## 1974-75 <br> SAN DIEGO STATE UNIVERSITY <br> ] general catalog



General Catalog
and

Announcement of Courses

Volume 61

1974

San Diego State University San Diego, California

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Annual Calendar


Summer Sessions, 1974
June 3-21
June 24-August 2
August 5-23
Fall Semester, 1974
August 1-31

August 14, 16, 20, 23, 26, 27

August 14-3
August 30
September 2
September 3
September 3
September 16, 17, 25, 26, October 16

Sepiember 17
September 17
September 20
September 20, 23, 24 and
November 16
September 30
October 28
November 1-30

November $28-30$
December 1
December 13
December 14
December 22
December 31
Spring Semester, 1975
August 1-31

January 8-17
January $9,15,17,20$ and 21

January 13
January 20
January 27,28, February 7, 11,
January 30 and 31 , February 5 and 6 March 12 and 13, April 16 and 17

Term I summer session ( 3 weeks).
Term II summer session ( 6 weeks)
Term III summer session ( 3 weeks).
Applications for admission or readmission to San Diego State University for the Spring semester 1975 Accepted after this only until enrollment quotas are Chet
Chemistry placement examinations for students planning to enter Chemistry 1A or 10; Mathematics placement examinations for students planning to $\begin{array}{r}\text { en } \\ 2 . \\ \hline\end{array}$
Testing, advising and registration.
Opening date of the academic year
Holiday-Labor Day.
rrst day of classes.
Reading Comprehension test for transfer students entering elementary or kindergarten-primary education.
Last day to apply for refunds.
File application for admission to elementary teacher education assembly.
Last day to file application for the bachelor's degree for mid-year graduation.

English Proficiency Examination for students entering secondary education.
Last day to withdraw from class or change program. Holiday-Veteran's Day.
Applications for admission or readmission to San Diego State University for the Fall semester 1975. Accepted after this date only until enrollment Thanksgiving met.
Thanksging recess.
Last day to file application for the bachelor's degree for June or summer graduation.
Last day of classes before final examinations.
First day of final examinations.
Winter recess begins.
Grades due. Last day of fall semester.
Applications for admission or readmission to San Diego State University for the spring semester 1975. Accepted after this date only until enrollment quotas are met.
Testing, advising and registration.
Chemistry placement examinations for students planning to enter Chemistry 1A or 10; Mathematics placement examinations for students planning to enroll in Math 3, 4, 19, 20, 21, 40, 50; or Economics First
First day, second semester.
First day of classes.
First day of classes.
English Proficiency examination for students entering secondary education.

Reading Comprehension test for transfer students entering elementary or kindergarten-primary educa-

## - Academic Calendar




Amount of Refund 100 percent of fee 90 percent of fee 50 percent of fee

Parking Fee
This schedule of refunds refers to calendar days, commencing on the date of the term

```
when instruction begins.
    Nonreserved space per semester:
```

        Period
    $1-30$ days
31-60 days
$61-90$ days
Amount of Refund
91 -end of term
 25 percent of fee

For a refund, the parking sticker must be removed from the vehicle by a University Police Officer. The refund application is obtained from the Cashier's Office, CL-108.
The late registration fee is not refundable. The Cashier's Office should be consulted for further details.
SUMMER SESSION FEES

Term III 1.00

Student Union Fee:
Term I 2.00

Term II
2.00

Parking Fees (nonreserved spaces):
Entire summer period
Six-week session
Three-week session
EXTENSION COURSE FEES
Lecture or discussion course
(per unit) $\$ 26.00$

## EXEMPTIONS

Students under Public Law 894, 87-815, California state veterans' dependents, or state rehabilitation programs will have fees paid for tuition and materials and service under provisions of these respective programs.
ef or collected from those individuals who qualify解

## Debts Owed to the Institution

From time to time the student may become indebted to the institution. This could occur, for example, when the student fails to repay money borrowed from the institution. Similarly, debts occur when the student fails to pay institution dormitory or library fees, or when the student fails to pay for other services provided by the institution at the request of the student. Should this occur, Sections 42380 and 42381 of Title 5 of the California Administrative Code is authorized to be charged to combination of the above from to receive services, materials, food or merchandise or any under these provisions the institution person owing a debt" until the debt is paid. For example other services, such as grades and transcripts. If a student feels the hister, and may withhold all or part of a particular fee or charge, the student should contact the campus business office The business office, or another office on campus to which the student will be referred by the business office, will review the pertinent information, including information the student may wish to present, and will advise the student of its conclusions with respect to the debt

# Organization and Administration 

The California State University and Colleges
Board of Trustees
Office of the Chancellor San Diego State University Advisory Board
Administration Colleges, Schools, Departments

## The California State University and Colleges



## The California State University and Colleges

The individual California State Colleges were brought together as a system by the Donahoe Higher Education Act of 1960. In 1972 the system became The California State University and Colleges and fourteen of the nineteen campuses received the title University. The oldest campus-San Jose State University-was founded in 1857 and became the first institution of public higher education in California. The newest campus-California State College, Bakersfield-began instruction in 1970.
Responsibility for The California State University and Colleges is vested in the Board of Trustees, whose members are appointed by the Governor. The Trustees appoint the Chan cellor, who is the chief executive officer of the system, and the Presidents, who are the chief executive officers on the respective campuses.
The Trustees, the Chancellor and the Presidents develop systemwide policy, with actual mplementation at the campus level taking place through broadly based consultative proce resity and Colleges, ma he Board of Trustees through the Chancellor.
Academic excellence has been achieved by The California State University and Colleges hrough a distinguished faculty, whose primary responsibility is superior teaching. Whil each campus in the system has its own unique geographic and curricular character, al campuses, as multipurpose institutions, offer undergraduate and graduate instruction for professional and occupational goals as well as broad liberal education. All of the campuses equire for graduation a basic program of General Education-Breadth Requirements regardless of the type of bachelor's degree or major field selected by the student. A limited number of doctoral degrees is offered jointly with the University of California.
Presently, under the system's "New Approach to Higher Education," the campuses are implementing a wide variety of innovative programs to meet the changing needs of student and society. Among pilot programs under way are instructional television projects, self-paced learning plans, minicourses, and credit-by-examination alternatives. The Consortium of The rnat rimpossible to attend classes on a campus. r impossible to attend classes on a campus.
Enrollments in fall 1973 totaled nearly 290,000 students, who were taught by a faculty of 16,000 . Last year the system awarded over 55 percent of the bachelor's degrees and graduated from the nineteen campuses since 1960.


Photographer: John Gross

## Average Annual Costs and Sources of Funds per Full-time Equivalent* Student in The California State University and Colleges

The nineteen campuses of The California State University and Colleges are financed primarily through funding provided by the taxpayers of California. For the 1973/74 year, to total cost of operation is $\$ 553.8$ million, which provides continuing support for 33,290 full-time equivalent (FTE*) students. This results in an average cost per FTE tudent of $\$ 2,374$ per year Of this amount, the average student pays $\$ 224$. Included in this average student payment is the amount paid by nonresident students. The remaining $\$ 2,150$ in costs is funded by state and federal taxes.

Averages do not fit all students alike or even any specific student. To arrive at an averag figure that is meaningful, the costs outlined above exclude "user fees" for living expenses, housing and parking, as well as costs for extension and summer session work Computations are based on full-time equivalent students, not individuals, and costs are prorated by system totals, not by campus. The average costs for a full-time equivalent student in the system are depicted in the following chart:

1973/74 Total Costs of Campus Operation (Including Building and Land Amortization)

Enrollment: $\quad 233,290$ FTE

Source

| State Appropriation (Support) | $\$ 441,860,573$ |
| :--- | ---: |
| State Funding (Capital Outlay)** | $29,161,250$ |
| Student Charges | $52,349,450$ |
| Federal (Financial Aids) | $30,476,849$ |
|  | $\$ 553,848,122$ |

## Average

Cost Per
tudent (FTE)*

| $\$ 1,894$ | 79.8 |
| :---: | ---: |
| 125 | 5.3 |
| $224 * * *$ | 9.4 |
| 131 | 5.5 |
| $\$ 2,374$ | 100.0 |

* For budgetary purposes, full-time equivalent (FTE) translates total head count into total academic studen load. The term assumes that a full-time student in The California State University and Colleges is enrolled fewer than 15 units.

The system's more than 14,000 acres of land and the wide range of facilities and equipment on the 19 campuses are currently valued at approximately $\$ 1.2$ billion. Amortized over a 40 -year period, they are valued at $\$ 125$ per FTE student.
*** The average costs paid by a student include the materials and service fee, health facilities fee, college union fee, student body fee, and the nonresident tuition. This amount is derived by taking the total of all student fee, student body fee, and the nonresident tuition. This amount is derived by taking the total of all student
fees and dividing by the total full-time equivalent student enrollment. Individual students may pay more or less than $\$ 224$ depending on whether they are part-time, full-time, resident or nonresident students.

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Appointments are for a term of eight years expiring March 1 of the years in parentheses. Names are listed in order of accession to the Board.
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The California
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## General Information

General Information Imperial Valley Campus Special Programs and Services

Financial Aid Student Services

## General Information

## San Diego State University

San Diego State University traces its antecedents to a two-year Normal School which was established on March 13, 1897 for the training of elementary school teachers. The seven aculty and ninety-one students ow while the first unit of the campus was under construction in temporary quarters Boulevard where El Cajon Boulevard begins.
The curriculum was limited at first to English, history and mathematics, but it broadened rapidly under the guidance of Samuel T. Black, who left his position as State Superintendent of Public Instruction to become the first President (1898-1910).
Under the vigorous administration of Edward L. Hardy (1910-1935), the School was reorganized as a four-year State Teachers' College in 1921, and supervision was transferred from a local Board of Trustees to the State Board of Education. In the same year, the two-year San Diego Junior College, the antecedent institution of the present Community Colleges, was incorporated as a branch of State, where it remained through 1946.
By the time its first four-year bachelor's degree was granted, it became clear that San Diego State Teachers' College would soon outgrow its 17 -acre site, and a campaign was and buy the old one. In 1928 the present site, on what was then the far eastern outskirts of and buy the old one. In 1928 the present thas approved by the electorate.
In February, 1931, the college relocated in the seven mission-style buildings surrounding what is now called Main Quad. In 1935, the Legislature dropped the word "Teachers"" from the title and permitted the expansion of degree programs into areas other than teacher preparation. Walter R. Hepner was appointed President (1935-1952) and the institution began a period of slow growth.
At the end of World War II there were fewer students enrolled than there are presently faculty members. In the quarter-century since, the College grew phenomenally under the direction of President Hepner and his successor, Malcolm A. Love (1952-1971), until it is now one of the three most populous campuses in California. In 1960, the College became a part of the newly organized State College System under a statewide Board of Trustees and a Chancellor. In 1971, following a campaign spearheaded by President Love, the Legislature College became California State University, San Diego.

Donald E. Walker, now President of Southeastern Massachusetts State University, served as Acting President for 1971-1972, and Brage Golding, President of Wright State University in Ohio, became the School's fifth President in 1972. Dr. Golding, a Chemical Engineer, is the first President to come from a background other than teacher education, drawing to a close the University's "Normal School" and "Teachers' College" primary emphasis. After a spirited campaign by the Alumni Association, legislation was passed in 1973 which changed the institution's title to that overwhelmingly preferred by the community: San Diego State University.
In recent years a number of new buildings have been added to accommodate the 30,000 students who attend, notably: Aztec Center, the first student union in the system; Dramatic Arts, with the finest theater in the county; Music, incorporating a Recital Hall; and the ings combined. A new Health Services building will open this year and new Art and Humanities classroom buildings are high on the system's construction priority list.
The curriculum is a far cry from that of 1898, although English, history and mathematicsjoined now by psychology and sociology-still provide the greatest number of instructional hours. Students may now work toward a bachelor's degree in sixty-three areas, a master's in fifty-one, and the doctorate in three. A remarkable eighty-eight percent of the permanent teaching faculty possess the doctorate in those disciplines where it is the standard terminal degree.
A measure both of the distance San Diego State has come and of the stature it has achieved may be taken from the fact that the University has been granted a charter for a chapter of he national honor society Phi Beta Kappa, the first of the System's nineteen campuses to be so honored. The first students to receive this distinction were initiated in the spring of
1974.

## Degrees and Certificates

San Diego State University offers the following degrees and certificates:

Bachelor of Arts
Bachelor of Science
Bachelor of Vocational Education
Bachelor of Music
Doctor of Philosophy in Chemistry (with University of California, San Diego)
Doctor of Philosophy in Ecology Doctor O Pnilosophy
(with University of California,

Doctor of Philosophy in Genetics (with University of California, Berkeley) Master of Arts Master of Science
Master of Business Administration
Master of City Planning
Master of Pulic Administration
Master of Social Work

A nondegree program leading to the Certificate in Public Administration is offered by A A nondegree program Administration and Urban Studies.

## Types of Curricula Offered

San Diego State University offers the following types of curricula:
Undergraduate Curricula. Undergraduate curricula provide the following opportunities for study:
(1) Liberal arts and sciences: Curricula in the academic major fields, leading to the Bachelor of Arts degree in liberal arts and sciences.
(2) Applied arts and sciences: Curricula in major fields leading to the Bachelor of Science, Bachelor of Arts or Bachelor of Music degree in applied arts and sciences.
(3) Professional curricula: The School of Business Administration offers the Bachelor of Science degree in business administration with majors in seven fields; the School of Engineering offers the Bachelor of Science degree in engineering with specialization available
in four fields; and the School of Education offers curricula in teacher education leading to graduate credentials at all levels of public school teaching.
(4) Preprofessional and nondegree curricula: Programs are offered in predentistry, prelegal, and premedical, leading to transfer to professional schools. A nondegree program is offers an ROTC program, leading to a commission in the Air Force Reserve.
Graduate Curricula. The Graduate Division offers curricula leading to the Master of Arts or Master of Science degree in a wide variety of fields, the Master of Business Administration, the Master of City Planning, the Master of Public Administration, the Master of Social Work, and joint-doctoral programs in chemistry, ecology and genetics.

## Imperial Valley Campus

## Faculty

Professors: Rodney (Dean), Baldwin (Associate Dean), Smith (Coordinator of Extended Services)
Associate Professors: Ayala, Franklin, Harmon, Polich, J., Wilson
Assistant Professors: Hill, King, B., Polich, K. (Librarian), Rice, Spencer
Lecturers: Atwood, Crutcher, Ferguson, Hammond, Kane, E., Kane, T., King, I., Lopez, Marañon, Nagel, Ortega, Pattie, Von Werlhof, Wong

## Location and Function

The Imperial Valley campus is a division of San Diego State University. As such, it is fully accredited. Operating as a separate campus, its primary function is to provide collegiate instruction for the desert area of Southeastern California.
The campus is located at Seventh Street and Heber Avenue in Calexico, adjacent to Rockwood Plaza, a park near the center of the city. The buildings housing this campus are of early Spanish style architecture, complementing the geographic location which is within walking distance of Mexicali, Baja California, Mexico, a city of approximately 00,00 popula are fully air-conditioned in the summer.
The program at this campus is an integral part of San Diego State University and is under the general jurisdiction of the Vice President for Academic Affairs. The curriculum includes the recommended upper division and postgraduate program of courses leading to a bachelor's degree and/or the California Teaching Credentials. In addition to its regular program, the campus assists in the administration of extension courses for the area.
A major function of this campus is to foster better understanding and relations between Mexico and the United States. Since the campus is located within walking distance of the Mexican metropolis of Mexicali, the student has a unique opportunity frequently to visit a foreign country and enjoy its educational, cultural and recreational attractions. Mexicali is linked by highway, bus, trains and airplane to the rich cultural heritage of Hermosillo, Guaymas, Mazatlan, Guadalajara and Mexico City.
The climate of Imperial Valley is dry and mild most of the college school year, with dune buggying, water skiing in the nearby Salton Sea, Gulf of California, Colorado River and golfing all time foulty year around.
The fulltime faculty and many of the part-time faculty are regular members of the San Diego State University instructional staff. Serving at the Imperial Valley campus are full-time
resident faculty members in the areas of anthropology, art, criminal justice administration resident facuity members in the areas of anthropology, art, criminal justice administration,
drama, economics, education, English, geography, history, mathematics, Mexican-American studies, music, philosophy, political science, psychology, sociology, and Spanish. More than eighty percent of the full-time faculty possess the doctoral degree. Part-time faculty, selected from outstanding educators and practicing professionals of Imperial Valley, augment the instructional programs of the Imperial Valley Campus.
Since the student-faculty ratio is low, personal student counseling can be provided. Each student is assigned a faculty adviser who assists him in arranging his program so that he is better able to realize his educational and occupational career goals.

## Program

The program at the Imperial Valley campus is restricted to upper division and graduate students. The campus offers eleven majors leading to the bachelor's degree and also a program designed to complete the California teaching credentials. The programs are similar to those described in this catalog; however, not all majors and minors are available at Imperial Valley Campus.
The Imperial Valley Campus is structured to serve the needs of the following: (1) community college graduates, (2) transfer students who have satisfactorily completed two or more years of college work with an accredited college, (3) students working for the B.A. or B.S degree, (4) persons now teaching, but who want to complete requirements for the bachelo degree and/or a teaching credential, (5) inservice teachers holding either a provisional credential or a partial wish to expand their academic preparation graduate students who wish to expand their academic preparation
For those transfer students ne work in connection with ( M San Jacinto College, Palo Verde College, and Arizey College, Colleg

## Special Programs and Services

## Summer Sessions and Extension Courses

San Diego State University conducts three summer sessions which offer credit applicable to graduation and residence requirements.
During the three-week Term I, three semester units of credit may be earned; during the six-week Term II, up to seven units of academic credit may be earned; during the three-week Term III, three units of credit may be earned. The tuition for the summer sessions is based on the cost per semester unit. Write to the Dean of Summer Sessions for information concerning course offerings, special workshops, and requirements for admission. The Sum mer Sessions Bulletin is available in mid-March and is mailed free of charge upon request In order more adequately to serve the educational needs of the community, San Diego classes in response to expressed needs when the enrollment is sufficiently large to finance classes in response to expressed needs when the enroliment is sufficiently large to finance business administration, public administration and the arts and sciences. Classes may be organized at various locations within San Diego and Imperial Counties. A minimum of 16 to 20 students is usually required in order to maintain a class. The usual class carries three units of credit and meets once a week, either in the late afternoon or evening. Some one-unit weekend workshops in various areas are also offered throughout the semester. These courses are listed in a special Bulletin of Extension Courses published each semester.
For limitations on extension credit, see the section of this catalog on Credit for Extension Courses. Refer to the index for page number. For information on organization of classes, current offerings, and eligibility for registration, communicate with the Extension Division.

## Honors Program

Some departments offer Honors sections of selected courses. Normally, admission is by invitation, but any student interested should consult the Class Schedule for the name of the faculty member in charge and consult with him to establish eligibility.

## International Programs

An overseas study program is offered by the California State University and Colleges International Programs in which students enroll for a full academic year simultaneously at their home campuses, where they earn academic credit and maintain campus residency, and at a distinguished foreign university or a special program center.
sity of Heidelberg, Germany; the Unive the University of Provence, France; the UniverAmericana University Mexico; the University of Granada and the University of Madrid, Spain; the Israel and Wppsala, Sweden; Tel Aviv University and the Hebrew University of Jerusalem, Israel; and Waseda University, Japan. In the United Kingdom, cooperating universities, which may vary from year to year, include Dundee, Leicester, London, Oxford, Liverpool, Lampeter and Sheffield. In addition, California State University and Colleges students may attend a special program in Taiwan, Republic of China, or an architectural program in Copenhagen, Denmark
Eligibility is limited to students who will have upper division or graduate standing during their year of participation, who have a 2.5 overall grade point average, who show ability to ade proficient in the language of instruction at ases of France, Germany, Mexico and Spain, a faculty committee on the student's home campus and by a statewide Selection is made by The International Programs is supported by state funds to the extent that such funds would have been expended had the student concerned continued to extudy that such funds would assume costs for predeparture orientation, insurance, transportation California. Students Home campus registration fees, tuition on the home campus for out-of-state students (if the student is not a California resident), and personal incidental expenses or vacation travel costs while abroad are also paid by the student. The Office of International Programs collects and effectively, such fur for those items which the program must arrange or can negotiate more effectively, such as home campus fees, orientation costs, insurance, outbound transportation, for any financial aid available at thents accepted in the International Programs may apply Application for the 1975-76 academic year must be submitt work-study.
(except for United Kingdom applicants year must be submitted before February 14, 1975 Applicants are notified of acceptance by Aprimust submit applications by January 7, 1975)
from the Office of Continuing Education or by writing to The California State University and Colleges International Programs, 5670 Wilshire Boulevard, Los Angeles, California 90036.

