151. Driver and Traffic Safety Education II (3) F, S, SS**

Prerequisites: Safety Education 150 and consent of instructor. Emphasis placed on techniques of teaching classroom and behind-the-wheel phases of driver instruction in secondary schools. Includes methods, materials and resources for classroom teaching and behind-the-wheel laboratory practice teaching of beginning drivers.

**152. Traffic Simulators (3) F, S, SS**

Prerequisite: Safety Education 150. Operation, maintenance and methods of teaching driver instruction with traffic simulators.

**153. Organization, Administration and Supervision of Driver and Traffic Safety Programs (2) F, S, SS**

Prerequisite: Safety Education 151. Organization and administration of secondary school driver instruction programs, including supervisory experience, evaluation of current programs and appraisal of current trends and research studies.

# SOCIAL SCIENCE

Associate Professors: Madison, R., Popham.

### LOWER DIVISION

**60. History and Geography of California (3) F, S, SS**

(Not open to students who have credit in geography of California or history of California.) An integrated study of the impact of the physical environment upon the political, economic and social development of California. Special attention to be given to the changing use of the area as brought about by historic events. A major objective will be a better understanding of contemporary California and its problems. May not apply toward a history or geography major.

### GRADUATE DIVISION

**298. Project or Thesis (1-3) F, S, SS**

Prerequisite: Consent of adviser. Planning, preparation and completion of a project or thesis related to this field. Optional.

# SOCIOLOGY

Professors: Dressler, Hartman, Korber, Massaro.

Associate Professors: Dackawich, Day, B., Sheets, Ullman.

Assistant Professors: Fathi, Haskell, Hubbard, Ponsar.

## LOWER DIVISION

**50. Principles of Sociology (3) F, S, SS**

Introduction to basic concepts of sociology and sociological analysis. Emphasis upon group, status, role, personality, socialization, social processes, institutions, social organization and socio-cultural change.

**52. Social Trends and Problems (3) F, S, SS**

Concepts of social change, lag, trends, and disorganization; population growth and mobility; minority groups; rural-urban relationships; communication agencies and problems; public health; social stratification; and war. This course is especially recommended for teachers who want a general survey of social problems.

**55. Marriage (3) F, S**

A survey of the most recent information on dating, courtship, engagement, mate selection, areas of adjustment in marriage, parenthood, financial, and homemaking problems.

**65. Elementary Statistics (3) F, S**

Prerequisite: A knowledge of mathematical procedures usually covered in elementary high school algebra. Statistical techniques in social research. The relations of appropriate techniques to research problems. Assumptions necessary to the use of statistical techniques. Not open to students with credit in Psychology 55 or Business 110.

**80. The Field of Social Welfare (3) F, S, SS**

The history, philosophy and development of thought in social welfare. Casework, social group work and community welfare organization, their functions and orientations. Social work as a career. Opportunities available and qualifications necessary for admission to the field. Not open to students with credit in Sociology 180.

## UPPER DIVISION

**109. Rural-Urban Trends (3) S**

Prerequisite: Sociology 50. Transition from rural to urban society in America; impact of the urban way on individuals and groups; persistence of rural values; social differences between communities in various stages of the process of urbanization.

**110. The Family (3) F, S, SS**

The family as a social institution; family in various cultures; the American family; relationships in family life; family and social change; disorganization and reorganization.

**115. Social Psychology (3) F, S, SS**

The extent to which personality is determined by social influences and the processes by which people fit themselves into human groups. (Not available to students having credit for Psychology 115.)

**120. Social Stratification (3) F, S**

Prerequisite: Sociology 50. Study of role, status, and the structure of differential rankings in societies, criteria for ranking, functions and dysfunctions, correlates of class position, and social change.

**121. Criminology (3) F, S**
Prerequisite: Sociology 50. Incidence and characteristics of criminal behavior; physical, economic and emotional causes of antisocial behavior; social effects of crime; probation and parole; prevention programs.

**122. Penology (3) F, S**
Prerequisite: Sociology 121. Control and treatment of offenders. Peno-correctional programs, particularly in the United States. Administrative problems and methods in penology. American penology viewed in the framework of criminology.

**125. Juvenile Delinquency (3) F, S, SS**
Extent and distribution; causative factors; influence of home, school and community; programs of prevention, control and treatment.

**127. Social Disorganization (3) F**
Prerequisite: Sociology 50. Analysis of those forces, processes, and relationships which tend to create disorganization in society and of their operation in selected life situations. Examination of the relationships between personal and social disorganization. Description and analysis of the forces and processes whereby reorganization is effected.

**130. Social Control (3) F, S, SS**
Prerequisite: Sociology 50. The nature and means of social control. The classification and analysis of different forms of social control. The relative significance of types of social control such as law, religion and the family. Deliberation of noninstitutional controls such as language, ideologies and status groups.

**135. Communication and Social Contact (3) S**
Prerequisite: Sociology 50. Social communication in human behavior. The nature and function of language and related communication symbols in group life. Communication media, such as newspapers, books, radio, television, movies and their function in socialization.

**140. Human Ecology (3) S**
A study of the relations of man to his social and physical environment. The spatial patterns of communities, distribution of population and institutions, and the processes of change in these phenomena.

**145. Sociology of Small Groups (3) F, S**
Designed to give theoretical and practical understanding of sociological concepts and principles found in the dynamics of small groups; research and theory, the individual in a social situation, the group as a system of social interaction, leadership, methodology, and the small group approach to a problem.

**150. Social Institutions (3) F**
Prerequisites: Sociology 50 and one other course in sociology. The process of institutionalization, the general nature of institutions, their relationship to persons, social control, social change and disorganization.

**153. Family Life Education (3) SS**
Concepts of family development and interaction in the modern American family with emphasis on leadership opportunities for professional persons. (Not open to students with credit in Home Economics 165.)

**155. Methods of Sociological Research (3) F, S**
Prerequisites: Sociology 50, 65 and one upper division course in sociology. An introduction to the use of scientific methods in sociology, its purpose and limitations, relationship between theory and research, research design, sampling, measurement and social science techniques, reliability and validity.

**160. Population and Migration (3) F**
Prerequisites: Sociology 50 and one other course in sociology. Growth and distribution of population; theories of population growth; population analysis; historical survey of the world migration; American immigration and emigration.

**161. Conservation of Human Resources (3) F, S**
An integrated study of the multiple human activities which promote the conservation of human resources. Special consideration is given to the problems of health, education, population density and old age as they affect the human resource. The role of inanimate energy in creating surpluses thus enabling man to develop and conserve both the quantity and quality of the human resource is stressed.

**162. Ethnic Group Relations (3) S**
Prerequisites: Sociology 50 and one other course in sociology. Patterns of ethnic group differentiation; world relationships between ethnic groups; accommodation and assimilation of minority groups in America.

**166. Contemporary Sociological Theory (3) S**
Prerequisites: Sociology 50 and two other courses in sociology, one of which is upper division. A critical analysis of the contributions of contemporary sociologists, intended primarily for majors in this field.

**170. Industrial Sociology (3) S**
Prerequisite: 3 units of sociology. Modern industrial society; industrial organization; group structure and behavior in factory, office, and store; worker and the machine; social classes and the industrial order; industrial conflict.

**175. Social Welfare Through Legislation (3) F**
The development of social legislation affecting family and child welfare, civil rights, social insurance, health and safety, labor-management relations.

**182. Introduction to Social Casework (3) F, S**
The contributions of psychology, sociology, biology, and social work to an understanding of the dynamics of human behavior. Role of the caseworker. Principles involved in helping people solve their personal problems.

**184. Introduction to Social Group Work (3) F, S**
Services and functions of social group work agencies. Role of the group worker. Principles involved in group participation and leadership.