## External Degree Programs

The California State University and Colleges System has established procedures for developing and offering specific programs leading to academic degree through the Extension Division. These programs are typically made available to qualified students in the commu nity without the requirement of matriculating in the University. At present two such degree programs are offered through San Diego State. One is a Bachelor of Science degree in Criminal Justice Administration, offered through the School of Public Administration and Urban Studies. For further information, write Ms. June Kaiser, Department of Criminal Justice. The second one is "Integrated Master of Arts and Superintendent's Administrator Credential Program reserved for the present for a selected group of potential school ad of Educational Administration in the School of Education of Educational Administration in the School of Education

## Research Bureaus

## Asian Studies <br> Alvin D. Coox, Director <br> The Center for Asian Studies is an interdisciplinary organization in the College of Arts and

 Letters. Drawing upon faculty members from many areas, it performs such services as (1) securing and administering grants and other support for research and development in Asian Studies; (2) coordinating and publicizing the activities of faculty engaged in Asiancentered Studies; (3) developing and administering the Asian Studies program and relevant curricula at the undergraduate and graduate levels; (4) responding to campus and community requests for information and services; ( 5 ) fostering campus and community interest in Asian Studies. The center's reading room and study faciity, located in LE-469, contains Asianperiodicals, books, pamphlets, dictionaries and maps.

## Business and Economic Research

## John B. McFall, Director

The Bureau of Business and Economic Research is a center for organized research activity serving the needs of the School of Business Administration. Operationally, it is a part of the School of Business Administration, with a director and staff, but serves in addition as a coordinating agency for studies which concern the university as a whole. The principal objectives of the bureau are to (1) conduct research in the areas of economics and business, with special reference to local and regional problems; (2) facilitate research in these areas by the faculty and students; (3) seek cooperative arrangements with outside individuals and organizations for conducting specific research projects; (4) analyze and interpret local and regional data; (5) publish the results of its investigations and aid faculty in publication of their research.
Graduate students and faculty are encouraged to make use of bureau facilities. The bureau is a member of the Association for University Business and Economic Research.

## Counselor Education

## Emery J. Cummins, Director

The Center for the Study of Counselor Education is an interdisciplinary task force under the administrative jurisdiction of the Dean of the School of Education; fiscal matters are coordinated through the San Diego State University Foundation. The Center is designed to draw together faculty members from relevant disciplines such as anthropology, economics, education, psychology, social welfare, social work, sociology, and the university counseling center for such purposes as (1) securing and administering grants and other support for reseas or rendering services related to counselor education and guidance through contractugrams or rendering services related al agreements with public or private agencies or organizations.

## Economic Education

## Joseph McClintic, Director

The Center for Economic Education works with the public schools to promote better economic education. The functions include (1) research, (2) the development, evaluation, and dissemination of appropriate tion, and (4) service. The development of more effective strategies and the evaluation of teaching at all levels is involved.

## Economics Research Center <br> Robert Barckley, Director

The Economics Research Center collects research materials, publishes occasional monographs, and encourages research of special interest to faculty and students in economics and graphs, and encourages research or secial
related areas. The Center's facilities are currently y tilized by the Economics Department for
faculty seminars and economisc conferences, by the Center for Research in Economic Develfaculty seminars and economics conferences, by the Center for Research in Economic Devel-
opment, by the Institute of Labor Economics, and by the local chapter of Omicron Delta opment,
Epsilon.

## Bureau of Educational Research and Evaluation

 Lester A. Becklund, CoordinatorThe Bureau of Educational Research and Evaluation operates within the School of Education. The objective of the bureau is to improve the quality of education through research by (1) assisting departments within the School of Education in their evaluation of courses and student performance, (2) serving faculty graduate advisers as a resource in research design and statistical techniques, (3) assisting the research activities of individual faculty members who wish to make use of its services, (4) assisting those directing cooperative studies established between the School of Education and other educational communities, and ( 5 ) keep-

## European Studies Center <br> Ernest M. Wolf, Director

The European Studies Center coordinates and supports teaching and research related to the European area. It supervises the major in European Studies for the A.B. degree. It sponsors the annual San Diego State University Summer Seminar and Travel Study Tour to Europe in connection with the European Studies Summer Campus at Strasbourg, France. It administers the European Studies Center Laboratory in LE-507 which contains books, and geography. The laboratory room is open several hours each day for study and research and geography. The laboratory room is open several hours each day for study and research
by students and instructors in courses dealing with any aspect of European studies. The center also assists in the development of the university library's holdings in the European area and has created a special collection of library materials on European integration and unification which is being steadily and systematically expanded.

## Institute of Labor Economics <br> Clinton Jencks, Director

The Institute of Labor Economics is a facility of the Department of Economics to encourage research by students and faculty in all phases of labor problems, collective bargaining, degree programs in the Department of Economics and to be of service to telated disciplines. Publications are exchanged with 75 similar institutes at other universities. Research materials and facilities to assist research and publications in the area of labor economics are maintained

## Latin American Studies <br> Philip F. Flemion, Director

The Center for Latin American Studies seeks to encourage teaching and research related to Latin America. It has primary responsibility for the administration of the Latin American undergraduate and graduate degrees and the Mexican Summer School programs. The center sponsors a Latin American Lecture Series which provides the campus with public lectures given by guest speakers and members of the San Diego State University faculty who discuss a variety of Latin American topics. The center also assists in the development of the univermaterials which is available in the center's created a special collection of Latin American materials which is available in the center's reading room LE-543.

## Marine Sciences

Glenn A. Flittner, Director
The Bureau of Marine Sciences has been established to facilitate interdisciplinary educais administered activity in the Marine Sciences at San Diego State University. The Bureau Fiscal operation is coordinated and operated under the guidance of a Faculty Committee. Fiscal operation is coordinated through the San Diego State University Foundation.

## Paleobiology Council

## Jason A. Lillegraven, Chairman

An interdisciplinary research and teaching agency to explore the fossil record. Composed of faculty members from the departments of Geology, Physical Science and Zoology at San educational institutions in the greater San Diego area.

## Public and Urban Affairs

W. Richard Bigger, Director

The Institute of Public and Urban Affairs is a part of Public Administration and Urban Studies, San Diego State University, organized to conduct research into community and governmental problems. It also sponsors institutes and conferences related to community and governmental activities. It is staffed by members of the faculty of San Diego State University. Closely associated with the institute is the Public Administration Center with a specialized and growing collection of research materials. The institute engages in cooperaesearch centers of efforts with the various departments of instruction, institutes, and research centers of the university.

## George Babilot, Director

Public Economics
The Center for Public Economics is a facility of the Department of Economics to encourage research by students and faculty in all phases of nonmarket economic decision-making encompassing the following areas: (1) the functioning of federal, state and local fiscal systems, including the provision for and financing of public goods at each level; (2) the economic factors involved in environmental changes, in particular, their bearing on urban and ocal economic problems; (3) the economic dimensions of social decision making. The cen er is designed to complement the curricular and degree programs in the Department of Economics and to be of service to related disciplines. It maintains research materials and acilities to assist research and publications in the area of public economics. Fiscal matter are coordinated through the San Diego State University Foundation. Financial support in the form of student assistance is available for faculty research projects on subjects in publi economics. The Center funds a number of student scholarships which are administered through the Scholarship Office. The Center for Public Economics is located in OL-307.

## Regional Environmental Studies

## Charles F. Cooper, Director

The Center for Regional Environmental Studies coordinates and encourages interdisciplinary research, educational and public service programs related to environmental quality and improved use of environmental resources. Physical, biological, social and institutional aspects contact between the University and contact between the tiry. Although the governmental and private institutions concerned with ter's activities include statewide, national and region receives primary attention, the Cen r's activities include statewide, national and international environmental programs.

## Research in Economic Development

## Ibrahim I. Poroy, Director

The Center for Research in Economic Development is part of the Economics Department's effort to encourage research by students as part of their education and by the faculty. meterial and aid for research in problems related to less developed countries.

## Social Research

## Aubrey Wendling, Director

The Social Research Center is a facility of the Department of Sociology. It provides physical equipment and space for the planning and processing of sociological research in such areas of investigation as urban growth and development, demographic factors, and experimental studies of social organization. The center is administered for laboratories for of Sociology by a director whose duties include consulting assistance in the Department execution of studies and in the preparation of proposals to funding inencies, designing and execution of studies and in the preparation of proposals to funding agencies.

## Survey Research <br> Oscar Kaplan, Director

The Center for Survey Research has been established to encourage nonprofit research in The Center field The Center is prepared to undertake surveys requested by governthe sample survey field. The Center is prepared to field work on a local, state or national basis. ment or nongovernment organizations, and to do nedo whf-campus support in survey research Faculty members who wish to submit applications for off-campujs bet by the Center's Advisory in the name of the Center is administered by a Director.

## Computer Center

The Computer Center is established to encourage and support the use of computers in all istructional, research and administrative activities of the University. The Center is a cooperative venture by the San Diego State Foundation, Aztec Shops and the University. The present equipment includes a medium-size electron a printer, card reader and punch. The 40 with 262,144 bytes of core storage, discs, PL/I and RPG languages. Remote job entry terminals are located in two buildings on campus. These terminals, consisting of a card reader and printer, are connected to the main computer in the Computer Center via telephone lines. A smaller digital computer, an 1130 , supports the APL and FORTRAN languages and has a plotting capabilteration in the facilities include all necessary peripheral equipment to permit computer operation in the fields of scientific computation and commercial data processing. Timesharing terminals are strategically located throughout the campus and are tied by teeph processing courses, and computer located at CSU, Northridge. Programming and data processing several departcourses related to some specia
ments within the University.

## Research and Project Administration

Research in all academic areas is carried on at San Diego State University, consistent with the Master Plan For Higher Education. San Diego State University also engages in projects such as federal educational contracts and institutes (both on the campus and in foreign countries) and other projects related to community and national goals. Research and project activities at San Diego State University are administered through the San Diego State University Foundation. Under general porch in Master Plan, between teaching and research, each complementing the other.

## Audiovisual Center

in general the Center provides professional assistance in the application of educational echnology to achieve maximum efficiency in instruction. These functions include: (1) consultation on selection, acquisition, preparation, utilization and evaluation of instructional media and equipment; (2) organizing, equipping and maintaining instructional media faciliistructional mediand (4) preparing materials required for instruction but not conveniently available from other sources.

## San Diego State Press

The San Diego State Press operates under supervision of a publications board composed of representatives from each school and college. Financial assistance is coordinated through the San Diego State Foundation.
The Press publishes manuscripts and other works of both scholarly and practical educational value. In addition, it publishes syllabi prepared for specific classes.

## Financial Aid

## Cost of Living

Each student should plan his budget based on individual needs. The wide range of financial resources of students in a university as large as ours makes it difficult to give specific information on costs. At San Diego State University, it is possible to live simply and participate moderately in campus life on a modest budget. The following table is based on systemwide figures provided for the purpose of determining financial aid.

Estimated Expenses for the Academic Year
Campus
Commuting

|  | Campus | Commuting |
| :---: | :---: | :---: |
| Materials, service, student activity, | campus | Commuting |
| student union fee, facilities fee. | \$187 | $\$ 187$ |
| Books and supplies | 180 | 180 |
| Personal | 450 | 360 |
| Room, board, health | 1285 |  |
| Board, incidentals. |  | 720 |
| Transportation, parking |  | 270 |

In addition, foreign students and out-of-state students pay an annual tuition of $\$ 1300$. Typical expenses for married students without children average $\$ 3925$ for a nine-month period.

## Financial Aid

San Diego State University makes every effort to see that students who wish to attend are not prevented from doing so due to inadequate resources. Available funds, however, are not not prevented from doing so due to inadequate resources. Available funds, however, are not aid in the form of loans, grants and part-time employment on or off the campus is made available to qualified applicants. In the majority of cases, a student will be offered a package inancial aid plan which may include one or more of the types of aid.
Some loan programs-those for prospective teachers, nurses and law enforcement agentsprovide for partial cancellation of the indebtedness if after graduation the recipient is employed full time in the designated area. Some interest-free loans of modest size are available for emergencies. Some outright grants can be made to students from low-income families who would not, but for such a grant, be financially able to pursue a course of higher education. Some grants are also available to full-time employees of certain law enforcement gencies. All financial aid funds are available only to U.S. citizens or permanent residents.

## Applying for Aid

All these financial aid programs, as well as others not described here, are administered by he Financial Aid Office, Room 122, Campus Laboratory School building. Interested persons should ask for the Financial Aid brochure. Counselors are available for guidance as to the most appropriate aid program for the individual
A form titled "Preliminary Financial Aid Application for 1974-75" is contained as Part C in the Admissions Application booklet. However, additional information is required for evaluation and determination of financial need. Instructions and any required additional orms will be furnished to those studerts or requested documentation must be returned to the Financial Aid Office by March 1, 1974.
A completed Financial Aid application includes a Parents' Confidential Statement (PCS) or a Student's Financial Statement (SFS). The PCS form may be obtained from your school counselor. It should be filed as soon as possible, in accordance with instructions therein. The SFS form is to be used by independent and married students; it may be obtained from your school counselor or from the Financial Aid Office. It, too, should be filed as soon as possible in accordance with instructions therein

## Alan Pattee Scholarship

Children of deceased public law enforcement or fire suppression employees who were killed in the course of law enforcement or fire suppression are not charged fees or tuition of any kind at any California State University or College, according to the Alan Pattee (hip Act, Education Code Section 23762. Students qualifying for these benefits are nown as Alan Pattee scholars.
2-85474

## Scholarships

. University Scholarship Committee will administer approximately 280 The San Diego State University chic year. The awards average about $\$ 200$. These scholarshins are donated by a number of individuals and organizations with the stipulation that ships are din Committee select the recipients. Selections are based on recom is available Scholaring from the various department chairmen and financial need. received from the various depare Room 122, Campus Laboratory School building. A similar profrom is anticipated for the 1975-76 academic year.
gram is anticipated for academic year about 500 students received scholarships, fellowships, grants or stipends totaling approximately $\$ 500,000$ through the various departments. Federal, state and private industry support programs of this nature are larel of work. Students who doing graduate work or to students preparing for some speck with an adviser in the departhave decided on some particular area of stucy shouid chelowship, grant or stipend support ment of their major to det
might be available to them. For the made their own selector clubs and organizations who wish to help students who are studying ships are generally from clubs and organization. Students should ask if a club or organization of which they or members of their family are members sponsor scholarships.
and individuIs, the following scholarships are awarded through the Scholarship Committee:

Allstate Foundation
American Business Women
American Institute of CPAs
American Society of Military Comptrollers AMOCO Foundation Amsden Memorial
Baronofsky, Dorothy Memorial Bass Broadcasting Beitner, Brenda Memorial Biehl, Martha S. Memorial Brooks, Baylor
Brown, Dr. Leslie P.
Burgener, Clair. W.
California Association of Teachers of
Deaf \& Hard of Hearing Children
California PTA
California Society CPAs-Women's Auxiliary Cap and Gown
Chi Omega
Copley Newspapers
Country Friends
Cramer, Harry
Crossley, Sharon A.
Del Cerro Jr. Women's Club
Delta Delta Delta
Delta Kappa Gamma
Dorado Foundation
Downtown Optimist Club
Downtown Optimist
Driver, Robert F. Co.
East San Diego Lioness Club
East San Diego Lioness Club
Ellis, George William Memorial
English Speaking Union
Escobedo, R. J.
Faculty Wives
Fleet Foundation
Fontaine, Amelie Memorial
Foster, Frank Memorial
Fox Foundation

Geldreich, Dr. Edward
General Dynamics
Gore, Bonnie Jean
Hodgetts, Mabel Memoria
BEW, Wom's Auxiliary
IBEW, Women's
KFMB
Kappa Beta Nu
KGTV
Mesa Dialogue for Action
LaSalle, William Memorial
Linkletter, Art
Lodge, Catherine Yuhan
Morrison, Alvin Memorial
Mortar Board Alumnae of San Diego
National Council of Jewish Women
Nuttall-Styris, Inc
Olberg, Lottie E. Memorial
Pacific Beach Jr. Women's Club
Paine, Miriam
Pfaff, Paul
Phi Epsilon Phi
Pi Lambda Theta
Post, Foster Memorial
Post, Foster Memoria
Public Relations Club of San Diego
Public Relations Club of San Diego Public Relations Society of America San Diego-Imperial Coun
San Diego Realty Board
San Diego Realty Board
San Diego State University Alumni
San Diego State University Memorial Senn, Percie Belle
Shields, Robert Patterson Foundation Sigma Alpha-Gamma Upsilon Chapter
Sigma Alpha Iota Alumnae
Silverman, Anna \& David Memorial
Silvergate Lions Club


## Student Services

## Staff

Activities: Charlotte Hayes, Sandy Herrmann, Stephen Ironhill, Barbara Metzner, Gary Solbue
Career planning and placement, and financial aid: Mary Pat Gannon, Richard B. Haines, E. Biddle Heg, J. Franklin Jonasson, Marilynn Jones, James Kelly, Nancy Leonard, William Linder, Florencio Medina, Cynthia Robinson, Shirley Ross, Nancee B. Williamson
Counseling and testing: Nancy Anderson, Rebecca Bryson, Gwen Cooper, Samuel Gange, Jack Graham, David Hostetler, Mike Irwin, Bill Latta, Henry E. McAdams, David Nesvig, Donald Neuman, Judith Osgood, Earl Peisner, Herman Roemmich, Steven Sherr, Melinda
Sprague, Marguerite Strand, Marvalene Styles, John Wood, Winnie Yee
Health services: William S. Baker, M.D.; Mary Bradford, M.D.; C. Leland Colm, M.D.; James Crawford, M.D.; James W. Firoved, M.D.; Frank Grabarits, M.D.; Ralph M. King, M.D.; Kathleen Lilley, M.D.; Robert Vinton, M.D.; and Betty Zak, M.D.; Gertrude Anderson, R.N.; Elizabeth Brandt, R.N.; Verna Brooks, R.N.; Juanita Carroll, R.N.; Donna Castonguay, R.N.; Betty Chohan, R.N.; Patricia Coe, R.N.; Ethel Erickson, R.N.; Virginia LeBlanc, R.N.; Virginia Myers, R.N.; Dorothy O'Carroll, R.N.; Joan Simcox, R.N.; Roy Stone, R.N.; Arlene Thompson, R.N.; and Frances Woodiwiss, R.N.

## University Counseling Center

Located on the edge of the campus at 5630 Hardy Avenue, the Center is a place where enrolled students and other members of the university community come for a wide range of services designed to enhance the total educational experience at San Diego State. Among these are academic advising for students without a declared major, individual and group counseling on educational, vocational, personal or social nature.
In addition, counselors are involved in the teaching of courses, consultation with student groups, faculty and administration, and the supervision and training of graduate students in Counselor Education and in Psychology.
a difficult time with their studies, and for considering areas of couples, for individuals having a difficult time with their studies, and for considering areas of special interest or concern. Center provides immediate, walk-in services or yoursday and until 4:30 p.m. on Friday, the Counseling is confidential and places a premium on understanding.
Counseling also is available on a walk-in basis at several locations. around the campus as part of the decentralized focus on services. Among these locations are the residence halls and the Malcolm Love Library.

## Test Office

In addition to working with counselors from the University Counseling Center to provide individual assessments for clients, the Test Office administers the tests required for entrance various graduate and professional schools.

## Health Services

As a part of the program of student personnel services the university provides health services for the protection and maintenance of student health. These services are administered under the supervision of a medical director-administrator. A full-time physician staff is available to the students when school is in regular session for consultation, treatment of nurses and technologists are also on duty and counsel as to follow-up procedures. Full-time conducted in Family Planning, on duty when school is in regular session. Special clinics are thopedics. As a par
everse side of the admissions procedure a health history is required of all students. On the private physician. health history is a physical examination form to be completed by the ment, and those for whom a modified study loadents undergoing private remedial treateducation activities seems advisable. The phy load or a limited participation in physical condition to matriculation in accordance with Title 5, California Administrative Coded as a graph 41200.