**185. Interviewing in Social Welfare (3) F, S**
A survey of interviewing principles and techniques as related to the field of social welfare. Special consideration of the interviewing process in the study, psychosocial diagnosis and treatment approach in working with the individual who experiences difficulty in achieving a satisfactory social adjustment.

**186. Community Welfare Organization (3) F**
A survey and evaluation of the community social welfare organizations, with special emphasis on the theory and principles that the social worker applies in functioning as a community organization worker.

**188. Probation and Parole (3) F, S**
History, philosophy and administration of probation and parole. Principles of investigation, supervision and socialized treatment in probation and parole.

**190A, B. Field Experience in Social Welfare (3,3) F, S**
Prerequisites: Sociology 50; Sociology 180, 182 or 184; or consent of instructor. Supervised experience in social agencies leading to orientation in public and private social welfare.

**GRADUATE DIVISION**

**201. Development of Social Thought (3) F**

Prerequisite: six units of sociology. Culture patterns and social thought; historical periods and social thought; representative thinkers before sociology; representative sociological thinkers; relation to educational and political theories.

**205. Social Classes (3) S**

Prerequisite: six units of sociology. Social differentiation on basis of class or caste. Origin and interrelationships of classes. Studies of social stratification. Class struggle.

**210. Seminar in Family (3) S**

Prerequisite: six units of sociology. Advanced study of the family as a social institution. Emphasis is placed on recent research, recent social changes affecting family life, and on family disorganization and reorganization.

**235. Seminar in Communication (3) F even years**

Prerequisites: Six units in sociology. Seminar in social communication as related to the areas of symbolic social behavior, social organization and disorganization, social groups, social institutions. The analysis of the mass media as an institution of social control.

## SPANISH

Associate Professor: Noguer.

Assistant Professors: Contreras, Donahue, Trinidad.

**LOWER DIVISION**

**1A, B. Fundamentals of Spanish (4,4) F, S**

1A—Practice in grammar, reading, pronunciation, writing and conversation. Not open to students who have had one year of high school Spanish.

1B—Prerequisite: Spanish 1A or one year of high school Spanish. Continuation of Spanish 1A.

**60A, B. Intermediate Spanish (3,3) F, S**

A—Prerequisite: Spanish 1A, B or two years high school Spanish or equivalent.

B—Prerequisite: Spanish 60A or three years high school Spanish or equivalent.

**UPPER DIVISION**

**102. Advanced Spanish I (3) F**

Prerequisite: Spanish 60B or equivalent. Extensive reading of Spanish writings, review of grammatical principles, and a general consolidation of the four language skills: reading, comprehension, composition, and conversation.

**103. Advanced Spanish II (3) S**

Prerequisite: Spanish 102 or equivalent. A sequel to Spanish 102, with continuing emphasis on extensive reading of Spanish texts and periodicals, regular composition work based on these readings, and the development of increased mastery of the spoken language through student discussion of the readings.

**105. Introduction to Spanish Literature I (3) F**

Prerequisite: 14 units of lower division Spanish. A study of the origins and development of the literature of Spain from the "Poem of Mio Cid" to 1700.

**106. Introduction to Spanish Literature II (3) S**

Prerequisite: 14 units of lower division Spanish. From 1700 to the present time.

**111. Advanced Spanish Syntax and Composition (3) S**
Prerequisite: Spanish 102 and 103 or equivalent. Special emphasis on the writing of short compositions and commercial letters.

**113. Survey of Latin American Literature I (3) F**
Prerequisite: 14 units of lower division Spanish. A survey of the outstanding Chronicles of the Conquest and the influence of Spanish culture in the formation of the New World. Covers the period of the colonization of Latin America and its struggle for independence.

**114. Survey of Latin American Literature II (3) S**
Prerequisite: 14 units of lower division Spanish. From the ending of the wars of independence to the present time.

**115. The Latin-American Novel (3) F, S, SS**
Prerequisite: 14 units of lower division Spanish. A survey of the most representative novels of Latin-America, with emphasis on the intimate relationship between the literature and the problems of our neighboring countries.

**116. The Modern Spanish Novel (3) F, S, SS**
Prerequisite: 14 units of lower division Spanish. Survey of works of outstanding Nineteenth and Twentieth Century Spanish novelists.

**117. Spanish Romanticism (3) F, S, SS**
Prerequisites: 14 units of lower division Spanish. A study of the most representative Spanish writers of the Romantic period.

**118. The Modern Spanish Essay (3) F, S, SS**
Prerequisite: 14 units lower division Spanish. Reading and discussion of the essays of writers such as Azorín, Unamuno, Ortega y Gasset and Angel Ganivet.

**120A, B. Spanish Conversation (3,3) F, S, SS**
Prerequisite: 14 units of lower division Spanish. A functional course in conversation. Intended to meet specific, everyday situations and to provide help to those who intend to speak Spanish in travel, work or classroom instruction. Either half of course may be taken first.

**124. The Drama of the Golden Century (3) F, S, SS**
Prerequisite: 14 units of lower division Spanish. The Spanish drama from Juan del Encina to Calderon de la Barca.

## SPEECH

Professors: Goodman-Malamuth, Thompson, J., Wagner.

Associate Professors: Cain, E., Castleberry, Drum, Morehead, Smith, R., Wills.

Assistant Professors: Baker, D. F., Buck, Healy, J., Krueger, Landes, Larr, Lichty, Rogers, Shanks, Skriletz.

Instructors: Gilbert, R., Powell, J., Sullivan.

Lecturer: Graunke.

### LOWER DIVISION

**A. Speech Improvement (0) F, S**
For students with speech defects that are not amenable to correction in courses taken to satisfy the graduate requirement in speech. Counts 1 unit toward the student's semester load but does not give unit credit toward graduation.

**3. Voice and Articulation (3) F, S, SS**
The physiological and anatomical bases of normal voice production with intensive training in articulation, pronunciation, projection and related oral skills.

**25A, B. Speech for Foreign Students (3,3) F, S**
A general orientation to the production of American speech sounds and patterns. Emphasis on inflection patterns, phonetic drill, and oral language comprehension. Open only to students assigned to this course by the Foreign Student Advisor.

**27. Introduction to Parliamentary Procedure (2) F, S**
Application of the fundamentals of parliamentary procedure to the organization and functioning of groups.

**30. Essentials of Public Speaking (3) F, S, SS**
The composition and delivery of talks to inform and persuade. Logical organization is stressed. Three class hours weekly.

**41. Essentials of Argumentation (3) F, S, SS**
Theory and practice of argumentation. Includes evidence, proof, refutation, thought habits; training in argumentative speaking and evaluative techniques.

**42. Speech Activity (1) F, S**
Prerequisite: Consent of instructor. Prerequisite for radio-TV activity. Speech 49 or consent of instructor. Participation in intercollegiate forensic or radio and television production activities. Any student who expects to participate in such activities during the semester should enroll for speech activity. The student's specific assignments will be determined in consultation with the staff at the first meeting. Maximum credit, four units. For radio-TV activities, maximum credit, two units.

**46. Survey of Broadcasting (3) F**
The social, political, economic, and cultural implications of broadcasting. The history of broadcasting. Relationships between the broadcasting industry, the federal government, and the public. Comparative systems of broadcasting. Unresolved problems of broadcasting in America.

**49. Fundamentals of Radio-Television Production (3) S**
Basic principles and techniques of planning, writing, and producing television and radio programs. Not open to students with credit in Speech 48.

**50. Elements of Group Discussion (3) F, S, SS**
The basic principles and techniques of discussion. An introductory survey of the importance of discussion in contemporary society, including a study of and practice in informal group discussion, panel discussion, symposium and forum.