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## Clinical Training Center

The Clinical Training Center prepares university students at the undergraduate and graduate levels to identify and diagnose children's and young adults' physiological and psychological difficulties, to teach and give remediation, and to test and counsel. Stogy and rom the departments of Education, Psychology, Social Work and Speech Pathology and Audiology receive a variety of carefully planned experiences, including an opportunity to work with children and youth under supervision on a one-to-one ratio or in the interdisciplinary In addition, they take part in frequent staff meetings which utilize the int children with approach toward solution of children surtion of the training program.
While the primary purpose of the Center is to train teachers and clinicians, a community While the primary purpose of have problems with school achievement, speech, hearing, educational and vocational planning, and school adjustment. Referrals are ordinarily made by schools, other agencies, or individuals. Parents, for example, may make a referral either directly to the Center or through their child's school. In general, preference would be given to the child who might profit best by specialized help and who meets the needs of training college students. There are specific criteria of selection of children for each strand of the tota program.

## Student Activities

A rich field of cocurricular activities is available to San Diego State University students. The Student Handbook, This is San Diego State, available at the time of registration, give information concerning the nature and scope of these opportunities. The Dean of Activities, Dorothy V. Simpson, and her staff are available to students desiring advice and assistance in planning campus activities.
A multitude of exciting opportunities are offered to students wishing to participate in student activities. Some students enjoy participation in musical and dramatic performing groups, the intercollegiate athletic program, and newspaper, magazine, radio, television and film productions. Other students participate in student organizations; among the approximately 200 student organizations offering membership are service groups, honor societies, professional societies, recreational organizations, There are 10 national sororities at San Diego State University which provide housing accommodations for approximately 290 women. A formal rush program is held during the Fall semester while informal rush continues throughout the entire year. For further information, contact the Panhellenic Office, San Diego State University, San Diego, California 92115. The 15 national fraternities invite students for membership throughout the academic year and summer months. Interested students may obtain further information by writing to the Intrafraternity Council in care of the university activities office.

## Student Centers

San Diego State University was the first of the California State University and Colleges to build and operate a permanent university center. The Aztec Center story started in the mid-1930's when students and faculty began accumulating funds for construction. In 1956, the Associated Students Council set aside a permanent portion of the Activities Fee for the building fund. Students voted to assess themselves a mandatory fee for the further development of the project in 1963. Two years later the U.S. Department of Housing and Urban Development extended a 40 -year loan of $\$ 2.9$ million to enable construction to begin. The student union fee will be used to retire this indebtedness; no public tax money is involved. The furnishings and equipment were paid for with student funds and contributions from Aztec Shops, Ltd. From inception to the finalities of interior furnishings, students and faculty fee, it is a nonprofit, self-sustaining self-liquidating non-tax supported student-financed operation. Government of the Center is by the Aztec Center Board, composed of nine students and one faculty member. Anyone is welcome to the meetings, which are open and frequent.
Use of the Center is the privilege of San Diego State University students, faculty, staff alumni and their guests. It provides a pleasant background for many cultural, social and recreational activities. Its name reflects its unifying nature: a dynamic, enriching focal point The social life of members of the campus community.
The 110,000 square foot structure houses a portion of the activities program and includes several lounges, conference rooms, bowling lanes, and space for billiards, table tennis, an information booth, contract Post Office, ticket office, lost and found, barber shop, studen levernment center, a snack bar (Monty's Den), and a large hall (Montezuma Hall) for

## 40 / Student Services

No application can be honored if the student is not accepted for admission into San Diego No application can be honored (January 15, spring semester). Clearing residency is not the State University ybly Augusted to the university. Nor does receeipt of a housing contract mean
same as being fully admitter same as being fuly admited to that the university is committed to admitting the student. The deposit will be refunded if a student, after having submitted his housing application, is denied admission to ther $\$ 20$ sity.
During the Summer Sessions, rooms are available on a receipt-of-check date priority. A refundable security deposit should accompany a request
Adjacent to the campus is a nine-story privately owned and operated coeducational residence hall, approved for San for over 500 students.
Address questions about other off-campus housing and on-campus halls to the Director of Housing, San Diego State University, HA 860, San Diego, California 92115.

## Transportation and Parking

Bus line transportation to the university, connecting with all areas of the metropolitan area, is available daily, except Sundays and holidays. Route S operates north-south on College Avenue, between the campus and the College Grove Shopping Center at Ryan Road. Trans fer points for connecting east-west bus lines are at Montezuma Road with Route E-Fletcher Streamview Drive with Route 5 .
A free bus runs between the university and Ocean Beach, Mission Beach and Pacific Beach in the morning and afternoon. Schedules are available on campus.
On-campus parking areas are provided for students, faculty and staff. A visitor information booth is located at the entrance to the campus on Campanile Drive

## Educational Opportunities Program <br> This program is designed to assist undergraduate students from minority or low-income

 groups who wish to acquire a college education but have not been able to realize their potential because of economic, educational or cultural environments. In cooperation with various federal, state and local agencies, the program recruits and enrolls studentsprovides scholastic and personal counseling during their undergraduate careers. Financial aid is disbursed through the Financial Aid Office to those students who prove financial need in accordance with federal and state guidelines. EOP and its supportive services attempt to insure that each student shall have the opportunity to reach his or her fullest potential.

## Veterans

The Campus Veterans Affairs Office assists veterans and dependents with all matters pertaining to Veterans Administration Benefits. Services include assistance with enrollment, applying for educational benefits, tutoring, counseling and referral to appropriate depart-
ments or agencies. All eligible veterans and dependents who will be receiving veterans benefits are urged to contact the Veterans Affairs Office as soon as possible.

## Disabled Students

The Disabled Student Services office is located in Campus Lab School 110A; phone number is 286-6473. DSS acts as a liaison office for disabled students on campus at San Diego State is $286-6473$. DSS acts as a liaison office for disabled students on campus at San Diego State
University. The goal is to provide counseling-academic, personal and vocational-for students University. The goal is to provide counseling-academic, personal and vocational-for students
as they need it. A disabled student, as well as a student assisting him, has the right to as they need it. A disabled student, as well as a student assisting him, has the right to
preregister for classes. He may get on the preregistration list by contacting the Disabled preregister for classes. He may get on the preregistration list by contacting the Disabled tudents Services office and should also give the name of the student who will be assisting f there are problems with class schedules or classes assigned to rooms that are inaccessible, the DSS will help the student make arrangements to have the class rescheduled in an ccessible classroom. A transportation service offered through the DSS consists of two spe cially modified vans to enable students who are unable to drive to get to and from campus and field work. A golf cart is also available for those students who need help in mobility around the campus. Special parking facilities (authorized by the Health Services) is amon services offered. For further information concerning special orientation to campus, special maps, accessible restrooms or information about inaccessible classrooms, please contact the
Disabled Student Services.


# Regulations 

Admission and Registration<br>General Regulations Graduation Requirements

## Admission and Registration

## Admission to the Campus

Requirements for admission to San Diego State University are in accordance with Title 5 , Chapter I, Subchapter 3, of the California Administrative Code. A prospective applicant who is unsure of his status under these requirements is encouraged to consult a high school o college counselor or the Admissions Office. Applications may be obtained from the Admis sions Office at any of the campuses of The California State University and Colleges or at an California high shool or community college.

## Undergraduate Application Procedures-1975-76

Prospective undergraduates, whether applying for part-time or full-time programs of study, in day or evening classes, must file a complete application including all the required forms and fees as described in the application booklet. The $\$ 20$ nonrefundable application fee should be in the form of a check or money order payable to The California State University and Colleges. Undergraduate applicants may file only at their first choice campus. Alternate choice campuses and majors may be indicated on the application, but an applicant should list as alternate campuses only those campuses of The California State University and alternate degree majors will be his choice campus cannot accommodate him. Generally, is redirected to an alternate choice campus. Applicants will be considered automatically at is redirected to an alternate choice campus. Applicants will be considered automatically at scripts and other supporting documents should not be submitted until requested by the campus.

## Category Quotas and

## Systemwide Impacted Programs

Application category quotas have been established by some campuses, in some majors, where the number of applicants is expected to exceed campus resources. All applications Certain undergraduate programs (architecere equal consideration for such categories. therapy) are impacted throughout the 19-campus system and applicants to and prysical are expected to meet supplementary admission criteria for admission to these programs. Applicants to these major programs will be sent further information by the campuses about the supplementary criteria to be used, and how and when applicants must meet them.

## Postbaccalaureate Application Procedures

All applicants for any type of postbaccalaureate status (e.g., master's degree applicants, those seeking credentials, and those interested in taking courses for professional growth, reate degree aspirants should apply as undergraduate degree filing period. Second baccalaution for postbaccalaureate status includes all of the degree applicants. A complete applicaapplicants plus the supplementary graduate admissions application Puired for undergraduate cants who completed undergraduate degree requirements andion. Postbaccalaureate appliterm are also required to complete and submit an application and the $\$ 20$ the preceding application fee. Since applicants for postbaccalaureate programs may be limited to the hoice of a single campus on each application, redirection to alternative campuses or the hanges of campus choice will be minimal. In the event that a postbaccalaureate applicant wishes to be assured of initial consideration by more than one campus, it will be necessary the Graduate Studies Office of (including fee) to each. Applications may be obtained from in addition to the sources noted for under of The California State University and Colleges aple undergraduate applicants.

## Application Filing Periods-1975-76 <br> Term

ummer
Fall
Winter
Spring
nitial Filing Period
the previous February
the previous November
the previous June
the previous August

Extended Filing Period
March until filled December until filled July until filled September until filled

All applications postmarked or received during the initial filing period will be given equal consideration within established enrollment categories and quotas. There is no advantage in filing before the initial filing period. Applications received before the initial filing period may be returned, causing a delay in processing. With the exception of the impacted undergraduate program areas (architecture, natural resources, nursing, and physical therapy), most campuses will be accepting applications well into the extended filing periods until quotas are filled.

## Space Reservations

Applicants who apply during the initial filing period and who can be accommodated will receive a space reservation. A space reservation is not a commitment by San Diego State University to admit the student once eligibility has been determined. The space reservation directs the applicant to arrange to have appropriate records forwarded promptly to the Office of Admissions. Applicants should not request that any records be forwarded until they have received a space reservation notice.

## Hardship Petitions

There are established procedures for consideration of qualified applicants who would be faced with extreme hardship if not admitted. Prospective hardship petitioners should contact the Admissions Office regarding specific policies governing hardship admission

## Filing of Records

File Official Transcripts. The applicant must file the following official transcripts with the Admissions Office:
(1) Transcript from high school of graduation or last in attendance (not required of the graduate student who holds a bachelor's degree from an accredited institution, but is required of the student who holds a bachelor's degree from a nonaccredited institution).
(2) Transcripts from EACH college attended (including extension, correspondence, summer session, or evening courses). Graduate students must file transcripts in duplicate if they plan to enter the master's degree program.
(3) Photostat or true copy of the military sep applicant has had active military service. (Not required of graduate students.)
A transcript will be considered official and accepted to meet the regulations governing Admission only if forwarded directly to San Diego State University by the institution attended. All records or transcripts received by the university become the property of the university and will not be released nor will copies be made.

## Completion of Required Tests

Admissions Tests
(1) College Aptitude Test. The American College Test (ACT) or the Scholastic Aptitude Test (SAT) is required for matriculation of entering freshmen and transfer students with less than 56 units. Applicants should consult the high school counselor or the San Diego State University Test Office for dates and places where tests are given.
(2) Writing Competency Test. This test may be taken before registration by all undergraduate students transferring to this university with 45 units or more of advanced standing. Passing this test or satisfactory completion of designated courses or remedial programs is a graduation requirement for all students.
(3) Test of English as a Foreign Language. Applicants whose native language is not English must attain satisfactory scores on the Test of English as a Foreign Language (TOEFL). For further information see the section of this catalog on Admission of Foreign Students.
Teacher Education Tests
Assembly Bill 122, commonly known as the Ryan bill, has caused vast changes in credential requirements, including those for admission to programs. Refer to Admission to Teacher Education section of this catalog on the School of Education.

## Qualification Tests

Chemistry Placement Examination. Required of student before enrollment in Chemistry or examination is not required. Refer to the calendar in the class schedule for examination dates.

Mathematics Placement Examination. Required of students before enrollment in any of the following courses: Mathematics 3, 4, 19, 20, 21, 40, 50, and Economics 2. These examinations may be taken ierer in the Class Schedule for examination dates.
Graduate Aptitude Tests. This test is required of all graduate students who intend to enroll
Graduate Aptitude Tests. This test is required of all graduate stude. Also given during the in a master's degree program. May be taken before registration. Also Graduate Bulletin for full information and test dates.

## Undergraduate Admissions Requirements

First-time freshman eligibility is governed by an eligibility index. The index is computed using the high school grade point average on all course work conple and the ACT composite, of high school, exclusive of physical education and military science; and the ACT composite, or the SAT total score. The full table of grade point averages, with corresponding test scores and the equation by which the indur either the (ACT) are acceptable in establishing eligibility
Registration forms and test dates for either test may be obtained from school or college counselors, from the addresses below, or from the campus testing offices. For either test, submit the registration form and fee at least one month prior to the test date.

ACT Address
American College Testing Program, Inc. Registration Unit, P.O. Box 168 Iowa City, Iowa 52240

## SAT Address

College Entrance Examination Board P.O. Box 1025

Berkeley, California 94770
First-Time Freshmen (California high school graduates and residents). An applicant who is a graduate of a California high school or a legal resident for tuition purposes must have an eligibility index which places him among the upper one-third of California high sinimum acceptable index for applicants using the SAT score is 3072 ; using the ACT score, 741 .
First-Time Freshmen (high school graduates from other states and U.S. possessions). The missions requirements for nonresident applicants are more restrictive than those fo California residents. An applicant who is a nonresident for tuition purposes and is a graduate of a high school outside California must have an eligibility index which places him among the upper one-sixth of California high school graduates. The minimum acceptable index for nonresident applicants using the SAT score is 3402; using the ACT score, 826
High School Students. Students still enrolled in high school will be considered for enrollment in certain special programs if recommended by the principal and if preparation is equivalent to that required of eligible California high school graduates. Such admission is only for a given program and does not constitute the right to continued enrollment.
First-Time Freshmen (graduate of secondary schools, etc., in foreign countries). An applicant who is a graduate of a secondary school in a foreign country or who has equivalent preparation in a foreign country, may be admitted as a first-time freshman if his preparation and ability are such that in the judgment of the appropriate campus authority, the probability of his academic success at the campus is equivalent to that of eligible California high school graduates.
First-Time Freshmen (high school nongraduates). An applicant who is over 18 years of age, but who has not graduated from high school will be considered for admission only when preparation in all other ways is such that the campus believes promise of academic success equivalent to that of eligible California high school graduates.

## Eligibility Index

The following chart is used in determining the eligibility of graduates of California high schools (or California legal residents) for freshman admission to a CSUC campus. Grade point averages are based on work completed in the last three years a of physical education and military science. Scores shown are the SAT total and the ACT composite. Students with a given G.P.A. must present the corresponding test score. Conversely, students with a given ACT or SAT score must present the corresponding G.P.A. in order to be eligible.
ither minimum eligibility index is: SAT $=3072$ and ACT $=741$. The index is computed the by multiplying the grade point average by 800 and adding it to the total SAT score or multiplying the grade point average by 200 and adding it to 10 times the composite ACT
score.

| G.P.A. | A.C.T. Score | S.A.T. Score | G.P.A. | A.C.T. Score | S.A.T. <br> Score | G.P.A. | $\begin{aligned} & \text { A.C.T. } \\ & \text { Score } \end{aligned}$ | S.A.T. Score | G.P.A. | A.C.T. Score | S.A.T. Score | G.P.A. | A.C.T. Score | S.A.T. <br> Score |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $(-)^{1}$ |  |  | 2.96 | 15 | 704 | 2.71 | 20 | 904 | 2.47 | 25 | 1096 | 2.22 | 30 | 1296 |
| 3.20 | 11 | 512 | 2.95 | 16 | 712 | 2.70 | 21 | 912 | 2.46 | ${ }_{25}$ | 1104 | 2.21 | 30 | 1304 |
| 3.19 | 11 | 520 | 2.94 | 16 | 720 | 2.69 | 21 | 920 | 2.45 | 26 | 1112 | 2.20 | 31 | 1312 |
| 3.18 | 11 | 528 | 2.93 | 16 | 728 | 2.68 | 21 | 928 | 2.44 | 26 | 1120 | 2.19 | 31 | 1320 |
| 3.17 | 11 | 536 | 2.92 | 16 | 736 | 2.67 | 21 | 936 | 2.43 | 26 | 1128 | 2.18 | 31 | 1328 |
| 3.16 3.15 | 11 | 544 552 | 2.91 | 16 | 744 | 2.66 | 21 | 944 | ${ }^{2.42}$ | ${ }^{26}$ | 1136 | 2.17 | 31 | ${ }_{1336}^{1328}$ |
| 3.15 3.14 | 12 | 550 | ${ }_{2.89}^{2.90}$ | 17 | 752 | 2.65 2.64 | 22 | 952 | 2.41 | 26 | 1144 | 2.16 | 31 | 1344 |
| 3.13 | 12 | 568 | 2.88 | 17 | 768 | 2.63 | 22 | 968 | 2.39 | ${ }_{27}^{27}$ | 11160 | 2.15 2.14 | ${ }_{32}^{32}$ | 1352 1360 |
| 3.12 | 12 | 576 | 2.87 | 17 | 776 | 2.62 | 22 | 976 | 2.38 | 27 | 1168 | ${ }_{2.13}^{2.14}$ | ${ }_{32}$ | 1360 1388 |
| 3.11 | 12 | 584 | 2.86 | 17 | 784 | 2.61 | 22 | 984 | 2.37 | 27 | 1176 | 2.12 | 32 | 1376 |
| 3.10 | 13 | 592 | 2.85 | 18 | 792 | 2.60 | 23 | 992 | 2.36 | 27 | 1184 | 2.11 | 32 | 1384 |
| 3.09 | 13 | 600 | 2.84 | 18 | 800 | 2.59 | 23 | 1000 | 2.35 | 28 | 1192 | 2.10 | 33 | 1392 |
| 3.08 | 13 | ${ }^{608}$ | 2.83 | 18 | 808 | 2.58 | 23 | 1008 | 2.34 | 28 | 1200 | 2.09 | 33 | 1400 |
| 3.07 | 13 | ${ }^{616}$ | 2.82 | 18 | 816 | 2.57 | 23 | 1016 | 2.33 | 28 | 1208 | 2.08 | 33 | 1408 |
| 3.06 3.05 3.04 | 113 | 624 632 | 2.81 | 18 | 824 | 2.56 | ${ }^{23}$ | 1024 | 2.32 | 28 | 1216 | 2.07 | 33 | 1416 |
| 3.05 | 14 | 632 | 2.80 | 19 | 832 | 2.55 | 24 | 1032 | 2.31 | 28 | 1224 | 2.06 | 33 | 1424 |
| 3.04 3.03 | 14 | 640 | 2.79 | 19 | 840 | 2.54 | 24 | 1040 | 2.30 | 29 | 1232 | 2.05 | 34 | 1432 |
| 3.03 3.02 | 14 | 648 656 | 2.78 2.77 | 19 19 | 848 856 | ${ }_{2.53}^{2.53}$ | 24 | 1048 | 2.29 | 29 | 1240 | 2.04 | 34 | 1440 |
| 3.01 | 14 | 664 | 2.76 | 19 | 864 | 2.51 | 24 | 1064 | 2.27 | 29 | ${ }_{1256}^{1248}$ | 2.03 2.02 | 34 34 | ${ }_{1456}^{1448}$ |
| 3.00 | 15 | 672 | 2.75 | 20 | 872 | 2.50 | 25 | 1072 | ${ }_{2.26}$ | 29 | ${ }_{1264}^{1256}$ | 2.02 2.01 | 34 34 | 1464 |
| 2.99 | 15 | 680 | 2.74 | 20 | 880 | 2.49 | 25 | 1080 | 2.25 | 30 | 1272 | 2.00 | 35 | ${ }_{1472}$ |
| 2.98 | 15 | 688 | 2.73 | 20 | 888 | 2.48 | 25 | 1088 | 2.24 | 30 | 1280 | $(-)^{2}$ | 35 |  |
| 2.97 | 15 | 696 | 2.72 | 20 | 896 |  |  |  | 2.23 | 30 | 1288 |  |  |  | ${ }_{2}$ Students earning grade point averanges above 3.20 are eligible for admission, point averages below 2.0 are not eligible for admission

## Undergraduate Transfers (resident and nonresident) <br> Beginning fall term 1974, transfer eligibility is based on transferable college unit

 attempted rather than on all college units attempted. The California Come college unit transfer should consult his college counselor for information on transferability of courses An pplicant in good standing at the last college attended may be admitted as an undergraduat ransfer if he meets either of the following requirements:1. He was eligible for admission in freshman standing (see First-Time Freshmen requirements) and has earned an average grade of "C" $(2.0$ on a scale where $\mathrm{A}=4.0)$ or better in all transferable college units attempted.
2. He has completed at least 56 transferable semester units or 84 transferable quarter units with an average grade of $C \quad(2.0$ on a scale where $A=4.0)$ or better if a California resident. Nonresidents must have a G.P.A. of 2.4 or better.

## Evaluations of Transfer Credits

Native speakers from foreign countries who have finished high school or the equivalent in that country, with the exception of Spanish, will not be given credit for taking the lementary courses offered in that particular language. They will not be given credit for onversation courses in their native tongue.

## Other Applicants

Applicants not admissible under one of the above provisions should enroll in a community college, or other appropriate institution. Only under the most unusual circumstances will such applicants be permitted to enroll. Permission is granted only by special action
San Diego State University offers a special program designed to expand education opportunity for capable young people who, for a variety of reasons, have not previously had the opportunity. For detailed information regarding admission to this program, refer to the section of this catalog on the Educational Opportunities Program

## Postbaccalaureate (Graduate)

## Admission Requirements

All students holding a baccalaureate degree who desire to enroll at San Diego State University for postgraduate study must apply for admission to San Diego State University through the Office of Admissions. In making the application, they mill be admitted with procedures outlined above. On acceptance into the university, tachelor's degree from an unclassified graduate standing if they hold an acceptable bachelor hold such a degree.
accredited instition Graduate Standing
Unclassified Graduate Standing For admission to graduate standing as an Unclassified Graduate Student, a student shall have completed a four-year college course and holeted equivalent academic preparation as from an accredited institution, or shall have completies; and must satisfactorily meet the determined by the appropriate campus authorities; and
professional, personal, scholastic, and other standards for graduate study, including professional, examinations, as the appropriate campus authorities may prescribe. Admission to qualifying examinations, as the appropriate campus Graduate Standing does not constitute a State niversity or colege wistion to graduate degree curricula.
admin

## Classified Graduate Standing

A student who has been admitted to a State University or College under the Unclassified Graduate requirement above may, upon application, be admitted to an authorized graduate degree curriculum if he satisfactorily meets the professional, personal, scholastic, and other standards for admission to the graduate degree curriculum, including qualifying examinations, as the appropriate campus authorities may prescribe. Only those applicants who show promise of success and fitness will be admitted to graduate degree curretence and only those who continue to demonstrate a satisfactory as determined by the appropriate campus authorities, shall be eligible to continue in such curricula. Students whose performance in a graduate degree curriculum is judged to be unsatisfactory by the authorities of the campus may be required to withdraw from all graduate degree curricula offered by the campus.

## Admission as an International (Foreign) Student

The admission of international (foreign) students is governed by separate requirements. Prospective applicants from abroad should consult the individual campus catalogs and international (foreign) student informational brochures available from the campuses. Health insurance coverage is mandatory for international (foreign) students. Present Applicants for admission as either graduates or undergraduates whose education has been Applicants for admission as either graduates or undergraduates whose education has been Iranscripts of record from each secondary school and collegiate institution attended several months in advance of the opening of the semester in which the applicant expects to attend. International students from outside the United States will be considered for admission only or the fall semester. Only those foreign students already in the United States will be considered for the spring semester. Students applying to transfer from a college or university in the United States must have completed a full year at that institution. If certificates and
transcripts are not in English, they should be accompanied by certified English translations. transcripts are not in English, they should be accompanied by certified English translations.
Credentials will be evaluated in accordance with the general regulations governing Credentials wil be evaluated in accor
admission to San Diego State University.
An applicant whose education has been in a language other than English must take the Test of English as a Foreign Language (TOEFL). This test is administered in most foreign countries and test scores must be received by the university before admission to the may be obtained by writing to: Educational Testing Service (TOEFL), Princeton, New Jersey, 08540, U.S.A. Upon arrival at San Diego State University, a further test of English will be given for the purpose of placing students in an English language program commensurate with their linguistic ability in English, and for use by advisers to assist students in planning an appropriate course of study. All students, undergraduate and graduate, are required to take one or more of the following courses, depending upon performance on the placement test: English 1X, English 1Y, English 5. These English courses must be taken in consecutive semesters, with first required course being taken during the student's first semester at San

Diego State University. Foreign students transferring from another U.S. college may be required to take an English placement test.
Arrangements for housing should be completed before the student's arrival on the campus. Arrangements for housing should be completed before the student's arrival on the campus, Diego State University. Scholarship aid for entering students is limited; no scholarships are specifically reserved for students from another country. Further information regarding scholarships will be found in the section of this catalog on Financial Aid.
Upon arrival at San Diego State University the student should obtain an appointment as early as possible with the Coordinator of Foreign Student Admissions.

## Limitation of Enrollment

Admission to a state university or college must be restricted in relation to the number of students for whom an adequate college education can be provided by the staff and facilities available. The Trustees have authority on this matter.

## Registration

After a student has been admitted to the University, his first basic step is to register for classes. Registration at San Diego State University is held prior to the beginning of each semester and each summer session. It is conducted in two parts, one part for new and readmitted students and one for continuing students. The dates for registration are announced in the Class Schedule, which is issued each semester. Schedules are obtainable
at the University bookstore, just before registration. They contain general information on at the University bookstore, just before registration. They contain general information on registration, a listing of the times students are permitted to register, the courses offered for the term, and a listing of the fees required for registration. Fees are payable at the time of registration and depend on the number of units selected. Registration times listed are based on priority numbers assigned to students at the time they are admitted. Priority numbers are placed on the Notice of Admission for entering students and on all student plastic register for them at their scheduled time. The person designated must have his alternate's ID card and must pay his fees. He will also be required to provide necessary data on the student information card. Late registration at San Diego State University is possible only in cases of genuine emergency. This involves petition action and additional fees and in no case is permitted beyond the first week of class.

## Determination of Residence for Nonresident Tuition Purposes

New and returning students of The California State University and Colleges are classified for the purpose of determining the residence of each student for nonresident tuition purposes. The Residence Questionnaire and, if necessary, other evidence furnished by the student is used in making these determinations. A student may not register and enroll in classes until his Residence Questionnaire has been received by the Admissions Office.
The following statement of the rules regarding residency determination for nonresident tuition purposes is not a complete discussion of the law, but a summary of the principal rules and their exceptions. The law governing residence determination for tuition purposes by The California State University and Colleges is found in Education Code Sections 22800-22865, $23753.1,23754-237$ (com, 23758.2 and 23752 , and in Administrative Code, Article (commenculter 1, Part V. A copy of the statutes and regulations is available for inspection at the campus Office
Legal residence may be established by an adult who is physically present in the state while, at the same time, intending to make California his permanent home. Steps must be taken at least one year prior to residence determination date to evidence the intent to make California the permanent home with concurrent relinquishment of the prior legal residence. Some of the relevant indicia of an intention to establish and maintain California residence may be established by registering to vote and voting in elections in California; satisfying resident California state income tax obligations on total income; ownership of residential property or continuous occupancy or letting of an apartment on a lease basis where one's permanent belongings are kept; maintaining active resident memberships in California professional or social organizations; maintaining California vehicle plates and operator's icense; maintaining active savings and checking accounts in California banks; maintaining permanent military address and home of record in California if one is in the military service, perma

The student who is within the state for educational purposes only does not gain the status The student who is within the state for educational purpose
of resident regardless of the length of his stay in California. of resident regardless of the length of his stay in California. In general, the unmarried minor (aperson under heceased), or, in the case of permanent separation of the parents, from the parent with whom the minor maintains his place of abode. The residence of a minor cannot be changed by act of the minor or that of the minor's guardian, so long as the minor's parents are living.
A man or a woman may establish his or her residence, marriage is not a governing factor. The general rule is that a student must have been a California resident for at least one year immediately preceding the residence determination date in order to qualify as a "resident student" for tuition purposes. A residence determination date is set for each academic term and is the date from which residence is determined for that term. The residence determination dates or the 1974-1975 academic year are August 30,1974 and January 15 , 19 ce In you have any questions regarding the applicable date, to which you are registering.
There are several exceptions for nonresident tuition. Some of the exceptions provide for:

1. Persons below the age of 19 whose parents were residents of California but who lef the state while the student was still a minor. When the minor reaches age 18 , the exception the state while the student was stil a minor. When the minor reaches age
2. Persons below the age of 19 who have been present in California for more than a year before the residence determination date, and entirely self-supporting for that period of time 3. Persons below the age of 19 who have lived with and been under the continuous direct care and control of an adult, not a parent, for the two years immediately preceding the residence determination date. Such adult must have been a California resident for the most recent year.
3. Dependent children and spouses of persons in active military service stationed in California on the residence determination date. This exception applies only for the minimum time required for the student to obtain California residence and maintain that residence for a year. The exception is not affected by transfer of the military person directly to a post 5 Military personnel in active service.
termination date for purposes on the residence determination date for purposes other than education at state-supported institutions of
higher education. This exception applies only for the minimum time required for the student to obtain California residence and maintain that residence for a year.
4. A student who is an adult alien is entitled to residence classification if the student has been lawfully admitted to the United States for permanent residence in accordance with all applicable provisions of the laws of the United States; provided, however, that the student has had residence in California for more than one year after such admission prior to the residence determination date. A student who is a minor alien shall be entitled to residence classification if both the student and the parent from whom residence is derived have been lawfully admitted to the United States for permanent residence in accordance with all applicable laws of the United States, provided that the parent has had residence in California for more than one year after acquiring such permanent residence prior to the residence 7. Certain credentialed full for wich the student proposes to
5. Full-time State Unialed, full-time employees of school districts.
exception aplies only for the minimum the spouses. This residence and maintain the minimum time required for the student to obtain California 9. Certain exchange students.
6. Children of deceased public law enforcement or fire suppression employees, who were California residents, and who were killed in the course of law enforcement or fire
suppression duties. suppression duties.
7. A person in continuous full-time attendance at an institution who had resident Classification on May 1, 1973, shall not lose such classification as a result of adoption of the uniform student residency law on which this statement is based, until the attainment of the degree for which the student is currently enrolled.
Any student, following a final decision on campus on his residence classification, may make
written appeal to: ten appeal to:
Office of General Counsel
5670 Wilshire Boulevard
5670 Wilshi
Los Angeles, Califor
within 120 calendar days of notification of the final decision on campus of his classification. The Office of General Counsel may make a decision on the issue, or it may send the matter back to the institution with instructions for a further review on campus. Students classified


## General Regulations

## Student Responsibility for Catalog Information

Students are held individually responsible for the information contained in the catalog. Failure to read and comply with university regulations will not exempt a student from Failure to read and comply incur
whatever penalties he may
whatever penalties he may The Board of Trustees of The California State University and Colleges, in Section 43800 of Title 5 of the California Administrative Code, has reserved the right to add, amend, or repeal any of its regulations, rules, resolutions, standing orders, and rules of procedures, in whole or in part, at such time as it may choose. None shall be construed, operate as, or have the effect of an abridgment or limitation of any rights, powers, or privileges of the Trustees. The Chancellor reserves the right to add, amend or repeal any of his Executive Orders, at such time as he may choose, and the President of San Diego State University reserves the right to add, amend, or repeal provisions of this catalog and rules of the University, including, handbooks, books, at such time as he may choose. No Executive of any rights, powers, or privileges of the Chancellor nor shall any catalog provision or rule of the University be construed, operate as, or have the effect of an abridgment of limitation of any rights, powers, or privileges of the President.

## Grades

At the end of each semester or summer session in which a student is enrolled, a report of courses taken, showing units and grades earned, is sent to the student. Grades and grade points per unit used in reporting are as follows: Grade of A (outstanding achievement), 4 oints; B (commendable), 3 points; C (satisfactory), 2 points; D (passing), 1 point; F failure), 0 points; I (incomplete), counted as units attempted, 0 points; SP (satisfactory point average; Au no in the grade point average; $W$ (withdrawal), not counted in the grade signifying units earned, but not counted in the grade point average; NC (no credit), no credit earned and not counted in the grade point average.

## Undergraduate Student Options on Grading

An undergraduate student may elect to be graded credit/no credit in particular courses, An undergraduate student may el

1. Courses graded credit/no credit $(\mathrm{Cr} / \mathrm{NC})$, whether taken at this or at another institution, may not be used to satisfy requirements for the student's major except for those 2. Ne serned in the course listing
units required in a bachelor's degree progo credit may be offered in satisfaction of the total credit from another institution at the time of the student's admission may be used. If 24 o more units graded credit/no credit are transferred, the student may offer no additional courses graded credit/no credit to satisfy total units required for a bachelor's degree Exceptions to this rule will be made if a student is required to take a course on a Cr/NC basis only.
2. If for any reason (change of major or transfer from another institution) courses graded redit/no credit are offered to satisfy requirements in the major, the student may be required by the major department to pass competency examinations at an acceptable leve or take prescribed alternate courses before being allowed to continue in the major.
3. Selection of the grading basis (A through $\mathbf{F}$ or credit/no credit) is made at the time of on or before the last darse. Change of grading basis may be made by informing the Registra 5. A grade of "Credit" is awarded student may withdraw from a class or change program for work equivalent to $D$ or $F$.

## Grades for Classified Graduate Students

Graduate courses graded on the credit/no credit basis are limited to courses 296, 297, 298 299 and certain 200 -and 300 -numbered courses in the School of Education. No 100 -numbered courses graded credit/no credit are acceptable on a master's degree program. No foreign language option(s) of a master's degree program. At least $70 \%$ of the units used to rifl the minimum requirements on a master's degree program shall be graded on an B, C, D, F basis.

## Grade Point Average

To compute the grade point average, one divides the total number of grade points earned by the number of units attempted. Units earned with a Cr (Credit) are not included in the computation. The minimum GPA for a bachelor's degree is 2.0 (C); in other words, the student must have earned at least twice as many grade points as units attempted.

## Incomplete Grade

An Incomplete signifies that a portion of required course work has not been completed and evaluated in the prescribed time period due to unforeseen, but fully justified, reasons and that there is still a possibility of earning credit. It is the responsibility of the student to bring pertinent information to the instructor and to reach agreement on the means by which the remaining course requirements will be satisfied. A final grade is assigned when the work agreed upon has been completed and evaluated.
An Incomplete must be made up within one calendar year immediately following the end of the term in which it was assigned. This limitation prevails whether or not the student maintains continuous enroliment. Failure to complete the assigned work will result in an progress point computation
A candidate for graduation with the baccalaureate degree whose record carries a grade of Incomplete will be graduated provided he is otherwise eligible for graduation. However the Incomplete cannot be made up after the degree has been granted. If the student does not wish to be graduated with the grade of Incomplete on his record, he must cancel officially his application for graduation.

## Satisfactory Progress Grade

The symbol SP (satisfactory progress) is used in connection with courses that extend beyond one academic term. The symbol indicates that work in progress has been evaluated as satisfactory to date but that the assignment of a precise grade must await the completion of additional course work. Cumulative enrollment in units attempted may not exceed the total number applicable to the student's educational objective. All work is to be completed within one calendar year of the date of first enrollment and a final grade will be assigned to all segments of the course on the basis of overall quality. Any extension of this time must receive prior authorization by the Dean of the University College (for undergraduate courses) or the Dean of Graduate Studies (for graduate courses).

## Uncompleted Theses

A student who registers for Course 299, Thesis, but does not complete the thesis by the end of the semester or summer session in which he registers for it will, upon the recommendation of the Thesis Committee Chairman, receive an SP (satisfactory progress) grade. This grade symbol will remain on the student's record until the thesis is completed or up to two calendar years from the beginning of the semester or term of registration in the course, whichever occurs first. If, at the end of two years, the thesis is not completed the grade NC (no credit) will be recorded on the student's record, unless extension of time for completion, due to extenuating circumstances, has been recommended in advance by the Thesis Committee Chairman and the Department Chairman, and is approved by the Dean of Graduate Studies. A second registration in Course 299, Thesis, is expressly prohibited. A student Whadies 300 ( 0 units, $\mathrm{Cr} / \mathrm{NC}$ ) in any semester or term (within the two-vear for period, as outined inal approval.

## Courses

Courses
Except as permitted in general education requirements, a course cannot be used to satisfy

## Numbering of Courses

Courses numbered 1 through 99 or by letters (A, B, C, etc.) are in the lower division Coure 109 are in the upper division (freshman and sophomore years); those numbered 200 through 299 are strictly graduate courses Courses numbered 300 or over are graduate professional education courses. Courses Courses numbered X- 900 - X-999 are those offered exclusively in the extension program to meet on numbered X-900-X- -99 are thise community groups. These courses are not acceptable on advanced degree programs.

## Auditing

A student who does not wish to take a course for credit may, with the consent of the A student who does nutitor during the regular change of program period. Students may not enroll in courses for audit after registration. An auditor must meet alo credit. No requirements and pay the same fees required of students taking the course for credit. No change from regular registration to audit, or from audit to regular registration, will be permitted during the semester. An auditor is not held for examinations and does not receive credit or a final grade in the course.

## Repeated Course

A student who has received a grade of D, F or Incomplete in a course may repeat that A student who has received a grade of D, or the transcript, only the results of the last attempt will be used in computation of grade point average.

## Final Examinations and Credit

No final examination shall be given to individual students before the regular time. Any tudent who finds it impossible to take a final examination on the date scheduled must make arrangements with the instructor to have an incomplete grade reported and must take the deferred final examination within the time allowed for making up incomplete grades.

## Credit for Upper Division Courses

Normally, only juniors, seniors and graduate students enroll in upper division courses numbered 100 and above). However, a freshman or sophomore who demonstrates to the satisfaction of the appropriate department that he is qualified may enroll in an upper division course if the instructor consents. He may get upper division credit for it if, in addition, he secures the approval of the chairman of the department and of the dean of the school or college concerned, and files the approval with the Evaluations Office.

## Community College Credit

A maximum of 70 semester units earned in a community college may be applied toward the degree, with the following limitations: (a) No upper division credit may be allowed for in ed

## Concurrent Master's Degree Credit

A senior who is within 12 units of completing requirements for the bachelor's degree and whose overall grade point average is 3.0 or above may petition the Graduate Council to take for concurrent master's degree credit 100 -numbered courses listed in the Graduate Bulletin s acceptable for master's degree programs, and certain 200 -numbered courses approved by he department, with the remaining requirements for the bachelor's degree. Petitions must II) of the semester (the end of the fourth week of classes (or the first week of summer term must be completed at the end of the semester or term in which the concurrent credit is earned. The maximum number of units which may be earned as concurrent master's degree credit is determined by the difference between the number of units remaining for the bachelor's degree and 15 . No more than three units in 200 -numbered courses will be accepted toward the minimum unit requirements for the master's degree.


## Concurrent Postgraduate Credit

A senior who is within seven units of completing requirements for the bachelor's degree and who has been admitted to teacher education may petition the Dean, School of Education, to take a maximum of 12 units of 100 -numbered courses for concurrent postgraduate credit with remaining requirements for a bachelor's degree to apply toward the minimum unit postgraduate requirements for a teaching credential. The bachelor degree must be completed at the end of the sem credit is earned. Extension courses are not acceptable for postgraduate credit.

## Credit for Extension Courses

The maximum amount of extension and correspondence credit which may be accepted toward the minimum requirements for the bachelor's degree is 24 semester units. Extension and correspondence credit do not count in satisfaction of the minimum residence requirement. A maximum of six units in extension courses at San Diego State University may be accepted as part of the requirements for the master's degree, subject to limitation described in the Graduate Bulletin.
Extension courses offered by departments are of two kinds. The first includes regular courses listed in the General Catalog which are available for use by students in meeting college credit requirements of various kinds, and are usually at the upper division level. A second kind is offered by some departments at the X-900 level and serves to meet the needs of specific community groups. Courses at the X-900 level are designed to meet profes by the needs, and any credit toward degrees or credentals will not be applicable toward graduation requirements at San Diego State University unless otherwise specified in the course description. Courses at the X-900 level are not acceptable on advanced degree programs.

## Credit by Examination

Approval to receive credit-by-examination is granted at the discretion of the appropriate college authorities and under the following conditions:

1. The student must be matriculated, in good standing (not on probation), be registered in at least one regular course (not Extension) at the time credit-by-examination is authorized, and pay for additional units if cost exceeds fees already paid. Application for credit by examination must be made within the time limits for filing a change of program as listed in the Academic Calendar each semester. In summer sessions the Education Code for courses and examinations cannot exceed of the department concerned and the Dean of the University College is required prior to taking the examination. Forms for approval may be obtained from the Evaluations Office,
2. Credit-by-examination is restricted to regular undergraduate courses listed in the general catalog; does not include 200 -numbered, 300 -numbered, or Extension courses cannot exceed 30 units as applicable to graduation; and does not count as residence credit 4. Credit-by-examination is not treated as part of the student's study load and, therefore is not considered for Selective Service purposes or by the Veterans Administration in the application of their respective regulations; and is not always accepted as transfer credit between collegiate institutions.