**52. Elements of Oral Interpretation (3) F, S, SS**
Performance training in oral reading of prose and poetry.

## UPPER DIVISION

**106. Advanced Public Speaking (3) F, SS**
Prerequisite: Speech 30. Advanced forms of speech composition. Stress is placed on matters of selection of subject matter, arrangement of materials, and factors of style. Intensive application of rhetorical principles.

**107. Speech and Language Development in Children (2) F, S, SS**
Development of speech and language in children; recognition of speech and language needs and the role of the parents and teachers in meeting these needs; procedures for correcting minor speech disorders in the classroom; related community referral agencies.

**108. Persuasion (3) F, S**
A study of audience behavior; theories of motivation, attention, interest; an understanding and analysis of types of audiences with methods of audience adaptation.

**118. Speech Arts in the Elementary School (2) F, SS**
The use of creative dramatics, improvisations, puppetry, choral speech, radio, television, and group discussion for the purpose of developing fluency, responsiveness and imagination in children. The integration of improvised dramatic play with curricular subjects will be stressed.

**119. Laboratory in Speech Arts in the Elementary School (1) SS**
Prerequisite or co-requisite: Speech 118. A practical opportunity for the student to work with children in guiding creative dramatics, puppetry, choral speech and other speech arts.

**134. Advanced Group Discussion (3) F, S, SS**
Prerequisite: Speech 50. The relationship of discussion to the democratic process. Critical thinking and the role of leadership in the group process.

**137A, B. History and Criticism of American Public Address (3,3) F, S**
The evaluation of speech making as it pertains to the development of American institutions. 137A covers the period from Colonial times to the Civil War. 137B covers the period from 1860 to 1932. Either semester may be taken independently.

**138. Story Telling (2) F, S, SS**
Development of skill in the art of storytelling.

**139. Introduction to Rhetorical Theory (3) S**
Analytical survey of the major contributions of rhetorical authorities.

**140. Oral Interpretation of Literature (3) F, S, SS**
Prerequisite: Speech 52. Principles of oral interpretation including practice in reading prose, poetry and dramatic literature.

**141. Argumentation and Debate (3) F, S**
Techniques of argumentation and their application to the debate activity; logic, reasoning, and fallacies of reasoning; experience in the various forms of formal argument and debate.

**142. Speech Activity (1) F, S**
Prerequisite: Consent of instructor. Prerequisite for radio-TV activity, Speech 149 or Speech 151 or consent of the instructor. Participation in intercollegiate forensic or radio and television production activities. Any student who expects to participate in such activities during the semester should enroll for speech activity. The student's specific assignments will be determined in consultation with the staff at the first meeting. Maximum credit, four units. For radio-TV activities, maximum credit, two units.

**143. Contemporary Public Address (3) F**
A survey of Twentieth Century American public address. A study of procedures for evaluation of public address, and the application of these procedures to contemporary speakers, audiences, and occasions.

**144. Voice Science (3) S**
Prerequisite: Speech 3. The speech process as an organic and acoustic phenomenon. Anatomy and physiology of the respiratory, phonatory and articulatory processes, including the neuro-physical mechanism of speech. Acoustic concepts

include the nature and modification of sound, speech sound analysis, phonetic theory, and interaction of hearing and speech.

**145. Business and Professional Speech (2) F, S, SS**
Speech in informal business and professional situations, including interviews, sales talks, and conference speaking.

**146. Ancient Public Address (3) F**
A critical study of the speakers, speeches, and speaking arenas from the pre-classical and classical periods.

**148. British Public Address (3) S**
Major figures will be studied with emphasis on their ideas and speechmaking.

**149. Radio Production (3) F**
Prerequisite: Speech 49 or consent of the instructor. Planning and producing original radio programs for broadcasting, using a variety of production techniques. Not open to students with credit in Speech 150.

**151. Television Production (3) S**
Prerequisite: Speech 49 or consent of the instructor. Experience in producing original television programs. Emphasis is on creative programming using a variety of production techniques.

**154. Television and Radio Writing (3) S**
Nondramatic and dramatic writing for broadcasting. Student scripts and copy will be produced when possible.

**155. Radio and Television Programming (3) S**
Prerequisite: Speech 46 or consent of instructor. The history of program trends in American broadcasting and the influences which have been reflected in program practices. Present practices in programming. Experience in the experimental approach to creating, developing, and producing new ideas, techniques, and program forms for particular purposes and audiences.

**156. The Mass Media—Cultural Implications (3) S**
The impact of radio, television, and film on various worldwide societies. A survey of the major concepts of the mass media relative to national goals. Worldwide uses of mass media in education. Analysis of the social responsibilities of the mass media in America.

**157. History and Criticism of Motion Pictures (2) F**
A historical survey of the birth, development, and artistic and social impact of the motion pictures, in America and throughout the world. Includes a study of actual classics of film art as well as an investigation into the nature of the medium, its techniques, its principles, and its characteristics as art and as social comment.

**158. Introduction to Speech Correction (3) F, S, SS**
Prerequisite: Speech 162 is recommended. Survey of various speech disorders emphasizing treatment of functional defects; preparation of records and case studies, role of speech therapist in the community and in the public schools; includes observation of speech therapy and introduction to techniques for differential diagnosis.

**159. Speech Pathology: Non-Organic Disorders (3) S, SS**
Prerequisites: Speech 158, 162, or consent of instructor; Speech 144 recommended. Detailed study of the etiological, diagnostic, and therapeutic aspects of non-organic speech disorders, including stuttering; observation and limited clinical experience under supervision.

**160. Clinical Practice (1-6) F, S, SS**
Prerequisite: Speech 158 or consent of instructor. Student conducts speech therapy in a clinical situation under supervision. May be repeated for credit to a maximum of 6 units.

**162. Phonetics (2) F, S, SS**
Study of the phonetic basis of speech sounds and the various factors which influence pronunciation. Consideration is given to linguistic variations, regional dialects and standards.

**163. Principles of Audiometry and Hearing Conservation (3) F, S, SS**
Basic physiological and acoustical concepts of the hearing mechanism; techniques of pure tone and speech audiometry; interpretation of results; organization of hearing conservation programs.

**164. Speech Reading and Aural Rehabilitation (3) S, SS**
Prerequisite: Speech 162. Historical background of lip reading theory and instructional techniques; current teaching methods and research in visual communication, auditory training, and speech conservation; practice in teaching and performing speech reading; types of and utilization of hearing aids; hearing aid evaluation.

**165. Parent Counseling in Speech Correction (2) F, S, SS**
Techniques used in counseling and interviewing parents, emphasizing problems presented by speech handicapped children.

**170. Speech Pathology: Organic Disorders (3) F, SS**
Prerequisites: Speech 144, 158. Advanced study of speech disorders which have an organic origin, including problems of etiology, diagnosis, and therapy.

**190. Psychology of Speech (3) S**
An examination of the facts and theories which underlie the speech act. A study of the fundamental problems of abstraction and symbolism, the experimental foundation of communication theory, emotional and psychological considerations in oral communication, and group factors in public address.

**195. Special Studies in Speech (1-3) F, S**
Prerequisites: Speech major, senior standing, cumulative grade point average of 3.0 and/or consent of instructor. Individualized laboratory or library research selected in consultation with instructor. A written report of the research is required.

**196. Special Problems in Radio-Television (1-3) F, S**
Prerequisite: Consent of instructor. Open only to senior students in the radio-TV concentration. Intensive study and research in some problem of the mass media culminating in a research paper. May be repeated to a maximum of four units.

## GRADUATE DIVISION

**200. Seminar in Bibliography and Methods of Research (3) F**
An introduction to methodological problems involved in graduate research. Bibliographical problems and library research, location and use of original sources, special speech and drama research techniques of a survey or historical nature. Deals also with survey, description, experimentation, and theory of a scientific nature as these pertain to research in-speech and drama. A "pilot study" thesis will be required. Not open to students with credit in Drama 200.