## Credit for Advanced Placement Examinations

San Diego State University grants credit toward its undergraduate degrees for successful completion of examination of the Advanced Placement Program of the College Entrance Examination Board. Students who present scores of three or better will be granted six emester units (nine quarter units) of college credit
High school students who intend to participate in this program should make the necessary rrangements with their high schools and should indicate at the time they take the Advanced Placement Examinations that their test scores be sent to San Diego State University. To obtain credit and advanced placement, the student should contact the Office of the Dean obtain crediversity College.
of the University College.
Students may earn 3-10 semester units of credit toward their bachelor's degree for each Advanced Placement Examination satisfactorily passed while in high school. The chart below indicates the score necessary, the units earned and the course equivalents for each of the examinations offered.

| Examination | Score | Credit allowed toward degree | sDSU course equivalents* |  | Remarks |
| :---: | :---: | :---: | :---: | :---: | :---: |
| American History.- | 3, 4, 5 | 6 semester units | History 17A-17B |  | Satisfies American History/institutions and ideals requirement |
| European History - | 3, 4, 5 | 6 semester units | History 4A-4B | ${ }^{(6)}$ |  |
| English...........- | 3, 4, 5 | 6 semester units | English 5-6 | (6) |  |
| French............. |  | 6 semester units | French 3 and |  |  |
|  | 4,5 | 6 semester units | French 4 a |  |  |
| Classics: Vergil.... | $3,4,5$ $3,4,5$ | 3 semester units 3 semester units | Latin 3 Latin 3 |  | If more than one ex- |
| Latin Prose...... | 3, 4, 5 | 3 semester units | Latin 3 |  |  |
| Latin Lyric........ | 3,4,5 | 3 semester units | Latin 3 |  | torily passed, 3 addibe provided |
| German | 3 | 6 semester units | German 3 and 10 | (6) |  |
|  | 4, 5 | 6 semester units | German 4 and 11 | ${ }^{(6)}$ |  |
| Spanish |  | 6 semester units | Spanish 3 and 10 | ${ }_{(6)}$ |  |
|  | 4,5 | 6 semester units | Spanish 4 and 11 | (6) |  |
| Biology.... | $3,4,5$ $3,4,5$ | 6 semester units 10 semester units | Biology 1 and 2 Chemistry 1A and 1B |  | + Biology 166 |
| Chemistry $\qquad$ Mathematics | 3,4,5 | 10 semester units | Chemistry 1A and 1B | (10) |  |
| Calculus AB. | 3, 4, 5 | 6 semester units | Mathematics 50 |  | + Mathematics 166 (1) |
| Chyalculus BC | 3, 4, 5 | 9 semester units | Mathematics 50 |  | + Mathematics 51 (4) |
| B... | 3, 4, 5 | 8 semester units | Physics 2A-2B |  | + Physics 3A-3B (2) |
| C. | 3,4,5 | 8 semester units | Physics 4A-4B | (8) |  |
| Art History | 3,4,5 | 6 semester units | Art 50A-50B | (6) |  |
| Studio Art. | 3, 4, 5 | 6 semester units | Art 1A-1B or Art 2A-2B |  |  |
| Music.- | 3, 4, 5 | 6 semester units | Music 2, 51 | (6) |  |

* Credit may not be earned at SDSU for courses which duplicate credit already allowed for examinations as listed under SDSU course equivalents.

Credit for College Level Examination Program (CLEP) San Diego State University will consider the granting of credit to those students who have attained a score at or above the 50th percentile on each test of the General Examinations
of the College Level Examination Program. Scores should be forwarded to the Admissions of the College Level E
Office for evaluation.

## Credit for Military Service

The university is guided by the recommendations of the American Council on Education in granting undergraduate credit toward the bachelor's degree for military service. ostgraduate credit is not granted.
To obtain credit for military service, the student must be fully matriculated and enrolled in the university. The military form DD- 214 must be filed with the Admissions Office if military credits are to be counted toward the bachelor's degree or used to shorten the time the United States armed forces, should be submitted at the time of applying for admission to the university.

## Student Classification

A matriculated student is one who has complied with all requirements for admission to the university and has received his official Notice of Admission. All students taking courses in courses may a student whit be matriculated students. Only in summer sessions or in extension courses may a student who has not matriculated be accepted for enrollment.
ummer session who enrolls in one or more summer session classes shall be classified as a his extension class work be classified as an extension one or more extension classes shall for me matricula class work be classinied as an extension sutu need not绪
Freshman. A student who has earned a total of fewer than 30 semester units.
Sophomore. A student who has earned a total of 30 to 59 semester units, inclusive.
Junior. A student who has earned a total of 60 to 89 semester units, inclusive.
Senior. A student who has earned a total of 90 semester units or more.

Graduate. A student who has completed a four-year college course with an acceptable baccalaureate degree from an accredited institution. For information on classification of graduate students, see the Graduate Bulletin

## Student Program and Records

## Transcripts of Record

A student may obtain an official transcript of his record by filing an application at the Registrar's Office. A fee of \$1 is charged for all transcripts and must be paid in advance. One week should be allowed for the processing and mailing of the transcript. Transcripts from other schools or colleges become the property of this university and will not be released or
copied.

## Change of Program

San Diego State University provides for change of program beginning the first week of classes every term. Change of program includes: withdrawal from a class, adding a class, dropping a class, adding or reducing units of a class for which the student is already egistered, changing a section of the same class, or changing grading options.
a student does not attend the first ery course on his official study list filed at registration. If start of the second meeting, the professor may give his place to another student- however if this occurs, the student must still take the necessary formal drop action himself. Change of program cannot be effected by nonattendance in class; nonattendance without consequent formal drop action will result in a failing grade.
Change of program is permitted without effect on record or grade and with no restriction or penalty beginning the first week of class and ending the third week of classes. Withdrawals from class after the 20th day of instruction and prior to the last three weeks of instruction are permissible only for serious and compelling reasons. Permission to withdraw during this period is granted only with the approval of the instructor and the Department Chairman, and approvals are made in writing on prescribed forms. Withdrawals are not permitted during the final three weeks of instruction, except in cases such as accident student's control and the assignment of an Incomplete is not practicable. Ordinarily withdrawals in this category will involve total withdrawal from the campus, except that credit, or an Incomplete, may be assigned for courses in which sufficient work has been completed to permit an evaluation to be made. Requests to withdraw under such circumstances are handled and filed as above, except that such requests also must be endorsed by the Vice President for Academic Affairs or his designee.

## Change of Major or Curriculum

At the time of admission to the university, each undergraduate student is assigned to a major field or curriculum, or is designated as an undeclared major. After registration, any student wishing to change his major or curriculum must make application at the Evaluations Office.
Veterans using veteran benefits must obtain appropriate approval from the Veterans Administration for necessary changes in letters of eligibility.

## Withdrawal, Leave of Absence,

## Readmission, and Evaluation

Withdrawal. Students who wish to withdraw from the university must initiate action formally through the Registrar's Office. Failure to file will result in a failing grade in all courses. Under certain circumstances, complete withdrawal is possible up to three weeks preceding the last day of instruction; however, refunds are obtainable only for the first 14 days after the term begins. A student withdrawing during the refund period is no longer considered a continuing student and is required to apply for readmission. the third week of classes. For complete information about withdrawals afterore the end of weeks of week of Unofficial Withdrawal.
Unofficial Withdrawal. A student withdrawing unofficially from class or from the university will receive failing grades in all courses which he stops attending. An unofficial withdrawal is one in which a student stops attending classes without filing official withdrawal forms within the established deadlines.
Veterans unofficially withdrawing will have veteran's allowances immediately suspended and will be subject to full repayment of allowances received after date of unofficial withdrawal.

Withdrawal to Enter Military Service. Under certain conditions, a student withdrawing from the university to enter military service is entitled to apply for refund of materials and service fees or for partial credit (but not both). To qualify under this regulation, the student must (a) be a civilian who, because of his own initiative, receives orders to imped active duty by government action, or (c) be a reservist called to immediate extended active duty (Not applicable to other military personnel enrolled in the university.)
Entrance upon extended active military duty must be without unreasonable and unnecessary delay (normally within 30 days) after the date of withdrawal from the university to qualify the student for refund or partial credit. Verification of entry upon extended active duty is required and must be by written statement of the commanding officer or by official copy of orders. Application for withdrawal from the university may be made by the student in person, or by telephone or mail. Forms for withdrawal will also be sent to the ser request requested by a person designated by the student as his representalive in the university, partial
If the student is passing in courses at the time of withdrawal from then
If the student is passing in courses at the time of withdrawal form of the first six weeks of the semester, or two-thirds for the first 12 weeks. The university does not wish to influence the student in choosing between partial credit and refund of fees; however, it should be pointed out that partial credit in a course may not satisfy some specific requirement for which that course may be needed, and if the course is later repeated by the student the partial credit will be lost as "repeated" work.
Educational Leave of Absence. Students are permitted to take a total of two semesters of approved leave of absence during their matriculation at San Diego State University if it can be clearly established that the leave will contribute to a student's educational objective. Students are not penalized for taking leaves, and retain their priority numbers without change. No fees are involved.

At least five weeks prior to registration period for the semester during which he wishes a leave, a student must file application for the leave at the Registrar's Office. Deadlines for filing may be obtained at that office. Requests will be reviewed by appropriate officials解 application for leave.
Approval for leaves of absence will not be granted to students who have been admitted but will not have completed at least one semester before the leave of absence period, or to students who are disqualified. To be eligible for leave an undergraduate must be eligible to return as an undergraduate; students qualifying for change in status from undergraduate to graduate are not eligible.
Readmission. A student who withdraws from the university must file application for readmission if a full semester elapses between his withdrawal and his return. A $\$ 20$ application fee for readmission is required if the applicant was not regularly enrolled in either of the two semesters immediately preceding the semester for which the application is submitted, or if the student was enrolled at another institution subsequent to the last attendance at San Diego State University.
Evaluation. An evaluation is a summary of college work completed and of requirements to be completed for a bachelor's degree or credential. To be eligible for an evaluation, a student must have completed at least 56 units of acceptable college work and be qualified for full matriculation. Authorization for more than one evaluation during any one semester or one evaluation in nine weeks of summer session requires special permission.
A student who has earned 56 semester units or more, who has not received an evaluation, should apply at the Evaluations Office for an official evaluation. The evaluation is made on the regulations in effect at the time the student entered this university, except as otherwise provided in the California Administrative Code, Chapter 5, Section 40401, Election of Requirements.)
After an interval of five years from the time an evaluation is made, courses in education to be applied toward a teaching credential are subject to reevaluation.

## Credit and Study List Limits

A unit or credit hour represents 50 minutes of lecture or recitation combined with two A unit or credit hour represents 50 minutes of lecture or recitation combined with two
(as in preparation per week throughout one semester of 18 weeks. Two hours of activity (as in physical education) or three hours of laboratory (as in the sciences) are considered equivalent to one hour of lecture

At registration time, no student will be permitted to enroll for more than 18 units. After registration he may add additional units, if desired, by means of the add-drop process, though if he is employed outside of college he is strongly advised to undertake a modest college program. Going to college is properly a full-time job. Normally a student can expect to spend in class and study a total of three hours per week for each unit of college work attempted. A normal 16 -unit load therefore represents a 48 -hour week.

## Scholastic Probation and Disqualification

## Undergraduate Students

Progress toward the bachelor's degree is monitored in terms of progress points per unit attempted. Progress points are as follows: A, four progress points; B, three; C and Cr , two D, one; F and NC, zero progress points. An undergraduate student will be placed on academic probation if at any time his cumulative grade point average in all college work
attempted or his cumulative grade point average at this institution falls below 2.0 or if during any term while he in enrolled he fails to earn at least two times as many progress points as all units attempted.
An undergraduate student shall be removed from academic probation when his cumulative grade point average is 2.0 or higher in all college work attempted or in all work attempted at this university and when he earns at least twice as many progress points as al units attempted in a term.
A. As a lower-division stud on academic probation is subject to academic disqualification: if he falls 15 or in all units attempe grade points below a 20 (C)
B. As a junior ( $60-89$ semester this campus.
grade points below a $2.0(\mathrm{C})$ average on all units attempted or in all units attempted at this campus.
C. As a senior ( 90 semester hours of college work completed) if he falls six or more grade points below a 2.0 (C) average on all units attempted or in all units attempted at this campus.
D. Regardless of class level or cumulative grade point average, if in any term while he is on probation he fails to earn at least twice as many progress points as units

## Administrative Academic Probation

An undergraduate or graduate student may be placed on administrative academic probation by action of appropriate campus officials for any of the following reasons:
A. Withdrawal from all or a substantial portion of a program of studies in two successive
B. Repeated failure to
objective (when such failure the of the student).
C. Failure to comply, after due notice, with an academic requirement or regulation which is routine for all students or a defined group of students (example: failure to take placement tests, failure to complete a required practicum).

## Administrative Academic Disqualification

A student who has been placed on administrative academic probation may be disqualified from further attendance if:
A. The conditions for removal of administrative academic probation are not met within
the period specified.
B. The student becomes subject to academic probation while on administrative
C. academic probation.
C. The student becomes subject to administrative academic probation for same or similar reason for which he has been placed on administrative academic probation previously, although not currently in such status
Probation will be lifted when he has attained a C average or better on all college work attempted at San Diego State University.

## Graduate Students

The regulations governing probation and disqualification of graduate students are stated in Section 41300 of the California Administrative Code as follows:
"Probation and disqualification of graduate students are subject to criteria established by each campus; provided, that criteria of probation and disqualification may not be less than those established for undergraduate students.
"A student disqualified for scholarship deficiency may not enroll in any regular session of the university without prmission from the appropriate university authority, and may e denied admission to the summer session."
A. Standards for Placing Graduate Students on Scholastic Probation 1. A graduate student will be placed on scholastic probation Diego State University, if his grade point average on all work attempted at subsequent to his admission to the campus an anduate student, fall subsequent
below 2.5 .
2. A graduate student who is on probation during a given semester will be continued 2. A graduate student the end of that semester if (a) his overall graduate grade point average, including the semester in question, remains below 2.5 and (b) his grade point average on work taken during the semester is 3.0 or above.
B. Standards for Removing Graduate Students from Scholastic Probation. A graduate student who is on probation during a given semester will be removed
from scholastic probation at the end of any semester in which his overall graduate grade from scholastic probation at the
point average is 2.5 or higher.
C. Standards for Scholastic Disqualification of Graduate Students.

A graduate student may be disqualified from the University for scholastic reasons at the end of any semester during which he is on probation if at the end of that semester (1) his overall grade point average, including the semester in question, is below 2.5 and (2) his grade point average for work taken during that semester is below 3.0 .

A graduate student disqualified from the University under the foregoing regulations, may be readmitted to the University by the Board of Admissions. Application for readmission must be made on forms available at the Office of Admissions.

## Student Discipline and Grievances

Sections 41301 and 41302 of the California Administrative Code, Title 5, read as follows:
41301. Expulsion, Suspension and Probation of Students. Following procedures consonant with due process established for the campus of which he is a student, any student of a campus may be expelled, suspended, placed on probation or given a lesser sanction for one or more of the following causes which must be campus related:
(a) Cheating or plagiarism in connection with an academic program at a campus.
(b) Forgery, alteration or misuse of campus documents, records or identification, or knowingly furnishing false information to a campus.
(c) Misrepresentation of oneself or of an organization to be an agent of a campus.
(d) Obstruction or disruption, on or off campus property, of the campus educational process, administrative process or other campus function.
(e) Physical abuse on or off campus property of the person or property of any member of the campus community or of members of his family or the threat of such physical abuse. (f) Theft of, or nonaccidental damage to, campus property or property in the possession (g) Unauthorized entry into, une campus community.
) nauthorized entry (h) On campus property, the sale or knowing possession of dangerous drugs, restricted dangerous drugs, or narcotics as those terms are used in California statutes, except when wrully prescribed pursuant to medical or dental care, or when lawfully permitted for the purpose of research, instruction or analysis.
(i) Knowing possession or use of explosives, dangerous chemicals or deadly weapons on campus property or at a campus function without prior authorization of the campus
(j) Engaging in lewd, indecent or obscene behavior on campus property or at a campus
function. function.
(k) Abusive behavior directed toward, or hazing of, a member of the campus community. to such violation and during the campus president, notice of which had been given prior publication in the campus newspaper, or by term in which the violation occurs, either by for this purpose, and which order is not inconsistent with any of the other provisions of this Section.
(m) Soliciting or assisting another to do any act which would subject a student to expulsion, suspension or probation pursuant to this Section.

## Graduation Requirements <br> for the Bachelor's Degree

To qualify for graduation with a bachelor's degree from San Diego State University, the student must fulfill all of the following requirements.

## 1. Competency Tests.

Competency in mathematics and composition as demonstrated by tests or by satisfactory completion of designated courses.
Mathematics competency may be demonstrated by satisfactory scores on the quantitative section of the ACT (American College Test), or SAT (Scholastic Aptitude Test), or CQT (College Qualification Tests). Cutoff scores for determination of competence is the 15th percentile, based on national norms.
a satisfactory score on a test will be permitted to retest on the CQT.
In the event a student does not satisfy the requirement by examinations he may do so by successfully completing Mathematics $3,10 \mathrm{~B}, 18$ or higher numbered course.
Tllowing this univg the student's completion of 45 units of college work. All students transferring to registration. Passing of this or more of advanced standing credit may take this test berore satisfactory completion of English W, or remedial programs prescribed for the student by the University Committee on English fulfills the requirement.

## 2. Units.

For the A.B. and B.V.E. degree, a total of 124 units satisfactorily completed (grade of D or better); for the B.S. in engineering and B.M., a total of 132; for all other B.S. degrees, the total is 128 . Of the total, 36 units must be upper division for the B.S., 40 for the B.V.E., the B.M. and for the A.B. in applied arts and sciences, and 45 for the A.B. in liberal arts and ciences. Twenty-four units must be earned in residence at San Diego State University, 12 of which must be among the last 20 units applicable to the degree. For the A.B. in liberal arts and sciences, no more than 48 units in one department can apply to the degree. In the School of Business Administration, at least 52 units of the total must be in business and economics, at least 52 outside those areas. The B.M. consists of no more than 70 units in the major.

## 3. Major and Minor.

Every student must complete a departmental or interdisciplinary major and, if his major calls for it, a minor as well.
Major. A major is defined as a pattern of upper division courses, totaling not less than 24 units for the A.B., B.V.E., or B.M. degree and not less than 36 units for the B.S. degree. The maximum number of units for a major is determined by the university
Courses in the major are exclusive of those courses used to meet the requirements in general education. Not more than 15 units in lower division prerequisite and related course required by the department in preparation for the major may be used in general education in the student's mines, however, may not be used as part of the minimum unit requirement in the student's minor
A student may wish to major in two departments. If so, the requirements for both majors must be satisfied. Units for courses which could satisfy the requirements in both majors can completion only once. Only one diploma will be granted but the transcript will note the mpletion of each major
Minor. The minor normally consists of 15 to 22 units, at least six units of which must be in upper division courses. Specific requirements and maximum number of units are education requirements.

## 4. Grades.

In all courses attempted, in all courses at this university (except extension), and in all courses in the major, the student must achieve an average grade of $\mathrm{C}(\mathbf{2 . 0})$.

## 5. American Institutions.

## This requirement may be satisfied by any one of the following pairs of courses: <br> Afro-American Studies 7A and 7B

History 8A and 8B
History 17A and 17B
History 172A and 172B
History 179A and 179B
History 184A and 184B
Mexican-American Studies 20A and 20B
Mexican-American Studies 41A and 41B
Political Science 1 and 2
Political Science 105 and 115
Political Science 105 and 117
Political Science 115 and 117
Political Science 115 and 118
Alternatively, this requirement may be met by satisfactory completion of comprehensive examinations in each of the following areas: American history, institutions and ideals; the United States Constitution; and California state and local government The examinations are administered every semester and during Term I in the summer.
The requirement may also be met by satisfactory completion of a combination of courses and examinations. Relevant courses are:

## American History

Afro-American Studies 7A-7B; History 8A, 8B; 176A, 176B; 177A, 177B; 179A, 179B; 181A 81B; Mexican-American Studies 20A-20B, 41A-41B

## U.S. Constitution

Afro-American Studies 7A; History 8A; 17A; 172A; 177A, 177B; 179A; Mexican-American Studies 20A, 41A; Political Science 2, 115, 139A and 139B.