**220. Seminar in Public Address (3) F**
Prerequisite: 12 units of undergraduate speech. Selected problems in British and American public address.

**240. Seminar in Oral Interpretation (3) S**
Theories of oral interpretation of literature, with emphasis upon the history and evaluation of oral presentation of literature as an art form and a pedagogical instrument.

**250. Seminar in Discussion and Debate (3) S**
History and foundations of discussion and argumentation theory and review of research and contemporary writings in discussion and argumentation.

**259. Seminar in Speech Pathology (3-3) F, SS on demand**
Prerequisites: Speech 158 and 159, or consent of instructor. Selected problems in speech pathology through an investigation of the literature and clinical research. This course may be repeated once for credit.

**260. Advanced Clinical Practice (1-4) F, S, SS**
Prerequisites: Speech 160 (2 units), or consent of instructor. Student conducts therapy sessions under supervision for persons with more complex speech and hearing disorders. Student handles all aspects of clinical program including initial interviews, parent counseling, and testing.

**263. Seminar in Audiology (3) S, SS on demand**
Prerequisites: Speech 163 and 164, or consent of the instructor. Selected problems in audiology and hearing conservation approached through an investigation of literature and clinical research. This course may be repeated once for credit.

**298. Project or Thesis (1-4) F, S, SS**
Prerequisite: Speech 200, and consent of the department. Preparation, completion and submission of an acceptable thesis in partial fulfillment of the requirement for the master's degree.

**299. Seminar in Experimental Methodologies (3) S**
Prerequisites: A course in elementary statistics; Psychology 52; Sociology 65, or equivalent. An introduction to methodological problems involved in the use of various scientific methods of research in the various fields of speech and drama research. The application of basic statistical methods to empirical data, various possibilities for types of experimental designs in public address, theatre, and speech correction, as well as other types of scientific methods, such as survey, content analysis, and telemetering techniques. The use and application of various instruments. At least one major research project write-up required.

## ZOOLOGY

Professors: Arvey, Hardy, Loomis, White, J.
Associate Professors: Rainey, Reish.
Assistant Professors: Lockley, Loveland, Outka, Stephens, L.

### LOWER DIVISION

**1A, B. General Zoology (4,4) F, S, SS**
1A deals with the principles of animal biology and survey of invertebrate phyla; emphasis on metabolism and physiology. 1B deals with genetics, embryology and evolution and survey of the vertebrates. 1A must be taken prior to 1B. (Lecture 2 hours, laboratory 6 hours.)

**50. Animal Life in California (3) F, S, SS**
Prerequisites: Biology 10 or Zoology 1A. General identification and appreciation of common vertebrates in California. Not open for credit to biological sciences majors. (Lecture 2 hours, laboratory and field 3 hours.)

**54. Birds (3) S**
Prerequisite: Biology 10 or Zoology 1A. General identification and life histories of local birds. Not open for credit to biological sciences majors. (Lecture 2 hours, laboratory and field 3 hours.)

## UPPER DIVISION

**100. Invertebrate Zoology (4) F**
Prerequisites: Zoology 1A, B or Zoology 1A and Geology 5. Basic taxonomy, morphology, ecology and distribution of the invertebrates, Protozoa through Arthropoda, excluding Insecta, but including Protochordata; emphasis on local marine forms. (Lecture 2 hours, laboratory and field 6 hours.)

**102. Invertebrate Systematics (3) S**
Prerequisite: Invertebrate Zoology. A course dealing with the systematics of invertebrates, excluding insects. (Lecture 1 hour, laboratory and required field trips, 6 hours.)

**104. Ornithology (3) S, SS**
Prerequisite: Zoology 1A, B. Taxonomy, ecology and distribution of birds; emphasis on field work and use of bird collections of western forms. (Lecture 2 hours, laboratory and field 3 hours.)

**110. Herpetology (3) S**
Prerequisite: Zoology 1A, B. Taxonomy, natural history, ecology and distribution of amphibians and reptiles; emphasis on local forms. (Lecture 2 hours, laboratory and field 3 hours.)

**115. Ichthyology (3) F**
Prerequisite: Zoology 1A, B. Taxonomy, natural history, ecology and distribution of fish; emphasis on local forms and their economic implications. (Lecture 2 hours, laboratory and field 3 hours.)

**130. Mammalogy (3) F**
Prerequisite: Zoology 1A, B. Taxonomy, ecology and distribution of mammals; emphasis on field work and use of mammal collections of western forms. (Lecture 2 hours, laboratory and field 3 hours.)

**135. Comparative Anatomy (4) F, S**
Prerequisite: Zoology 1A, B. Comparison of structures in vertebrate classes; homologous, analogous and prototype structures of lower forms in relation to mammalian, including human, structures. (Lecture 2 hours, laboratory 6 hours.)

**140. Vertebrate Embryology (4) F, S**
Prerequisite: Zoology 1A, B. Steps in development of an organism to hatching or birth; starfish, amphioxus and frog development; emphasis on chick and human development. (Lecture 2 hours, laboratory 6 hours.)

**141. Experimental Embryology (3) S even years**
Prerequisites: Zoology 140; Biology 130; Chemistry 108. Selected topics in developmental biology; emphasis on gastrulation, determination, differentiation, regeneration, and the influence of peripheral structures on the central nervous system. (Lecture 1 hour, laboratory 6 hours.)

**165. Histology (3) F, SS**
Prerequisite: Six units of biological science including Zoology 1A. Microscopic anatomy of animals; nature and characteristics of tissues, organs and organ systems; emphasis on human histology. (Lecture 2 hours, laboratory 3 hours.)



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**166. Biology of the Protozoa (4) F**

Prerequisites: Zoology 1AB or Botany 1; Chemistry 1A. A comparative study of certain morphological, physiological, and life history features of representative protozoan species. Emphasis in the laboratory on optical, cytochemical, nutritional and other experimental techniques. (Lecture 2 hours, laboratory 6 hours.)

**167. General Animal Parasitology (4) S**

Prerequisite: Zoology 1AB. The comparative morphology, systematics, and life history of protozoan, helminth, and other invertebrate parasites, excepting higher arthropods. Study not restricted to parasites of man. Emphasis on life cycles, the host-parasite interaction, and host examination and staining. (Lecture 2 hours, laboratory 6 hours.)

**170. Vertebrate Paleontology (3) S**

Prerequisite: Zoology 135 or Geology 5. Stratigraphic history of skeletal modifications in vertebrates. (Lecture 2 hours, laboratory and field 3 hours.)

**186. Physiology of Fishes (3) S even years**

Prerequisites: Anatomy and Physiology 60 or Zoology 115. Selected studies in the physiological ecology of marine and freshwater fishes using techniques of environmental analysis. (Lecture 2 hours, laboratory 3 hours.)

**190. Dynamics of Animal Populations (3) F**

Prerequisites: Zoology 1AB; Mathematics 1 or 7, unless waived. A course dealing with the response to components of the physical environment, distribution, density, dispersal rates, reproduction, growth, regulation, and social behavior of natural animal populations. Experimentation and quantitative information is stressed. (Lecture 2 hours, laboratory 3 hours.)

## GRADUATE DIVISION

**204. Advanced Ornithology (2) F odd years**

Prerequisite: Zoology 104. Selected subjects on distribution, classification, physiology, adaptations, migration, and life histories of birds; emphasis on recent studies and new concepts. (Lecture 1 hour, laboratory and field 3 hours.)

**210. Advanced Herpetology (2) S even years**

Prerequisite: Zoology 110. Selected subjects on distribution, classification, physiology, adaptations and life histories of amphibians and reptiles; emphasis on recent studies and new concepts. (Lecture 1 hour, laboratory and field 3 hours.)