## California Government

Afro-American Studies 7B; History 8B, 17B, 172B, 179B, 189B; Mexican-American Studies
6. General Education

The requirement in General Education consists of 40 semester units as indicated below. Courses in the following categories may not be used to satisfy General Education Requirements: (a) Courses used in satisfaction of the major (only upper division courses are included in the major); (b) Courses used in satisfaction of a minor (this includes lower and upper division courses); (c) Courses in excess of 15 units required in Preparation for the Major ; and (d) no more than six units of Afro-American Studies or Mexican-American used to fulfill requirements in social sciences and merican Institutions.
Students with majors in applied arts and sciences and in professional programs must select general education courses in accordance with the pattern described below. Students in iberal arts and sciences may wish to combine general education with the additional breadth requirements for liberal arts and sciences. A special pattern of courses to achieve that purpose is outlined immediately following the general education pattern.
A. At least 32 units in the Natural Sciences, Social Sciences, Humanities, and Basic Subjects, including the minimum required in each subject area as indicated below.
. Natural Sciences. A minimum of six units to include:
a. A course of two units or more in any of the following departments:

Biology
Microbiology
Zoology
b. A course of two units or more in any of the following departments: Astronomy
Geography (limited to 1 and 3)
Geology
Physical Science
Physics
c. A one-unit laboratory course, unless either of the preceding courses included a laboratory which met for three hours or more per week. Examples of one-uni laboratory courses are Astronomy 9, Biology 2,
2. Social Sciences. An the fors in the the areas

A three-unit cours
Anthropology
Economics (except 2)
Geography (except 1 and 3 )

- Afro-American Studies (limited to 20 or 30 )

Mexican-American Studies (limited to 10 or 50)
Political Science (except American Institutions)
Sociology (except 60)
3. Humanities. A minimum of six units to include

A three-unit course in each of two of the following areas:
Classics
Literature in English
Literature in a Foreign Language
Philosophy (excluding logic)
4. Basic Subjects. A minimum of six units to include Course work in at least three of the following areas:

Written Communication in English
Oral Communication
Logic
Mathematics or Statistics
Foreign Language (excluding courses in literature or civilization)
5. Electives. Additional units as necessary in the Natural Sciences, Social Sciences, Humanities and Basic Subjects to achieve a total of 32 units in these subjects. Courses total but may not apply to the six-unit minimum in either be counted in the 32 units Humanities. Students, at their discretion, may include within the 32 units any courses they have taken in the following areas:

Art
Drama
History (limited to courses in
ancient history, Asian civilization and western civilization)
Music
Oceanography
Psychology (limited to introductory courses)
Public Administration
emantion (limited to courses in semantics and rhetorical theory)
B. Physical Activities. A minimum of two semesters of physical education activity courses, or equivalent monitored activities, or a combination of courses and monitored activities.

## Required Activity Course

To meet general education requirements, two semesters of activity courses or monitored activity are required as outlined above. All freshmen students must enroll in an activity course or monitored activity each semester. Two units are needed for general education and may be counted toward this requirement An or monitored activity in any one semester may be counted in lieu of one taken during the fall or spring semester. Any combination of activity courses and monitored activity may be used

## Exemptions or Postponement

Veterans who have served a minimum of one continuous year in the United States armed forces are exempted from the general education requirement in physical education Students over 25 years of age at the time of matriculation may also be exempted from the general education requirement in physical education upon approval by the Vice President for Academic Affairs or duly authorized representative. Students carrying fewer than 12 for a postponement of the physical education activity requirement Fhy Education Department Director of Health Services may postpone the enrollment onement. For reasons of health, the activity course. Permanent postponement from the activity requirement will not be made and a postponement does not eliminate the graduation requirement.
C. Electives to complete 40 units. Additional units as necessary in the subjects listed above or in any other subject listed in this catalog, to achieve a total of 40 units in general education Students are reminded, however, that courses taken in satisfaction of requirements for the major and minor may not be applied to general education, and not more than 15 units in preparation for the major may be applied to general education requirements.

## Alternate General Education Program

Any student with a minimum grade point average of 3.25 at this institution, with a declared major, and with 15 units or more but not over 45 units of college work may submit to the Dean of the University College an alternate program, with supporting reasons, for fulfilling general education-breadth requirements, compatible with the requirements listed below. If approved, the proposed program will replace the standard provisions. A student with such an approved program may, at his option, elect to revert to the standard program in effect at the time of his graduation; any student who changes his major shall revert to the standard
program or seek approval of a new proposal.
A. Natural Sciences, minimum of two courses
B. Social Sciences, minimum of two courses
C. Humanities, minimum of two courses
D. Basic Subjects, minimum of two courses
E. Electives, maximum of eight units, to provide a total of 40 units
. Additional requirement, five upper division units excluding courses in the area of the or and minor
Within the proposal, no courses in the student's major or minor may apply to the

## Breadth Requirements for Degrees in

## Liberal Arts and Sciences

In addition to the general education requirements listed above, students whose majors are offered in the Liberal Arts and Sciences curriculum are required to complete additional breadth requirements. They must follow the outline below. By choosing from this pattern, they may fulfill both general education and the additional breadth requirements for the
A. Natural Science

Either

1. Seven units
a. Life science with laboratory

Choose one:
Biology 1 and 2
Biology 4
b. Physical science with laboratory

Choose one:
Astronomy 1 and 9
Chemistry 1A
Chemistry 2A
Chemistry 10A
Geology 2 and 3
Geology 4

Microbiology 1 and 1L
Zoology 8

Physical Science 1
Physical Science 2A and 3
Physics 4A
Physics 2A and 3A
Physics 5

Or 2 . Nine units selected from Geography 1 or 3 , or any courses in astronomy, biology, botany, chemistry, geology, microbiology, oceanography, physical science, physics zoology. At least three units must be in a life science, and at least three units must be in a physical science; at least one course must be a laboratory course
B. Mathematics and Foreign Language

1. Mathematics 18 or higher numbered mathematics course, or satisfactory performance on the placement examination of the Department of Mathematics. 2. Foreign Language-four units. (The requirement may be met by two years of one foreign language in high school.)
2. Eight additional units in mathematics (course 21 or higher) or in foreign language. (This requirement may be met by completion of a third and fourth year of a foreign language in high school.)
C. Social Sciences
3. At least two courses (minimum three units for each course) taken in two departments selected from anthropology, economics (except 2), geography (except 1 or 3), political science, sociology (except 60), Afro-American Studies 20 or 30, and Mexican-American Studies 10 or 50 . However, no more than six units of Afro-American Studies or Mexican-American Studies or political science may
4. Electives in any of the above or in public administration.
D. Humanities and Fine Arts

Either
The Scope of Civilization
a. History $4 \mathrm{~A}-4 \mathrm{~B}$, or $9 \mathrm{~A}-9 \mathrm{~B}$, or $104 \mathrm{~A}-104 \mathrm{~B}$
and
b. Two courses taken in two departments selected from classics, humanities literature, Mexican-American Studies (limited to $30,100,133,135$ ), philosophy (except logic), or religious studies.
Or 2 . The Scope of Civilization
a. Comparative Literature 52A-52B or
b. Humanities 59A-59B
and, in a different department,
c. One additional course (minimum three units) in classics, humanities', literature Mexican-American Studies (limited to 30, 100, 133, 135), philosophy (except logic), or religious studies.
d. One additional course (minimum three units) in art, classics, humanities ${ }^{*}$ literature, Mexican-American Studies (limited to $30,60,65 \mathrm{C}, 100,133,135$ ), music, philosophy (except logic), or religious studies.
Or
3. Fifteen units in at least three of the following subjects: art, classics, history (other than courses used to satisfy American Institutions requirements), humanities ${ }^{\text {© }}$ Iterature, Mexican-American Studies (limited to $30,60,65 \mathrm{C}, 100,133,135$ ), music other than departments offering the student's major and minor.
E. Other

1. English 5 or 6 or Mexican-American Studies 2B
2. Seven or nine units from any three of the following groups
${ }_{75}$. English 5 or 6 (may not be the same course used under E 1, above), or English 75
b.
b. Health Science and Safety 21
c. Mathematics 155 or Philosophy 20, 121, 122
d. Afro-American Studies 4 or Mexican-American Studies 2A or Speech e. Psychology 1
f. Classics 50
3. Physical Education

A minimum of two semesters of physical activity in courses or equivalent monitored activity, to be fulfilled by:
a. Completing two one-unit physical education activity courses over a period of at least two semesters, or
b. Completing two satisfactory semesters of regular monitored physical activity for
credit, or c. Combi activity.

Required Activity Courses
To meet general education requirements, two semesters of activity courses or monitored activity are required as outlined above. All freshman students must enroll in an activity activity are required as outlined above. All freshman students must enroll in an activity graduation, but no more than one activity course or monitored activity in any one semester may be counted toward this requirement. An activity course takester Any combination of may be counted in lieu of one taken during the fall or spring semester. Any combination of activity courses and monitored activity may be used.

## Exemptions or Postponement

Veterans who have served a minimum of one continuous year in the United States armed forces are exempted from the general education requirement in Students over 25 years of age at the time of matriculation may also be exempted from the general education requirement in physical education. Students carrying fewer than 12 unit during any semester may apply to the chairman of the Physical Education Department for a postponement of the physical education activity requirement. For reasons of health, the activity course. Permanent postponement from the activity requirement will not be made and a postponement does not eliminate the graduation requirement.

## Application for Graduation

Graduation is not automatic on the completion of requirements. The student who intends to graduate must take the initiative. When he believes that he is eligible, he should file an application with the Evaluations Office, Administration Building, not later than the end of the third week of classes in the fall if he wants to graduate in mid-year, and not later than the end of the eleventh week of classes in the fall if he wants to graduate in June or at the end of summer session. The Class Schedule each semester specifies the exact date. An apply on or before the specified date will exclude the student from consideration for honors or distinction.

## Election of Regulations for Graduation

A student remaining in continuous attendance in regular sessions and continuing on the same curriculum in any state university or college or in any of the California community colleges may, for purposes of meeting graduation requirements, elect to meet the graduation requirements in effect at San Diego State University either at the time of his entering the
curriculum or at the time of his graduation therefrom, except that substitutions for curriculum or at the time of his graduation therefrom, except that substitutions for discontinued courses may be authorized or required by the proper authorities.

## Graduation with Honors and Distinction

With the approval of the faculty, graduation with honors is granted to those students in each graduating class who have achieved high grade point averages by the beginning of the fall semester for mid-year graduates and by the end of the fall semester for June and summer session graduates.
The grade point average is computed on work done at this institution, except that if the grade point average for work at other collegiate institutions is lower, those grades are included in the computation.
To be considered for computations relevant to honors or distinction, grades for removal of Incompletes and all other grade changes must be received in the Registrar s Office no late than the end of the fifth week of the semester in which the student plans to graduate and the student must file an application for graduation prior to the published deadline. After the degree is granted no changes can be made in the undergraduate record.
Upon recommendation of his major department and with the approval of the faculty, student doing superior work in his major field may be graduated with distinction in that field. 3-85474

## Commencement

Commencent exercises are held once a year at the end of the spring semester for Commencement exercises are heldid-year, those graduating at the end of the spring students who were graduated at mid-year, te requirements for graduation in the summer semester, and students who expect to complete by the authority of the Trustees and on session. The pres of the faculty, awards the degrees.

## Second Bachelor's Degree

, 24 units beyond A second bachelor's degree may be earned if the stor's degree, makes a complete change in


Curricula

Summary

Summary of Curricula Offered


Summary of Curricula Offered-Cont.

|  | Arts and Sciences Curricula |  | Professional Curricula |  |  | Graduate Curricula |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Majors | Applied Arts and Sciences <br> $\mathrm{AB} \quad \mathrm{BS}$ | Liberal Arts and Sciences <br> AB | School of Business Administration BS | School of Engineering BS | School of Education | Graduate Division <br> MA MS |
| Microbiology | $\cdots \mathrm{ABS}$ | AB |  |  |  | MS |
| Music.-. | *AB ${ }^{\text {* }}$ BM |  |  |  |  | MA |
| Philosophy -....- |  | AB |  |  |  | MA |
| Physical education Physical science... |  | AB |  |  |  | MA |
| Physics ........- | $\cdots \quad \overline{\text { AS }}$ | AB |  |  |  | MA MS |
| Poilitical science |  | AB |  |  |  | MA MS |
| Psychology-......- | *AB | AB |  |  |  | MA MS |
| Public administration |  |  |  |  |  | .. MPA |
| $\ddagger$ Radio-television. | AB BS |  |  |  |  | ... MA |
| \#\#Real estate.-...-...-.-.....- Recreation administration.. | $A B$ |  | BS |  |  |  |
| Religious studies....... |  | AB |  |  |  |  |
| **Russian |  | AB |  |  |  | MA |
| **Social science. | *AB | ${ }_{\text {AB }}$ |  |  |  | MA |
| Social welfare $\dagger$ Social work.-. | AB | AB |  |  |  |  |
| Sociology. |  |  |  |  |  | MSSW |
| Spanish.. |  | ${ }_{\text {AB }}$ |  |  |  |  |
| Speech communication. | $A B$ |  |  |  |  | MA |
| Speech pathology and audiology. |  |  |  |  |  |  |
| diStatistics....................- |  |  |  |  |  | -- MS |
| Vocational arts. | -. BS | AB |  |  | BVE |  |

$\ddagger \ddagger$ Offered by the Department of Telecommunications and Film.
*Limited to students in Teacher Education.
$\dagger$ For master's degree only (not an undergraduate major).
8 Offered jointly with the University of California, Berkeley.
$\$$ Offered jointly with the University of California, Riverside
\# Offered jointly with the University of California, Riverside
if A concentration with the B.S. in Business Administration.
74 A concentration with the B.S.
${ }_{6}$ An intered by Public Administration and Urban Studies.
$\dagger \dagger$ Offered by the Department of Microbiology.
Offered by the School of Social Work.
$\$$ Offered by the Department of Mathematics.

Preprofessional Curricula Predental
Prelegal Premedical

Curricula in Broad Field Areas Humanities Humanities
Medical technology

Teaching Credentials

Multiple subjects teaching credential
Single subject teaching credential
Standard teaching credential with
specialization in community college
teaching
teaching
Restricted credential
Minors for the Bachelor's Degree

## ccounting

Aerospace studies
Afro-American studies
Anthropology
Art
Asian studies
Astronomy
Biology
Botany
Business management
Chemistry
Classical humanities
Classic
Comparative literature
Dance
Drama
Economics
Educational technology
and librarianship
Employee relations
Engineering
English
Finance
French
Geography
Geology
German
Health science
History
Home economics
Humanities
Industrial arts

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Information systems
Insurance
Italian
Jewish studies
    Jewish stud
    Journalism
    Linguistics
    Marketing
                            Mexican-American Studies
                            Mexican-Ame
                            Microbio
                            Music
                            Philosophy
                            Physical education
                            Physical science
                            Physics
                            Political science
                            Portuguese
                            Production and operations
                            management
                            Psychology
                            Public administration
                            Radio-television
                            Real estate
                            Recreation
                            Religious studies
                            Religiou
                            Russian welfare
                            Social welf
                            Sociolog
                            Spanish
                            Speech communication
                            Speech pathology and audiology
                    Zoology
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## Interdisciplinary Programs

## Interdisciplinary Programs

## American Studies Major

With the A.B. Degree in Liberal Arts and Sciences
The major in American Studies is offered by the College of Arts and Letters. Dr. Lonna Malmsheimer, LE-522, is adviser for this major
Preparation for the major. History 17A-17B and English 53A-53B. (12 units.)
Major. A minimum of 30 upper division units to include Humanities 180, History 179A-179B (may be used for group B), and two groups of nine to 12 upper division units chosen from Group A, Group B, or Group C and approved by the adviser.
The remainder of the courses needed to fulfill the 30 unit requirement may be taken in courses listed in Groups A B C and D, except that no more than 12 of the 30 units may be taken from any one group.
Group A: American Literature. English 130, 131, 133, 134, 135, 136, 138, 139. 175A-175B, $175 \mathrm{C}, 176 \mathrm{~A}-176 \mathrm{~B}, 177 \mathrm{~A}-177 \mathrm{~B}, 178 \mathrm{~A}-178 \mathrm{~B}, 179 \mathrm{~A}-179 \mathrm{~B}, 180$ (when relevant to American Studies), 181A-181B, $182 \mathrm{~A}-182 \mathrm{~B}, 183 \mathrm{~A}-183 \mathrm{~B}, 184 \mathrm{~A}-184 \mathrm{~B}, 185,189 \mathrm{~A}-189 \mathrm{~B}$.
Group C. Social Sciences. Economics 111A-111B, 112, 135, 136, 138, 173, 174, 185, 189; Geography 121, 154, 155, 158, 159, 160, 170, 171, 173; Political Science 105, 115, 116, 1196, 120, $123-5,124,125,126,130,132,138,139 A-139 \mathrm{~B}, 171$; Sociology $113,114,121,124,125,136,157$; Journalism 117, 121; Mexican-American Studies 102, 105; Family Studies and Consumer Sciences 136; Women's Studies 140, 150A-150B, 180 .
Group D: Electives. Art 157; Music 151D; Philosophy 164; Anthropology 171.
Foreign Language Requirements. Choice of foreign language should be made in consultation with adviser.

## Asian Studies Major

With the A.B. Degree in Liberal Arts and Sciences
The major in Asian Studies is offered by the College of Arts and Letters. Dr. Alvin Coox, Department of History, is the adviser for this major.
Preparation for the major. Six units in History 4A-4B, 9A-9B, or Philosophy 1 and 2; six units in Anthropology 1 and 2, Economics 1A and 1B, Geography 1 and 2, or Political Science 1 and 3; and Humanities 59A-59B. (18 units.) Art 52A-52B and Comparative Literature $70 \mathrm{~A}-70 \mathrm{~B}$ are recommended.
Major. A minimum of 30 upper division units to include: From the Humanities not less than 12 units from at least two departments chosen from Art 152A, Comparative Literature 170,190 through 196 (when relevant); History 180 (when relevant), 190A-190B, 191A-191B 192, 193, 194, 195, 196A-196B, 197A-197B; Humanities 199 (when relevant); Philosophy 175 (when relevant), 196 (when relevant); Religious Studies 121A-121B, 126A-126B, 180, 181, 190 (when relevant), and 199 (when relevant); and from the social sciences not less than 12 units rom at least two departments chosen from Anthropology 175, 178, 186, 190, 191, 192, 196 (when relevant); Economics 102, 115, 167, 189, 190 and 199 (when relevant); Geography 131,
133, 134, 150; Political Science 183, 187, 191. Recommended: Business Administration 165 .
Foreign Language. Appropriate Asian language recommended.

## Asian Studies Minor

The minor in Asian Studies is offered by the College of Arts and Letters. Dr. Alvin Coox, Department of History, is the adviser for this minor. It consists of a minimum of 21 units to include History 9A-9B or Humanities 59A-59B. Other lower division courses acceptable for the minor are Art 52A-52B, Comparative Literature 70A-70B; and four units of an appropriate
Asian language. Twelve units must be in upper division. Upper division courses acceptable Asian language. Twelve units must be in upper division. Upper division courses acceptable 190A-190B, 191A-191B (a) from the Humanities, not fewer than six units chosen from: History 190A-190B, 191A-191B, 192, 193, 194, 195, 196A-196B, 197A-197B, Philosophy 175, Religious from: Anthropology 175, 186, 190, 191, 192 Science 183, 187, Business Administration 165 .
Courses selected from (a) and (b) above must be outside the major. No more than six units may be chosen from among History 192, 193 and Anthropology 191. No more than six units may be chosen from among History 194, 195 and Anthropology 192.

## Child Development Major

With the B.S. Degree in Applied Arts and Sciences
The major in Child Development is offered by Family Studies and Consumer Sciences.
Preparation for the major. Anthropology 2; Biology 1; Family Studies and Consumer Sciences 4 and 70; Family Studies and Consumer Sciences 35 or Social Welfare 30; Psychology 1,50; Sociology 1; Sociology 60 or Psychology 70. (27 units.)
Major. A minimum of 36 upper division units to include Biology 159; Family Studies and Consumer Sciences 135 and 171; Psychology 131 and 150; Sociology 140 or Psychology 145 and 18 units selected with the approval of the adviser, at least 12 and not more than 15 units of which must be in an area in which the student wishes to concentrate.