**215. Advanced Ichthyology (2) F even years**

Prerequisite: Zoology 115. Selected subjects on distribution, classification, physiology, adaptations and life histories of fishes, emphasis on recent studies and new concepts. (Lecture 1 hour, laboratory and field 3 hours.)

**230. Advanced Mammalogy (2) S odd years**

Prerequisite: Zoology 130. Selected subjects on distribution, classification, physiology, adaptations and life histories of mammals; emphasis on recent studies and new concepts. (Lecture 1 hour, laboratory and field 3 hours.)

**235. Zoogeography (2) S, SS**

Historical and ecological approach to problems in animal distribution; terrestrial and aquatic forms are used to illustrate zoogeographical principles. (Lecture 2 hours.)

**240. Principles of Taxonomy (2) F, SS**

Rules and problems in animal systematics; taxonomy as a tool in zoological studies. (Lecture 2 hours.)

# FACULTY

## (As of February 3, 1964)

(Number in parenthesis indicates year of appointment)

ACKERMAN, STANLEY (1960)—Assistant Order Librarian
A.B., Brooklyn College; M.S. in L.S., University of Southern California.

ADAMS, JACK (1963)—Assistant Professor, Psychology
A.B., University of California; M.A., University of Hawaii; Ph.D., Claremont Graduate School.

AHLQUIST, IRVING F. (1949)—Professor, History
B.S., Wheaton College; M.A., Ph.D., University of Illinois.

ALBRECHT, WALTER A., JR. (1952)—Professor, Mathematics
B.S., Hamline Un versity; M.A., University of Minnesota; Ph.D., Ohio State University.

ALEXANDER, JAMES M., III (1963)—Assistant Professor, Anthropology
A.B., University of New Mexico; M.S., Clemson College, South Carolina.

ALLEN, CHARLES A. (1957)—Associate Professor, English
A.B., DePauw University; Ph.D., University of Iowa.

ALLEN, RALPH K. (1956)—Professor, English
A.B., William Jewell College; M.A., Ph.D., University of Washington.

AMENDT, JOHN T. (1957)—Associate Professor, Political Science
Chairman, Political Science Department
B.S., Loyola University, Los Angeles; Ph.D., Georgetown University.

ANDERSON, BURTON L. (1958)—Associate Professor, Geography
B.S., Southern Methodist University; M.A., University of Minnesota; Ph.D., University of Washington.

ANDERSON, ROY C. (1950)—Professor, Education
A.B., Augustana College; M.A., University of Michigan; Ed.D., Stanford University.

ANDERSSON, HENRY F. (1956)—Associate Professor, Accounting
A.B., M.A., University of Southern California.

ANFINSON, OLAF P. (1956)—Professor, Physical Science
B.Ed., Winona State Teachers College; M.A., Ed.D., Colorado State College of Education.

APPLETON, GEORGE L. (1953)—Professor, Physics
B.S., Carnegie Institute of Technology; Ph.D., University of Southern California.

ARCHER, BLAIR C. (1950)—Associate Professor, Art
B.S., Moorhead State Teachers College; M.Ed., Ph.D., University of Minnesota.

ARNELL, WALTER J. W. (1959)—Associate Professor, Mechanical Engineering
Aeronautical Engineer, Royal Aircraft Establishment, England; B.Sc., University of London; M.A., Occidental College; M.S., University of Southern California.

ARNHEIM, DANIEL D. (1959)—Associate Professor, Physical Education
A.B., George Pepperdine College; M.A., Los Angeles State College.

ARVEY, M. DALE (1953)—Professor, Zoology
A.B., University of California; M.S., University of Idaho; Ph.D., University of Kansas.

ASH, WILLIAM D. (1957)—Associate Professor, Marketing
A.B., Idaho State College; M.B.A., Stanford University.

ASHER, EUGENE L. (1959)—Associate Professor, History
A.B., M.A., Ph.D., University of California at Los Angeles.

ASPIZ, HAROLD (1958)—Associate Professor, English
A.B., M.A., Ph.D., University of California at Los Angeles.

ATKINSON, GENE (1957)—Associate Professor, Physical Science
A.B., Rice Institute; M.Ed., Ed.D., University of Houston.

BAIRD, JOHN J. (1956)—Associate Professor, Biology
Chairman, Biology Department
A.B., Iowa State Teachers College; M.S., Ph.D., State University of Iowa.

BAKER, CLARENCE P. (1952)—Associate Professor, English
B.S., Haverford College; M.A., Harvard University; Ph.D., University of California at Los Angeles.

BAKER, DAN F. (1961)—Assistant Professor, Speech
A.B., M.A., Indiana University.

BAKER, DOROTHY W. (1961)—Assistant Professor, Home Economics
B.S., University of Maryland.

BALTZELL, JAMES H. (1958)—Associate Professor, Foreign Languages
A.B., University of Illinois; M.A., Ph.D., Indiana University.

BARBER, SHIRLEY (1963)—Assistant Professor, Business Education
B.S., University of Oregon; M.Ed., Oregon State University; Ed.D., Colorado State College.

BARTLETT, KENNETH T. (1959)—Assistant Professor, Physical Education
B.S., University of Minnesota; M.A., California State College at Los Angeles.

BASSHAM, HARRELL C. (1959) ..... Associate Professor, Education
B.S., Union College; M.A., Ph.D., University of Nebraska.

BATES, ELEANOR H. (1963) ..... Lecturer, Anthropology
A.B., California State College at Long Beach; M.A., University of Southern California.

BATES, ZELPHA (1953) ..... Professor, Home Economics
A.B., Washburn College; M.A., Teachers College, Columbia University; Ed.D., New York University.

BAUER, ROGER D. (1959) ..... Assistant Professor, Chemistry
B.S., Beloit College; M.S., Ph.D., Kansas State University.

BEATTIE, WILLARD H. (1962) ..... Assistant Professor, Chemistry
A.B., M.S., University of Chicago; Ph.D., University of Minnesota.

BECKER, CALLIE D. (1963) ..... Assistant College Librarian
A.B., Shorter College; A.B. in L.S., Emory University.

BECKER, CHARLES E. (1956) ..... Assistant Professor, Music
B.Mus., M.A., Ph.D., State University of Iowa.

BECKER, EDWIN N. (1955) ..... Associate Professor, Chemistry
B.S., Iowa State University; Ph.D., University of Wisconsin.

BECKER, HAROLD K. (1963) ..... Assistant Professor, Police Science
A.B., M.S., University of Southern California.

BEECHER, EARL S. (1961) ..... Assistant Professor, Business Finance
A.B., University of Utah; M.B.A., University of California at Los Angeles.

BEEGLE, DONALD A. (1963) ..... Assistant Professor, Physical Education
B.S., M.S., University of Oregon.

BEEKMAN, BRUCE E. (1958) ..... Assistant Professor, Physiology
A.B., San Diego State College; M.A., Indiana University.

BELLONI, FRANK P. (1963) ..... Lecturer, Political Science
A.B., University of California at Riverside; M.A., State University of Iowa.

BELT, VIRGINIA M. (1963) ..... Associate Professor, Business Finance
B.S., Southern Illinois University; M.S., Ph.D., University of Illinois.

BENNETT, DONALD A. (1963) ..... Lecturer, Education
B.S., Eastern Oregon College; M.A., University of Denver.

BENSON, RUSSELL V. (1962) ..... Assistant Professor, Mathematics
B.E.E., Cornell University, New York; M.A., Ph.D., University of Southern California.

BERGLAND, CLARENCE R. (1951) ..... Associate Dean—Admissions and Records
B.S., M.A., University of Southern California.

BETAR, GEORGE V. (1963) ..... Assistant Professor, English
A.B., State University of New York, College at Albany; M.A., Ph.D., University of Southern California.

BIRO, BELA L. (1959) ..... Associate Professor, Art
Ph.D., University of Budapest.

BLACK, ALBERT G. (1962) ..... Instructor, English
A.B., M.A., University of Michigan.

BLACK, STUART E. (1962) ..... Assistant Professor, Mathematics
B.S., Harvey Mudd College, Claremont; M.A., University of California at Los Angeles.

BLACKBURN, FAY I. (1959) ..... Social Science Catalog Librarian
A.B., Mount St. Mary's College, Los Angeles; M.S. in L.S., University of Southern California.

BLACKMAN, EVELYN L. (1961) ..... Lecturer, Education
A.B., University of Washington; M.P.H., Ed.D., University of California.

BOK, FRANK J. (1956) ..... Associate Professor, Physical Education
B.S., M.A., Ph.D., Certificate in Physical Therapy, State University of Iowa; Registered Physical Therapist, California.

BONDE, ROBERT G. (1962) ..... Assistant Professor, Industrial Arts
A.B., M.A., San Jose State College.

BONIS, WILLIAM D. (1963) ..... Assistant Professor, Philosophy
B.D., Theological Academy, Sarospataka, Hungary; M.Th., Presbyterian Theological Seminary, Pittsburgh; Ph.D., University of Texas.

BOORKMAN, CHARLES J. (1949) ..... College Librarian
A.B., B.S. in L.S., University of Illinois; M.A., University of Southern California.

BORDERS, DAVID C. (1962) ..... Assistant Professor, Art
B.F.A., Ohio State University; M.F.A., University of Washington.

BORING, WARREN J. (1956) ..... Associate Professor, Physical Education
B.S., Kansas State College; M.S., University of Colorado; H.S.D., Indiana University.

BOYLE, RAYMOND E. (1961) ..... Assistant Professor of Psychology
A.B., Reed College; M.S., Ph.D., University of Washington.

BRADLEY, JACK I. (1952) ..... Professor, Psychology
A.B., Los Angeles State College; M.A., Occidental College; Ph.D., Claremont Graduate School

BRASHER, ROBERT E. (1956) ..... Serials Catalog Librarian
A.B., Oklahoma City University; M.A. in L.S., University of Denver.

BRATTON J. WESLEY (1950) ..... Dean of Instruction, Extended Services
A.B., Seattle Pacific College; M.S., Ed.D., University of Southern California.

BRENT, PAUL L. (1959) ..... Associate Professor, Education
B.S., Central State College; M.Ed., Ed.D., University of Oklahoma.

BROOKS, CHARLES B. (1957) ..... Associate Professor, English
A.B., M.A., Ph.D., University of California.

BROWNSWORD, ALAN W. (1961) ..... Assistant Professor, History
A.B., Brown University; M.A., Ph.D., University of Wisconsin.

BRUNNER, RUTH H. (1957) ..... Associate Professor, Physical Education
B.S., M.A., George Washington University, Washington, D.C.

BRYAN, RUTH M. (1962) ..... Assistant Humanities Librarian
B.A., M.A., University of California at Los Angeles; M.S. in L.S., University of Southern California.

BRYANT, DAVID L. (1949) ..... Executive Dean, Administration
B.S., University of Southern California; M.A., Stanford University; Ed.D., University of Southern California.

BUCHNER, REINHARD K. (1963) ..... Assistant Professor, Physics
B.S., Gutenberg University, Mainz, Germany; M.S., Doctorate in Engineering, Technical Hochschule, Aachen, Germany.

BUCK, STEVEN M. (1961) ..... Assistant Professor, Speech
A.B., M.A., Washington State University; Ph.D., Purdue University.

BUCKLAND, ROSCOE L. (1955) ..... Professor, English
Chairman, English Department
A.B., M.A., University of Idaho; Ph.D., State University of Iowa.

BUCKWALTER, BARBARA (1959) ..... Assistant Professor, Home Economics
B.S., Brigham Young University; M.S., Oregon State College.

BURCH, CHARLES (1951) ..... Professor, Botany
B.S., Slippery Rock State Teachers College; M.S., Ph.D., Cornell University.

BURDICK, DONALD E. (1957) ..... Medical Officer
B.S., M.D., University of Nebraska.

BURK, R. BURDETT (1954) ..... Professor, Education
B.S., Ball State Teachers College; M.S., Ed.D., Indiana University.

BURRAS, DARRELL V. (1957) ..... Professor, Business Education
Chairman, Business Education Department
B.S., Central Michigan College; M.S., Ph.D., University of Michigan.

CACCESE, VINCENT P. (1960) ..... Head Science and Technology Reference Librarian
A.B., University of California at Los Angeles; M.S. in L.S., University of Southern California.

CAIN, EARL R. (1959) ..... Associate Professor, Speech
Chairman, Speech Department
A.B., University of South Dakota; M.A., Ph.D., Northwestern University.

CAIN, GUY H., JR. (1960) ..... Assistant Professor, Electrical Engineering
B.S. in E.E., University of Wisconsin; M.Eng., University of California at Los Angeles.

CAMBURN, HERBERT L. (1960) ..... Assistant Professor, Drama
A.B., M.A., Michigan State University.

CAMPBELL, DANIEL A. (1962) ..... Lecturer, Physical Education
A.B., University of California at Santa Barbara

CANFIELD, JAMES K. (1957) ..... Assistant Professor, Education
A.B., Fresno State College; M.A., Teachers College, Columbia University.

CARLSON, EARL R. (1961) ..... Assistant Professor, Psychology
B.S., University of Washington; Ph.D., University of Michigan.

CARLSON, MAUDE C. (1952) ..... Head Social Science Reference Librarian
A.B., M.A. in L.S., University of Michigan.

CARPENTER, BRUCE H. (1962) ..... Assistant Professor, Biology
A.B., M.A., Long Beach State College; Ph.D., University of California at Los Angeles.

CARR, HARRY LAWSON (Peter) (1959) ..... Associate Professor, English
A.B., University of Southern California; M.A., Johns Hopkins University; Ph.D., University of Southern California.

CASTLEBERRY, OTTIS L. (1956) ..... Associate Professor, Speech
A.B., Pennsylvania State College; M.A., University of Southern California; Ph.D., Pennsylvania State University.

CERVENY, GEORGE R. (1952) ..... Professor, English
B.S., M.A., University of Idaho; Ph.D., New York University.

CHAMBERS, CARLETON A., P.E. (1961) ..... Associate Professor, Civil Engineering
B.S.E., M.S.E., Princeton University.

CHAWLA, SUDERSHAN (1962) ..... Assistant Professor, Political Science
B.S., Delhi University, India; M.A., Ph.D., Ohio State University

CHOW, RICHARD H. (1958) ..... Associate Professor, Physics
A.B., M.A., University of British Columbia; Ph.D., University of California at Los Angeles.

CHRISTENSEN, ARNOLD M. (1949) ..... Professor, Education
A.B., Carleton College; M.A., University of Minnesota; Ph.D., State University of Iowa.

CLEGG, RICHARD (1958) ..... Associate Professor, Physical Education
A.B., M.A., Ed.D., Stanford University.

COCKRUM, JAMES E. (1955)—Coordinator, Audio-Visual Services; Professor, Education
B.Ed., Southern Illinois University; M.A., Teachers College, Columbia University; Ed.D., Indiana University.

COHEN, IRA S. (1959)—Assistant Professor, Political Science
A.B., University of Arizona; M.A., Ph.D., University of Chicago.

CONREY, BERT L. (1959)—Professor, Geology
Chairman, Geology Department
B.S., M.S., University of California; Ph.D., University of Southern California.

CONROY, JEAN L. (1961)—Instructor, Mathematics
A.B., M.A., University of Maine.