## European Studies Major

With the A.B. Degree in Liberal Arts and Sciences
The major in European Studies is offered by the College of Arts and Letters. Dr. Ernest Wolf, Department of German-Russian, is adviser for this major.
Preparation for the major. Twenty-two units to include Art 50A or 50B; Economics 1A-1B, or Geography 1 and 2, or Political Science 1 and 3; History 4A-4B; and 12 units in Latin or one of the major European languages (French, German, Italian,
the minimum of four units required in liberal arts and sciences.
Major. A minimum of 30 upper division units to be chosen with approval of the adviser and distributed as follows: six units in Humanities to include Humanities 150A-150B or 151A-151B; six units in a major European foreign language; nine units in economics, geography, history or political science; six units in art, classics, comparative literature, music or philosophy; three units of electives. Majors in European Studies must have their program for each semester approved by the adviser.

## Humanities Curriculum

## In Liberal Arts and Sciences

The Humanities curriculum is offered by the College of Arts and Letters. Dr. Frank Marini, Dean of the College of Arts and Letters, is the adviser for this curriculum.
The intensive program in humanities provides a course of study which gives a comprehensive view of the development of contemporary civilization, with practice in critical thinking and careful expression. The program encourages extensive reading in history, literature and philosophy, with oral and written discussion.

Specific Requirements and Recommendations
I. A major in one of the departments of the College of Arts and Letters, consisting of 24 upper division units and the required introductory courses, plus a minor if required by the major department. Knowledge of one foreign language is required, as specified in the departmental major.
II. Twelve or more upper division units in related fields, selected with approval of the faculty adviser for the curriculum. (May include courses in the minor, if appropriate.)
III. The adviser will assist the student who undertakes this program to distribute his course work among the following areas:
(a) The origins of Western Civilization: Greek and Roman, Hebrew, Medieval.
(b) Western Civilization, 1500-1900; Continental, British and American.
(c) Contemporary Civilization.
(d) Type courses concerned with more than one period; comparative study of Asian Civilization; linguistics and composition; theory.
IV. Humanities 198, Integration in the Humanities (3 units).

The student will file with the Evaluations Office a master plan approved by the adviser for the humanities curriculum.

## Jewish Studies Minor

The minor in Jewish Studies is offered by the College of Arts and Letters. Dr. Harry Ruja, Department of Philosophy, is adviser for this minor. It provides a balanced interdisciplinary study of Jewish contributions to world culture and history. It serves the needs of students who plan to (1) specialize in disciplines in which an understanding of essential, or 2 , sturg a minor in Jewish Studies may want to consider combining it with ministry. in Scial Science with an emphasis on Africa and the Middle East. Many courses major this major are available in anthropology, Arabic language and literature, economics, geography, history, political science, and sociology.

The minor in Jewish Studies consists of 15 to 17 units to include Humanities 30 and 31, or (English 105), 185 186, 192 (Kafka); Hebrew 199; Philosophy 135, 136; Religious Studies 100A and 115.

## Latin American Studies Major

## With the A.B. Degree in Liberal Arts and Sciences

The major in Latin American Studies is offered by the College of Arts and Letters. The adviser for Latin American Studies is Dr. Thomas M. Davies, Jr., Department of History. The governments of the western hemisphere; and (2) a basic education and training for a business or professional career involving understanding of Latin America.
High school students preparing to enter this program should include in the high schoo course of study not less than three years of study in one foreign language, preferably Spanis or Portuguese. Proficiency in either of these languages is indispensable to a successful career in this area of study.
Preparation for the major. Portuguese $1,2,3,4,10,11$, or Spanish $1,2,3,4,10$, and 11 with a minimum grade point average of 2.0 for all work attempted; twelve units selected fror Anthropology 2, Economics 1A and 1B, Geography 1, History 8A-8B, Political Science 1, 3 (32 units.)
Major. A minimum of 36 upper division units selected from courses in anthropology, art economics, geography, history, Mexican-American Studies, political science, Portuguese, and Spanish, with not less than twelve units in one field and nine in each of two other fields. A least 33 units must be in courses having Latin American content. The student will file with the Evaluations Office a master plan approved by the adviser for the Latin American Studies curriculum.
Courses acceptable for the Latin American Studies Major include: Anthropology 155, 157, 162, 163, 169-S, 180, 181, 182; Art 151A, 151B; Economics 114, 153, 195; Geography 123, 124 198 (when relevant); History 160A-160B, 161A-161B, 162A-162B, 163A-163B, 164, 165A-165B Science 175, 184, 191 (when relevant); Mexican-American Studies 100, 133, 135; Politica $106 \mathrm{~A}-106 \mathrm{~B}, 107,108,109,170,171,172,185$ (when 185 (when relevant); Spanish 104A-104B in one of the departments listed above.

## Liberal Studies Major

With the A.B. Degree in Applied Arts and Sciences and in Liberal Arts and Sciences
The liberal studies major offers a general type of education leading to objectives not otherwise provided in the regular programs of the university. Students electing this major must declare it, as well as any option selected within it, prior to satisfactory completion of ester units.
Option 1. Liberal Studies in Three Disciplines
The student elects three disciplines as associated with departments participating in the Letters, the College of Professiopartments include those listed in the College of Arts an Administration, the of Professional Studies, the College of Sciences, the School of Business Social Welfare.

Preparation for the major. A minimum of a year course in each of the three disciplines division in the major must be completed in the lower division as foundation for upper The student, or whatever the participating departments require
the three disciplint secure approval of his program by the department chairman in each of
Major. A minim involved and
fewer than nine units from any one division units selected from three disciplines, with no majors offered only in liberal one discipline. If two of the three fields selected are from required by that program. If two of the three fields major is governed by the regulations in the liberal arts and sciences program (majiers whe selected from those not exclusively subject teaching credential only do not apply) applied arts and sciences.
Option 2. Liberal Studies in the Multiple Subjects Groups with the A.B. Degree in pplied Arts and Sciences
subjects groups of knowlis option selects courses to extend his background in the four multiple subjects groups of knowledge identified as follows (not more than 30 ind the four multiple any one department or area):

Group A: English (including courses in grammar, literature, composition) and speech. This group includes the following areas: (1) Afro-American Studies (English and speech nly), (2) comarative (4) jeratu and speech only. (7) speech and speech only, (7) speech communication, plus (8) speech pathology and audiology,
Group B: Mathematics and science (physical sciences or life sciences). This group includes Group B: Mathematics and science (physical sciences or life sciences). This group includes microbiology, zoology; (3) mathematics; (4) the physical sciences, i.e., astronomy, chemistry, geology, oceanography, physical science, physics; (5) psychology.
Group C: Social sciences. This group includes social science courses only in the following areas: (1) Afro-American Studies; (2) anthropology; (3) economics; (4) family studies and consumer sciences; (5) geography; (6) health science and safety; (7) history; (8) Mexican-American Studies; (9) political science; (10) social welfare; (11) sociology; (12) women's studies.
Group D: Humanities and fine arts (including foreign languages). This group includes the following areas: (1) Afro-American Studies (humanities and fine arts only); (2) art; (3) rama; (4) foreign languages and literudures (humanities and fine arts only); (2) art; (3) German and Russian, Spanish and Portuguese; (5) humanities; (6) Mexican-American Studies (humanities and fine arts only); (7) music; (8) philosophy; (9) religious studies; (10) women's studies (humanities and fine arts only).
Preparation for the major.
Group A: Fifteen units of approved course work to include: a three-unit course in Grese course work to include: a three-unit course in ormpores anit course in linguistics; and three additional units of course work selected from the areas listed under Group A above.
Group B: Fifteen units of approved course work to include: six units of mathematics"; three or more units of a life science ; three or more units of a physical science; and additional units from the areas listed under Group B for a minimum of fifteen units.
Group C: Fifteen units of approved course work to include: course work to satisfy "American Institutions"...requirements; and additional units of course work selected from the areas under Group C.
Group.D. Fifteen units of approved course work to include: three units of art; three units of music.... ; three units selected from drama, humanities, philosophy or religious studies; and additional units of course work selected from the areas under Group D.
Major. A minimum of 30 upper division units to include: a 15 -unit concentration in one of the four groups; the additional 15 units distributed among the three remaining groups with no less than three units in each of the groups.
The Liberal Studies Major Option 2 is recommended for students who plan to enter elementary education. It meets all requirements for the multiple subjects/diversified major as specified in the Ryan Bill. Students planning to enter elementary education must consult and secure progu when College to secure program approval.

## Russian Area Studies Major

## With the A.B. Degree in Liberal Arts and Sciences

The major in Russian area studies is offered by the College of Arts and Letters. Dr. Vytas Dukas, Department of German-Russian, is adviser for this major
Preparation for the major. Russian 1, 2, 3, 4, or equivalent. ( 16 units.) Lower division prerequisites for the upper division courses to be taken in the major. (3-9 units.)
Major. A minimum of 30 upper division units to include nine units from at least two departments in the humanities selected from Comparative Literature 125, 126, History $147 \mathrm{~A}-147 \mathrm{~B}$, Humanities 152, 153; nine units from at least two departments in the social ciences selected from Economics 102, 118, Geography 126, 127, Political Science 181, 186; six units in Russian selected from Russian 101A-101B, 102A-102B, $103,104,105$

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## Social Science Major

With the A.B. Degree in Liberal Arts and Sciences
The major in social science is offered by the College of Arts and Letters. Information may be obtained in LE-363A.
Preparation for the major. Mathematics 19 or other statistics course offered by a social science department; a six-unit sequence in each of three of the following fields: (1) anthropology, (2) economics, (3) geography, (4) history, (5) Mexican-American Studies, (6) pollows: Anthropology 1 and 2 . 21 units.) Courses recommended for these sequences are as 8A-8B; Mexican-American Studies 1A-1B, 10 or 20A-20B; Political Science 1 and 2. and Sociology 1 and 10.
Major. Thirty upper division units in the fields listed above to include 15 units in one; six units in each of two others; three more units in one of these or a fourth field Mexican-American Studies is limited to six units selected from 100, 101, 102, 103, 104, 105, 111, 121, 122A-122B, 180, 183, 186.
Courses covering four fields must be completed. If the requirement for the fourth field號

Social Science M
With the A.B. Degree in Liberal Arts and Sciences
The adviser for this emphasis is Dr. David H. Johns, Department of Political Science. Emphasis in Africa and the Middle East
Preparation for the major. History 4A-4B, Humanities 57 and/or 58, and three to six units Geography 1, 2; and Humanities 30 , 31 arative Literature 52A, 52B, 80A; Economics 1A, 1B the upper division required and recommended courses listed below have a number of prerequisites, but these prerequisites do not constitute requirements per se for the completion of the major.
Major. A minimum of 30 upper division units, selected with the consent of the adviser to include at least 15 units in anthropology, economics, geography, history, political science or religious studies, or a combination of 15 units in art, comparative literature and religious studies. Required courses: Anthropology 176 or 184 or 185. Econive literature and religious or 130 ; six units from History 156A, 156B, 157, 158A and 158B; Economics 119; Geography 125 or 192. In addition the following courses are recommended: Anthropology 152, 153, 154, 156 164; Art 152B, 158; Comparative Literature 175; Economics 189, 195; History 123, 155A-155B
83A; Political Science 176, 191; Religious Studies 114, 115, 116
Foreign Language: Arabic 1, 2, 103 and 104, or Hebrew 1, 2 and 3 or French 1, 2 and 3 or Portuguese 1, 2, and 3. An equivalent level of competency in any other lanch 1,2 and 3 be determined by examination Africa and the Middle East is acceptable. Competency will e determined by examination.
in Jewish Studies.

## Social Science Major

With the A.B. Degree in Liberal Arts and Sciences
The adviser for this emphasis is Dr. Warren A. Johnson, Department of Geography

## Preparation for thphasis in Environment

Tree of the following fields: (1) Biology 1 and 2, Chemistry 7A; a six-unit sequence in each of (5) political science, and (6) sociology. (25 units.) Cours, (3) geography, (4) history, sequences are as follows: Anthropology 1 and 2, Economics 1A and 1B Gended for these History 4A-4B or 8A-8B, Political Science 1 and 2 commended courses include: Chemistry 7B, Geology 2 , Additiona
Major. A minimum of 30 upper division $\mathbf{B}$, Geology 2,3, and 4.
138 or 173, Geography 170 or 199, Political Science 119 or 12 units selected from Economics Anthropology 156, 158, 159,179; Economics 100A, 100B, 105, 131, and 18 units selected from 150, 157. Recommended: B6; History 185; Political Science 116, 117, 118, 125; Sociology 140, 150, 157. Recommended: Biology 115 or 165.


## Graduate Division

## Graduate Division

## Organization and Administration

All graduate work leading to advanced degrees is under the jurisdiction of the Graduate Division and responsibility for all graduate curricula is delegated to a Graduate Council under the chairmanship of the Dean of the Graduate Division who also serves as the administrative officer of the Graduate Division.
Under the provisions of Section 41001 of the Administrative Code (see the section of this catalog on Admissions), the Graduate Council, through the Graduate Division Office, admits all students to authorized graduate degree curricula, determines their eligibility to continue in such curricula, and, in the cases of unsatisfactory performance, requires students to withdraw from all graduate curricula.
The Graduate Council is the appropriate university authority for the administration of all matters related to graduate degree curricula, requirements for which are specified in Section 40504 of the California Administrative Code.

## Association Membership

San Diego State University is a member of the Western Association of Graduate Schools and the Council of Graduate Schools in the United States.

## Degrees Offered

All master's degrees are conferred by the Trustees of The California State University and Colleges upon recommendation of the faculty of San Diego State University. These degrees are designed to provide instruction for graduate students in the liberal arts and sciences, in applied fields, and in the professions, including the teaching profession.
California and the Board of Trustees jointly by the Board of Regents of the University of California and the Board of Trustees of The California State University and Colleges in the names of San Diego State University and the cooperating campus of the University of California.

## Doctor of Philosophy

The Doctor of Philosophy degree in Chemistry is offered jointly with the University of The Doctor of Phil
California, Riverside. The Doctor of Phil
California, Berkeley.

## Master of Arts

The Master of Arts degree is offered in the following fields:
$\begin{array}{ll}\text { American studies } & \text { Anthropology } \\ \text { Mathematics }\end{array}$
Art
Asian studies
Biology
Chemistry
Drama
Economics
Education
English
French
Geography
German
Health science
History
Industrial arts
Latin American studies

Mathematics
Music
Physical ed
Physical education
Physical sciences
Physics
Political science
Psychology
Radio and television
Russian
Social science
Sociology
Spanish
Speech communication
Speech pathology

## Master of Science

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

Aerospace engineering

## Astronomy <br> Biology

Business administration
Chemistry
Compl engineering
Computer science
Counseling
administration
Electrical engineering

Geology
Home economics
Mass communications
Mathematics
Mechanical engineering
Microbiology
Physics
Psychology
Radiological physics
Social work
Social wor
Statistics

## Master of Business Administration <br> Master of City Planning <br> Master of Public Administration

## Master of Social Work

Admission Procedures

## Matriculation

Any student, holding the baccalaureate degree and wishing to be admitted to San Diego State University for postgraduate study, must apply for admission to the university at the Admissions Office and comply with the regulations of the Admissions Office as stated in the section of this catalog on Admissions.

## Unclassified Graduate Standing

Acceptable graduate students are admitted to the university by the Admissions Office with unclassified graduate standing. Admission to the university with unclassified graduate standing does not constitute admission to graduate degree curricula in the Graduate Division.

## Classified Standing in the Graduate Division

A student who has been admitted to the university by the Admissions Office with unclassified graduate standing who desires to earn an advanced degree must file an anclassified graduate standing who desires to earn an advanced degree must file an Division. If the applicant meets the requirements of Section 41001 of the California Administrative Code, he will be admitted to the graduate curriculum of his choice and to the Graduate Division with classified graduate standing. The Graduate Division Office notifies the Registrar to change the status of the student from unclassified to classified standing.

## Failure to Meet Admission Requirements

If the applicant fails to meet the requirements for classified graduate standing, he may remain in the university with unclassified graduate standing and enroll in any undergraduate course for which he has the necessary prerequisites, provided facilities and competent instructors are available
Unclassified graduate students are not eligible to enroll in 200 -numbered courses except with permission of the instructor and the Dean of the Graduate Division. All credit earned by an unclassified graduate student is subject to evaluation as to its acceptance in satisfaction r's degree requirements.
ndergraduate students are not permitted to enroll in 200 -numbered courses, except under special circumstances (see section "Concurrent Master's Degree Credit").

## Withdrawal and Reinstatement

A graduate student who has begun work on a graduate degree and has taken no courses within the last calendar year may be considered to have withdrawn from the degree curriculum. If he wishes to resume his work, he may be required to file an application for readmission to the Graduate Division. He may then be required to comply with regulations and requirements in effect at the time of readmission.
Any student who was not in attendance or on official approved leave of absence during wishes to enroll must apply for readmissio Any graduate
Council may be rudent whose performance is judged to be unsatisfactory by the Graduate Diego State University.

## Advanced Degree Curricula

Requirements for the Doctor of Philosophy
The requirements for the Doctor of Philosophy degree are stated fully in the Graduate
Bulletin.

## Requirements for Master's Degree

The minimum requirements for the Master of Arts degree, the Master of Science degree the Master of Business Administration degree, Master of City Planning degree, Master of Board of Trustees of The California State University and Colleges. Students seeking to benter a curriculum in the Graduate Division leading to these degrees must comply with the admissions procedures described above, be advanced to candidacy, and meet the scholastic professional and personal standards, including the passing of examinations, required in the The Mate Division.
The Master of Arts, Master of Science, and the Master of Public Administration degrees require 30 semester units of graduate work; the Master of Business Administration degree requires between 30 and 60 units (depending upon the student's background); the Master 56 units of graduate work. At least 30 units of wores are two-year degrees and each requires State University for the M.C.P. dt 30 units of work must be earned in residence at San Diego All acceptable credit must have been and at least 24 units for all other master's degrees. requirements for the degree are completed. A wrade point aven years of the date when all five-point scale) or better must be earned in (1) all programerage of 3.0 (grade of B on a required for the removal of undergraduate deficiencies, including courses accepted for transfer credit and courses taken concurrently courses taken at San to courses accepted for transfer, and (3) all 100-, 200-or 300-numbered courses listed on the Diego State University concurrently with or subsequently to the earliest course

## Graduate Bulletin

Complete details on the operation and administration of these requirements, together With other administrative regulations on graduate study as determined by the Graduate Council, will be found in the Graduate Bulletin, which is available at the Graduate Division
Office.


# Nondegree Curricula 

## Preprofessional Programs

## Programs Available

Preprofessional curricula, which usually require three or four years of collegiate work, are
offered. Curricula outlines of preprofessional pages, meet the typical requirementional study, which are presented en the work, are expecting to complete their professional fraininission to professional schools. Student suggested outlines of study to meet the require at other institutions should modify the choice. Curricula outlines are presented for predental of the professional schools of their Students planning to enter other professional fields, such prelegal, and premedical programs. pharmacy, veterinary science, may obtain assistance from agriculture, forestry, optometry, propriate preprofessional courses of study.

## Predental Curriculum

The preprofessional programs described here may all be pursued in conjunction with a interested in the dental may serve to fulfill some graduation requirelves constitute a requirements the dental profession should inform graduation requirements. A student requirements of the specific dental college he hopes to himself regarding the entrance advisers on campor additional guidance, the student is invited choose courses specified The curriculupus.
Students ordin for dental hygiene is
in one and a minily elect to concentrate in che the same as for predentistry.
Many dental schools reques.
by a predental council rather that letters of recommendation for applicants be prepared campus and all western dental schools have bividual professors. Such a council exists on this Obtain the it is essential that each applicant provinformed. In order to obtain letters trom must be submitted instructions from the provide the council with certain information application is being to the Biology Department office Department of Biology. This form Recommeng made.
Recommended Course of Study for Predental Curriculum course, Health Science and Safd 2, Chemistry 1A-1B, English 5, English 6 or other litum Speech Communication 3. Sophomore year: Biond 4, physical education activities, and 1, social science (Amsical education activities, Physics $1 A-1 \mathrm{~B}$, Chemistry 4 or 5 , and 12 nd local government Biology 140, 141, 156, Chemistry 12 . Recommended for the courses 10 , Chemistry 112, Psychology 106, 107, and various year: Art 119A,

## Prelegal Curriculum

## See the first paragraph under Predental.

flexibility in for a broad and liberal ed to meet the requirements of standard American usually be in the individual programs. Theren, while at the same time providing American with the advicated for the prolegal student are two patterns of concentrationg desirable and the adviser, to fit best the interests $n$, either of which may concentration which will and political major pattern. Subject to of the student. These are the majed in consultation concentration science should receive first ividual variation, the fields major-minor pattern for possiblion as being the most effective possible activities in the field of business. 2, and a year divion: Business Administration Study for Prelegal Curriculum will plan his course with the coupper division: In the junics 1A-1B, Political Science 1 and plans to work, but keeping counsel of his adviser in junior and senior years the student admission to schools of law Th in mind the entrance reqms of the field of law in which he by all prelegal students in the recommended list below sequirements and examinations for in accordance with student needs.