CONTRERAS, JOSEPH (1961)—Assistant Professor, Foreign Languages
A.B., M.S., University of Southern California.

COOK, EDGAR T. (1952)—Chief, Library Technical Processes
A.B., Occidental College; M.S. in L.S., University of Southern California.

COPPOLA, AUGUST F. (1961)—Assistant Professor, English
A.B., University of California at Los Angeles; M.A., Hofstra College, Hempstead, New York; Ph.D., Occidental College.

COTTA, EDMUND A. (1958)—Associate Professor, Marketing
Chairman, Marketing Department
B.B.A., University of Toledo; M.B.A., University of Pennsylvania.

COX, HIDEN T. (1963)—Coordinator of Research; Professor, Biology
B.S., Furman University, Greenville, South Carolina; M.A., Ph.D., University of North Carolina.

CRAFTS, JAMES S. (1957)—Professor, Art
Chairman, Art Department
A.B., Oberlin College; M.A., Teachers College, Columbia University; M.A., Ph.D., Yale University.

CRANE, GEORGE F. (1958)—Associate Professor, English
A.B., Stanford University; M.A., University of California at Los Angeles; Ph.D., University of California.

CRAWFORD, WALTER B. (1963)—Assistant Professor, English
A.B., Union College, Lincoln, Nebraska; M.A., Columbia University; Ph.D., University of California at Los Angeles.

CREAMER, LYLE R. (1962)—Assistant Professor, Psychology
B.S., M.S., Kansas State University; Ph.D., University of Illinois.

CROGEN, CORINNE A. (1951)—Professor, Physical Education
B.Ed., La Crosse State Teachers College; M.S., Wellesley College; Ed.D., University of Michigan.

CROSSAN, ROBERT D. (1955)—Associate Professor, Education
A.B., M.A., Whittier College; Ed.D., University of Southern California.

CROWE, WALTER C. (1952)—Professor, Physical Education
B.S., M.S., University of California at Los Angeles; Ed.D., University of Southern California.

CTVRTLIK, JOSEF T. (1963)—Assistant Professor, Foreign Languages
A.B., University of Prague, Czechoslovakia; M.A., University of Southern California.

DACKAWICH, S. JOHN (1959)—Associate Professor, Sociology
A.B., University of Maryland; Ph.D., University of Colorado.

DALLIN, LEON (1955)—Professor, Music
B.Mus., M.Mus., University of Rochester; Ph.D., University of Southern California.

DARBEE, RICHARD H. (1954)—Professor, English
A.B., Alma College; M.A., University of Michigan; Ph.D., University of New Mexico.

DARM, ADAM E. (1963)—Assistant Professor, Industrial Technology
B.S. in Ed., Northern Illinois State College.

DAVIS, BOYD A. (1951)—Professor, Education;
Assistant to the Dean—Curriculum
A.B., John Fletcher College; M.S., Ph.D., Iowa State University.

DAVIS, JIM ERVIN (1962)—Assistant Professor, Economics
A.B., M.A., University of Oklahoma; Ph.D., University of Wisconsin.

DAY, BARBARA R. (1959)—Associate Professor, Sociology
B.S., M.A., Washington State College; Ph.D., University of Washington.

DAY, JAMES E. (1955)—Associate Professor, English
A.B., Iowa State Teachers College; M.A., Ph.D., State University of Iowa.

DEAN, C. THOMAS (1952)—Professor, Industrial Arts
Chairman, Division of Applied Arts and Sciences
A.B., Peru State Teachers College; M.S., Ph.D., Iowa State University.

DEATHERAGE, DOROTHY (1955)—Associate Professor, Physical Education
A.B., M.A., Stanford University.

DEHARDT, DORIS C. (1961)—Assistant Professor, Psychology
A.B., M.A., University of Missouri; Ph.D., Michigan State University.

DELOTTO, MARCEL J. (1954)—Associate Professor, Physical Education
B.S., Randolph-Macon College; M.A., University of North Carolina; Ph.D., University of Oregon.

DEMILLE, ROSALIND J. (1963) ..... Assistant Professor, Physical Education
A.B., M.A., University of Southern California.

DEMOS, GEORGE D. (1962) ..... Associate Dean, Counseling and Testing
B.S., Northern Illinois State College; M.S., University of Illinois; Ph.D., University of Southern California.

DENNEMEYER, RENE F. (1957) ..... Associate Professor, Mathematics
A.B., M.A., Ph.D., University of California at Los Angeles.

DENNIS, JOHN G. (1962) ..... Assistant Professor, Geology
B.S., Imperial College, London, England; M.A., Ph.D., Columbia University, New York.

DILLINGHAM, ORVAL L. (1955) ..... Professor, Art
A.B., M.F.A., University of Minnesota.

DIXON, KEITH A. (1958) ..... Associate Professor, Anthropology
A.B., M.A., University of Arizona; Ph.D., University of California at Los Angeles.

DOLE, MARJORIE B. (1959) ..... Counselor
A.B., M.A., Long Beach State College.

DONAHUE, FRANCIS J. (1960) ..... Assistant Professor, Foreign Languages
A.B., University of Omaha; M.A., University of Wisconsin.

DORSEY, JOHN F. (1961) ..... Head Order Librarian
A.B., Colorado State College of Education; M.A. in L.S., Denver University.

DRESSLER, DAVID (1953) ..... Professor, Sociology
Ph.B., University of Chicago; M.A., Columbia University; Ph.D., New York University.

DRUM, DALE D. (1956) ..... Associate Professor, Speech
A.B., M.A., Ph.D., University of Southern California.

DUDLEY, JOHN H., P.E. (1960) ..... Assistant Professor, Civil Engineering
B.S., United States Military Academy; M.S., Massachusetts Institute of Technology.

DURBIN, ROBERT P. (1950) ..... Professor, Biology
A.B., San Diego State College; M.S., Ed.D., University of Southern California.

DVORAK, ELDON J. (1961) ..... Assistant Professor, Economics
B.S., South Dakota State College; Ph.D., University of Washington.

EGGE, ALFRED S. (1961) ..... Assistant Professor, Biology
A.B., Long Beach State College; M.S., Ph.D., University of Arizona.

EHRREICH, ALBERT LEROY (1957) ..... Assistant Professor, Geology
A.B., M.A., University of California at Los Angeles.

ELPERS, MARY JO (1963) ..... Instructor, Biology
B.S., Marian College, Indianapolis; M.S., Indiana University.

ERICKSEN, SHELDON D. (1955) ..... Associate Professor, Geography
Chairman, Geography Department
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# INDEX


Accounting (see business administration)
Accreditation, 17
Administrative and professional staff, 302
Admission, 29
Adult special students, 30
Advanced standing, 31
Advisory board, 10
American history and Constitution requirements, 44
Anatomy, 129
Anthropology
  Degree requirements, 53
  Courses, 130
Art
  Degree requirements, 53
  Courses, 132
Astronomy, 139
Auditors, 30
Auxiliary services staff, 304

Baccalaureate degrees, 41
Bachelor of arts degree, 41
Bachelor of science degree, 41
Bachelor of vocational education degree, 41
Biology
  Degree requirements, 56
  Courses, 139
Bookstore and Cafeteria, 23
Botany
  Degree requirements, 58
  Courses, 143
Buildings and facilities, 22
Business administration
  Degree requirements, 58
  Courses, 144
Business education
  Degree requirements, 62
  Courses, 145
Business, technical and secretarial staff, 303

Calendar, 6
California State Colleges, 14
Chancellor, 10
Chemistry
  Degree requirements, 63
  Courses, 155
College administrators, 11
College, history of, 17
Councils and committees, 13
Counseling, 25
Courses, announcement of, 128
Courses, classification and designation of, 36
Courses, repetition of, 33
Credentials, 120
Credit or waiver by examination, 32

Degree programs, 19
Disqualification of students, 36
Division and department chairman, 11
Dormitories, 24
Drama
  Degree requirements, 63
  Courses, 159

Economics
  Degree requirements, 64
  Courses, 162
Education
  Degree requirements, 64
  Courses, 166
Engineering
  Degree requirements, 65
  Courses, 179

English
  Degree requirements, 68
  Courses, 188
Entomology, 194
Expenses for books and supplies, 40
Extension and correspondence credit, 31

Faculty, 283
Fees and expenses, 39
Final examinations, 37
Finance (see business administration)
Financial assistance, 26
Foreign languages (see specific language)
Foreign students, 30
Foundation, LBSC, 23
Fraternities, 27
French
  Degree requirements, 69
  Courses, 195

General education requirements, 42
General regulations, 34
Geography
  Degree requirements, 69
  Courses, 197
Geology
  Degree requirements, 70
  Courses, 200
German
  Degree requirements, 70
  Courses, 202
Grades, 34
Grade points, 36
Grade reports, 34
Graduate degree program, 93
Graduate records check, 37
Graduation with honors, 45
Graphic arts (see industrial arts)

Health education
  Degree requirements, 71
  Courses, 204
Health service, 25
History
  Degree requirements, 71
  Courses, 205
Home economics
  Degree requirements, 72
  Courses, 221
Honors Program, 45
Housing, 24

Industrial arts
  Degree requirements, 73
  Courses, 216
Industrial technology
  Degree requirements, 73
  Courses, 223
Instructional program, 19
International Summer Sessions, 22

Journalism, 75
  Courses, 226
Junior college transfers, 31

Laboratory technology (see microbiology)
Latin, 75
  Courses, 227
Library, 22
Librarians, 302
Living accommodations, 24

# INDEX—Continued


Marketing (see business administration)
Master of arts degree, 95
Master of science degree, 95
Mathematics
  Degree requirements, 76
  Courses, 228
Matriculation, 29
Medical facilities, 25
Metalwork (see industrial arts)
Microbiology
  Degree requirements, 76
  Courses, 232
Mid-term reports, 34
Military credit, 31
Music
  Degree requirements, 77
  Courses, 234

National defense act
  Student loans, 26
Nursing
  Degree requirements, 79
  Courses, 242

Objective, change of, 37
Overseas Study Programs, 21

Part-time employment for students, 27
Philosophy
  Degree requirements, 81
  Courses, 244
Photography, 246
Physical education
  Degree requirements, 81
  Courses, 246
Physical science
  Degree requirements, 82
  Courses, 253
Physics
  Degree requirements, 83
  Courses, 254
Placement, 27
Police science and administration
  Degree requirements, 83
  Courses, 256
Preprofessional programs, 91
  Pre-Dental, 91
  Pre-Legal, 91
  Pre-Medical, 92
Political science
  Degree requirements, 84
  Courses, 259
Probation, 36
Production management (see business administration)
Psychology
  Degree requirements, 85
  Courses, 263
Public administration (see political science)
Recreation
  Degree requirements, 86
  Courses, 268
Refunds of fees, 40
Regular sessions, 19
Registration, 33
Regulations, election of, 45
Residence halls, 24
Residence requirements, 44
Russian, 269

Safety education, 270
Scholarship requirements for degrees, 44
Scholarships, 26
Services and activities, 24
Social science
  Degree requirements, 86
  Courses, 270
Social welfare
  Degree requirements, 87
Sociology
  Degree requirements, 87
  Courses, 271
Sororities, 27
Spanish
  Degree requirements, 88
  Courses, 274
Speech
  Degree requirements, 89
  Courses, 275
Student activities, 27
Student conduct, 38
Student load, 36
Summer session, 20
Summer session, admission to, 30

Teaching credentials, 120
Testing, 26
Trustees of the California State Colleges, 9
Tuition, 39

Unclassified students, 31

Veterans (counseling), 26
Vocational rehabilitation, 26

Withdrawals, 34

Zoology
  Degree requirements, 90
  Courses, 280



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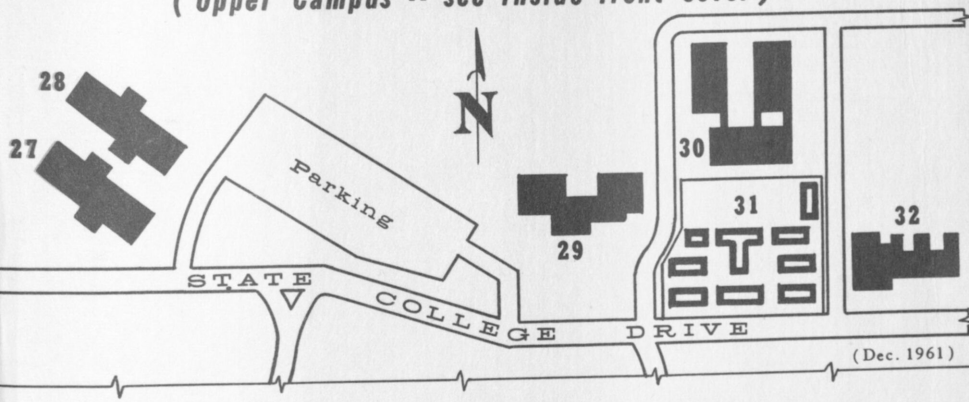
## LOWER CAMPUS

*( Upper Campus -- see inside front cover )*

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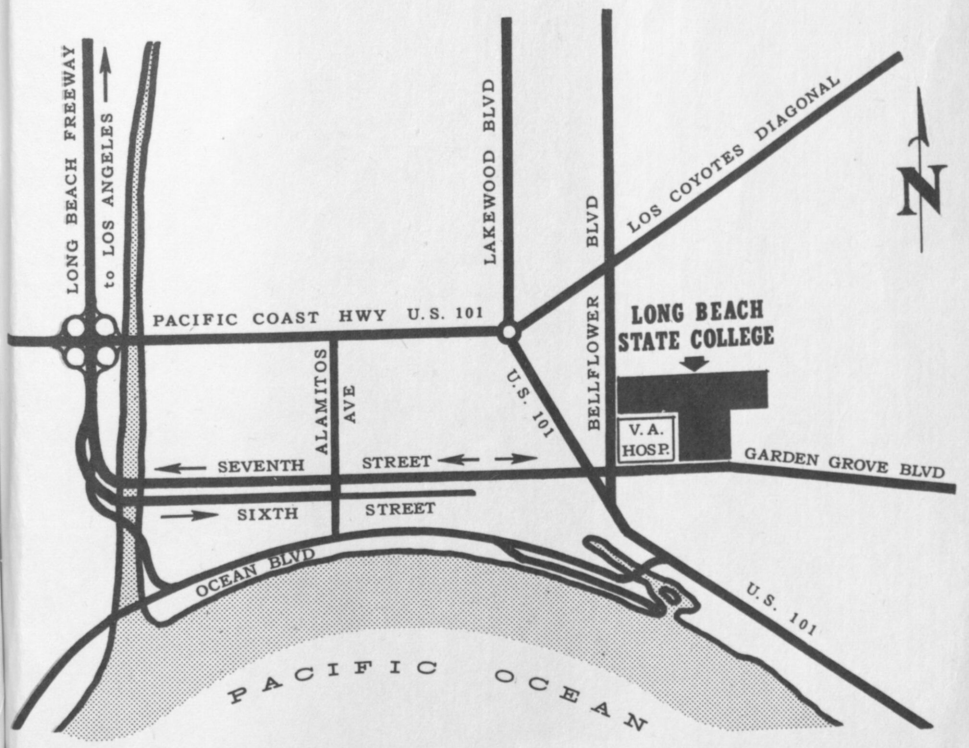
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