## School of Business Administration

## Departmental Organization

Five departments comprise the School of Business Administration: Accounting, Finance, Management, Marketing, and Information Systems. Each department offers its separate majors and minors.

## Accreditation

The School is a member of the American Assembly of Collegiate Schools of Business.

## Bureau of Business and Economic Research

The Bureau of Business and Economic Research is an organized research activity serving the needs of the School. Its chief purpose is to facilitate research by facuity and students in the areas of economics and business. For further information, see "Research Bureaus" in the catalog section, Introducing San Diego State University

## Courses in Business Administration

Courses in business administration are listed and described in the section of this catalog on Announcement of Courses.

## The Master's Degree

The School of Business Administration offers the Master of Business Administration degree (a 30-60 unit program) and the Master of Science degree in business administration. Both degrees offer concentrations in ten areas. For further information, refer to the Graduate

Departmental Majors and Minors
The following listed majors and minors are offered by the five departments in the School
of Business Administration.
DEPARTMENT OF ACCOUNTING
Major in Accounting with the B.S. degree
Minor in Accounting
DEPARTMENT OF FINANCE
Majors with the B.S. degree in the following:
Finance
Insurance
Real Estate
Minors in the following:
Finance
Finance
Real Estate
DEPARTMENT OF MARKETING
Majors in Marketing with the B.S. degree
Minor in Marketing
DEPARTMENT OF INFORMATION SYSTEMS
Major in Information Systems with the B.S. degree
Minor in Information Systems
OF MANAGEMENT
Minors in the following.
Business Management
Employee Relations
Production and Operations Management

## Graduation Requirements

The student must complete the requirements listed below for the bachelor's degree Refer to the section of this catalog on Graduation Requirements for specific information.)

1. A minimum of 128 semester units for the B.S. degree. No less than 40 percent of these units must be in business and economics, and no less than 40 percent must be in courses outside of the areas of business administration and economics.
2. At least 24 units earned in residence, half of which must be completed among the last 20 units counted toward the degree.
3. A scholastic grade point average of 2.0 (grade of C on a five-point scale) or better in (a) all units attempted, (b) all units in the major, and (c) all units attempted at this college.
4. At least 36 upper division units for the B.S. degree.
5. One Major.
6. Satisfactory completion of competency tests in mathematics, speech and writing, or completion of appropriate courses designated in lieu thereof
7. All regulations established by the college.
8. American institutions, to include competence in American history, institutions and ideals; U.S. Constitution; and California state and local government.
9. Forty units in general education exclusive of courses in the major.
10. Application for graduation.

## The Major

Each major in business administration consists of a pattern of prescribed upper division courses. The minimum number of units required is stated in the description of each major Also required as preparation for the major are the lower division prerequisite courses Some majors require additional courses in a prescribed pattern in areas other than the majo Business administration majors are not required to complete a minor for the degree For information on general education and other degree requirements, refer to the section of this catalog on Graduation Requirements.
Any student majoring in Business Administration must make sure that 40 percent of the units counting toward graduation are taken outside of the fields of business and economics.

## Majors

## Accounting Major

## With the B.S. Degree in Business Administration

Preparation for the major. Business Administration 1A-1B, 30A, 80, 83; Economics 1A and 1 B, Economics 2 or Mathematics 19, and Mathematics 20 or 50 . ( $25-27$ units.) Students who expect to use any course in business administration or economics to meet general education equirements must complete compensating units in courses outside these areas.
Major. Thirty-nine upper division units to include Business Administration 100, 102, 106 $126,132,150,190$ or 191; and Economics 100A or 100B; and 12 units selected from the ollowing: Business Administration 101, 107, 108, 112, 114, 115, 118,119 . and/or one course and only one course each from finance, information systems, In
In addition to units in general education and to upper division units in the major, nine upper division elective units outside of business administration and economics are required Lower division courses satisfy this requirement when all nine units are in one foreign

## Finance Major

## With the B.S. Degree in Business Administration

Preparation for the major. Business Administration 1A-1B, 30A, 80, 83; Economics 1A and 1B; Mathematics 20 or 50 ; and Economics 2 or Mathematics 19. (25-27 units.) Students who expect to use any course in business administration or economics to meet general education requirements must complete compensating units in courses outside these areas.
Major. Forty upper division units to include Business Administration 100, 126, 127, 128A, $130,132,150,190$ or 191; Economics $100 \mathrm{~A}, 100 \mathrm{~B}$, and 135; at least three units selected from Business Administration 129 and 197; and three units of electives selected from business administration and economics courses with consent of the adviser. Fifty-two units ( 12 of which must be upper division) must be taken outside business administration and economics.

## Information Systems Major

## With the B.S. Degree in Business Administration

Preparation for the major. Business Administration 1A-1B, 30A, 80, 83, and 84; Economics 1 A and 1B; Economics 2 or Mathematics 19; Mathematics 20 or 50 . (28-30 units.) Students who expect to use Economics 1A to meet general education requirements must complete compensating units in courses outside business administration and economics.
Major. A minimum of 34 upper division units to include Business Administration 103, 126 $132,135,150,184,185,186,187,188$, and 190 ; six units of electives selected from Busines Administration 128A, 131, 134, 140, 163, 182, 183, and 194A.
General electives. In addition to the requirements for the major, the student must select 20 units to complete the required total; at least nine of the 20 units must be in upper division courses outside of business administration or economics.

## Insurance Major

With the B.S. Degree in Business Administration
Preparation for the major. Business Administration 1A-1B, 30A-30B, 80, 83; Economics 1A and 1B, Economics 2 or Mathematics 19, and Mathematics 20 or 50 . ( $28-30$ units.) Student education requirements must complete compensating units in courses outside these areas
Major. Thirty-nine upper division units, to include Business Administration 120, 121A, Administration 103 or $106,122,125,127$ or $128 \mathrm{~A}, 131$ or $134,140,151$ selected from Business Economics 135. Fifty-two units (12 of which must be upper division) must be taken outside of business administration and economics.

## Management Major

With the B.S. Degree in Business Administration
The major in management is a flexible program which allows the student to either obtain environment; or Production and Operations Management, or Manas of Human Resources Administration, all three of the following requirements.
(1) Professiona
urriculum Within the Major Field
Preparation for the major. Business Administration 1A-1B, 30A, 80, 83; Economics 1A and 1B; Mathematics 19, and Mathematics 20 or 50 . (25-27 units.)
Major. Business Administration 103, 126, 132, 134, 135, 140, 145, 149, 150, 190 or 191. (31
units.)

## (2) Areas of Concentration Within the Major Field

Select 18 units from one of the areas below. No units taken in the major above may be included in these 18 units.
(a) Business Management: (1) Decision techniques-six units from Business (2) Organization behavio, $138,157,185,186,187,190$ or 191, 192, or Economics 107, and Psychology 105, 121, 123 125 in units from Business Administration 137, 142, 143, 163, Environgy 105, 121, 123, 125, or Sociology 120, 122, 132, or 148, and (3) Organizational Environment-six units from Business Administration 118, 129, 130, 131, 148, 151, 153, 156, 165,
(b) Economics 150, 170, History 175A-175B, Sociology 101, 104.
(b) Human Resources Administration: (1) Six units of Business Administration 142 and (3) Six units from Psychology 105s Administration 122, 137, Economics 150, 152, or 153, and (3) Six units from Psychology 105, 121, 133, 152, 175, Sociology 120, 121.
(c) Production and Operations Management: (1) Six units of Business Administration 136 and either 137 or 138, and (2) Six units from Business Administration 114, 127, 142, 161, 192, 192, Economics 150, and (3) Six units from Business Administration 185, 186, 187, 190 or 1, 192, Economics 107, 141, 171.
(d) Management Science: (1) Six units of Business Administration 190 or 191, plus 192, and (2) Six units from Business Administration 114, 136, 138, 157, 185, 186, 187, and (3) Six units from Economics 107, 141, Mathematics 134, 136, 138, 157, 185, 186, 187, and (3) Six units from Economics 107, 141, Mathematics 134, 135A-135B, 141, 143.

Employee relations: Nineteen units required, including Economics 1A and 1B, Business Administration 1A-1B, 132, 140, and three units from Business Administration 142, 143, or 145. Finance: Sixteen units required, including Economics 1A, 1B and 135, and Business Administration 132.
Information systems: Nineteen units required, including Business Administration 83, 84, 185, 186, 187, and Mathematics 20 or 50.

Insurance: Nineteen units required, including Business Administration 30A-30B; 120; 121 Insurance: Nineteen units required, including Business Administration 30 ,
or 124 ; and three additional upper division units in business administration.
Marketing: Nineteen units required, including Economics 1A and 1B, Business Marketing: Nineteen units required, including Economics 1A and 1B, Busin
Administration 150, and six additional upper division units in business administration. Administration 150, and six additional upper division units in business administration.
Production and operations management: Nineteen units required, including Economi
Production and operations management: Nineteen units required, including Economics
1A and 1B, Business Administration $1 \mathrm{~A}-1 \mathrm{~B}, 132,135$, and three units from Business 1A and 1B, Business Administ
Administration 136, 137, or 138 .
Administration 136, 137, or 138.
Real estate: Nineteen units required, including Business Administration 30A-30B, 170, and six additional upper division units in business administration.

## Business Major

For the Single Subject Teaching Credential
All candidates for the Single Subject teaching credential in business must complete all requirements for the applicable specialization as outlined in this section of the catalog on the School of Education. Students must complete the requirements of a major in one of the five departments within the School of Business Administration. In consultation with the Coordinator of Teacher Education in the School of Business Administration, undergraduate students shall develop programs which fulfill the State credential requirements.

## School of Education

## Accreditation

The School is a member of the American Association of Colleges for Teacher Education. It is fully accredited by the California State Board of Education and the National Council for the Acereditation of Feacher Education.

## Bureau of Educational Evaluation and Research

The Bureau of Educational Evaluation and Research is an organized service and research activity of the School of Education. Its chief purposes are to facilitate research by faculty and students in the area of education and to provide services to schools and colleges in the field of education. For further information, see "Research Bureaus" in the catalog section, Special

## Courses in Education

Courses in education are described in the section of this catalog on Courses and Curricula

## Degrees

## Master's Degree

The Master of Arts degree in education with concentrations in 10 areas and a Master of Science degree in counseling are offered. For further information, refer to the Graduate Bulletin and to the section of this catalog on the Graduate Division.

## Bachelor's Degree

Graduation Requirements. Requirements for graduation with a bachelor's degree are outlined in the section of this catalog on Graduation Requirements.
Bachelor of Vocational Education Degree. The bachelor of vocational education degree is currently offered to vocational teachers of California who are recommended by the Board of Examiners for Vocational Education

## New Credentials

Assembly Bill 122 (Ryan Bill) has changed the credential structure in the State of California. Students who do not complete credential requirements by September 14, 1974 or who are not on a lock list as of December 1, 1973, must meet the requirements of the new in the offices of the several departments of the School of Education credentials is available credential (elementary), and the single subject credential (secondary) The multiple subjects by the Commission for Teacher Preparation and Licensing. The following cren approved a developmental stage.
Specialist Credentials*
Early Childhood
Reading
Bilingual/Cross-Cultur
Special Education
Services Credentials
Administrative Services
Health Services Credential
Library
Pupil Personnel Services

[^1]
## 92 / School of Education

## Credentials

Anyone wishing to teach or provide other types of professional service in the public schools of Caiifornia must hold a valid teaching/service credential. Assembly Bill 122 has markedly programs have been defined (see below). Others are in the state of development and/or adoption. Students are advised to consult with the department in which they are interested to obtain advising that is current.

## List of Credentials School Service Authorized

1. Multiple subjects credential

Teach in any self-contained classroom kindergarte through twelfth grade.
2. Single subject credential ............. Teach single subject area in grades K through 12

## Fisher Credentials

List of Credentials
School Service Authorized
(1) A standard teaching credential
with specialization in.
(a) Elementary teaching .......... Teach kindergarten and grades one through nine
(b) Secondary teaching ........... Teach major and minor in grades seven through

The following applies to both (a) and (b).
By completing specialized preparation, additional authorization may be earned in: (1) Specialization in Teaching of Exceptional Children, authorizing teaching in the area of tion in Librarianship, authorizing service as one through fourteen; and (2) specializa kindergarten and grades one through fourteen. (3) Specialization in Area of Deaf ind Severely Hard of Hearing, authorizing teaching in the area of deaf and severely hard of hearing in kindergarten and grades one through fourteen.
(2) The Community College

Instructor Credential ............ credential

Teach in grades thirteen and fourteen, any course in an occupational or subject matter area which appears on the credential document
4) A standard designated services
each trade or technical courses at grade levels specified on the credential
credential
5) A standard supervision
credential

(6) A standard credential
administration
Perform pupil personnel services or health services as specified on the credential
Serve as supervisor, consultant, or other intermediate administrative position including school principal

Serve as a district superintendent or in intermediate level administrative positions, including those services authorized by the standard supervision
(7) A restricted credential $\qquad$ Serve as a speech and hearing specialist at all grade levels.

## Admission to Teacher Education Application for Admission

Students who plan to enroll in a credential program must make application for admission
 Credential through the Secondary Education Department.

[^2]demonstrated ability to communicate effectively verbally and in writing. 5. Successful clearance of Health Examination
6. Formal application to the program by the student in the Education 100A class.
7. Absence of criminal conviction which would preclude credentialing.
New Students Who Seek to Complete a Credential

Teachers with a provisional credential or partial fulfillment of requirements credential who are teaching and working concurrently toward a regular credential may have a program
designed to fit their background. Evaluation of college credit completed to date and arrangements for programming should be made through the Admissions Office of the School of Education.

Advanced Standing in Teacher Education
A student transferring into San Diego State University with advanced standing must complete a minimum of six units of professional education work in residence at this university before recommendation for a credential, regardless of the extent of education work already completed elsewhere.

Evaluation of Credits
After an interval of five years, courses in education are reevaluated and subject to reduction in credit, in light of new requirements and changes in educational procedures. All courses taken either at this university or elsewhere must be approved by an official adviser in order to be credited toward meeting credential requirements or pattern requirements for

## Multiple Subjects Teaching Credential

## Multiple Subjects (Elementary) - Clear

Persons interested in teaching in the elementary school will typically pursue the multiple subjects credential which authorizes the holder to teach in any self-contained classroom, classrooms in which one teacher is responsible for all the subjects commonly found in the elementary schools. Attainment of this credential requires:

1. A bachelor's degree (or higher) with any major other than education
2. Completion of a fifth year of study ( 30 units of upper division or graduate units).
3. Completion of an approved program of professional education including 15 units of Education for further information about the appertary
4. Passage of subject matter examination(s) or wiver progr
5. Ksage 1 . or waiver thereof
6. Three years of successful teaching reading

Multiple Subjects (Elementary) - Preliminary
all the requirements listed above except for completiong credential if the applicant has met years of successful teaching above except for completion of the fifth year of study and/or three yese requirements would be eligible. Thus, a person whose program allows him to meet inishes his four-year college program for a preliminary credential at the same time he must complete the 30 units (the fifth year of study) next five years, however, such persons credential.

## Description of Interdepartmental Majors for Elementary Teaching

## Liberal Studies Major

With the A.B. Degree in Applied Arts and Sciences and in Liberal Arts and Sciences
The liberal studies major offers a general type of education leading to objectives not otherwise provided in the regular programs of the university. Students electing this major
must declare it prior to satisfactory completion of 90 semester Option 1. This to satisfactory completion of 90 semester units.
Subjects credential. Information regarding this aption but is not acceptable for the Multiple Programs section of this catalog. Option 2. Liberal Studieg
The student taking this option selects A.B. Degree in Applied Arts and Sciences

subjects groups of knowledge identified as follows (not more than 30 units may be taken for credit toward this major in any one department or area):
Group A: English (including courses in grammar, literature, composition) and speech This group includes the following areas: (1) Afro-American Studies (English and speech only); (2) comparative literature; (3) English, i.e., American literature, British literature and creative writing; (4) journalism; (5) linguistics; (6) Mexican-American Studies (English and speech only); (7) speech communication, plus (8) speech pathology and audiology. the following areas: (1) geographyce (physical sciences or life sciences). This group includes microbiology, zoology; (3) mathematics; (4) the physical sciences sciences, i.e., biology, botany geology, oceanography, physical science, physics (5) psychces, i.e., astronomy, chemistry geology, oceanography, physical science, physics; (5) psychology.
areas: (1) Afro-American Studies; (2) anthropology; (3) econourses only in the following consumer sciences; (5) geography; (6) health science and safty (7) family studies and Mexican-American Studies; (9) political science; (10) social welfarety; (11) ${ }^{(7)}$ history; (8) women's studies.
following areas: (1) Afro-American Studies (humereign languages). This group includes the following areas: (1) Afro-American Studies (humanities and fine arts only); (2) art (3) drama; (4) foreign languages and literatures, i.e., classical and oriental, French and Italian German and Russian, Spanish and Portuguese; (
Studies (humanities and fine arts only); (7) music; (8) philosities; (6) Mexican-American tudies, (humanities and fine arts only); (7) music; (8) philosophy; (9) religious studies; (10)
women's studies (humanities and fine arts only).
Preparation for the major. ${ }^{\circ}$
Preparation for
Group A: Fifteen units of approved course work to include: a three-unit course in composition; a three-unit course in literature; a three-unit course in speech communication; a three-unit course in linguistics; and three additional units of course work selected from the Group B. Fifter units above
Group B: Fifteen units of approved course work to include: six units of mathematics*: additional units from the areas listed under Group B for a mins of a physical science; and Group C: Fifteen units of approved course work to include: course work units. "American Institutions". requirements; and additional units of course work selected from the areas under Group C.
Group.... Fifteen units of approved course work to include: three units of art; three units of music ; three units selected from drama, humanities, philosophy or religious studies; and additional units of course work selected from the areas under Group D.
Major. A minimum of 30 upper division units to include: a 15 -unit concentration in one of the four groups; the additional 15 units distributed among the three remaining groups with no less than three units in each of the groups.
The Liberal Studies Major Option 2 is recommended for students who plan to enter
elementary education. It meets all requirements for the elementary education. meets all requirements for the multiple subjects/diversified major as specined secure program approval from an planning to enter elementary education must consult

## Single Subject Teaching Credential

Single Subject (Secondary) - Clear
Persons interested in teaching in the secondary school will typically pursue the single subject credential which authorizes the holder to teach K-12 in any of the subjects indicated
below. Attainment of this credential requires: elow. Attainment of this credential requires:

1. A bachelor's degree (or higher) with any major other than education.
2. Completion of a fifth year of study ( 30 units of upper division or graduate units)
3. Completion of an approved program of professional education. The required courses are Education 100A, 100B, $100 \mathrm{C}, 100 \mathrm{D}, 100 \mathrm{E}, 100 \mathrm{~F}, 100 \mathrm{G}, 100 \mathrm{H}$
4. Passage of subject matter examination(s) or waiver thereof.
5. Knowledge of methods of teaching reading.
6. Three years of successful teaching.

- Includes all General Education requirements except physical education. (Students who plan to enter elementary swop plan to enter elementary
 ..... Health science and safety is required for students who plan to enter elementary education.


## Single Subject (Secondary) - Preliminary

An applicant may be granted a preliminary teaching credential if all the requirements listed above have been met excepp for completion of the fifth year of study and/or three years of successful teaching experience. Thus, a person whore cedential at the same time he finishes his four-year college program.

Acceptable Single Subject Areas

## Art Business <br> English <br> Foreign Languages <br> Government <br> History

Home Economics
Industrial Arts
Life Sciences
Mathematics
Music
Physical Education
Physical Science
Social Sciences

## Description of Interdepartmental Waiver Programs For Single Subject Teaching Credential

Physical Sciences Major
For Secondary Teaching
This major is in the process of being revised. For further information contact the Physical Sciences Department.

## Social Sciences Major

For Secondary Teaching
This major is in the process of being revised. For further information contact Ann Cottrell, Department of Sociology.

## The Community College Instructor Credential

Specific Requirements

1. An associate degree in which the student can establish four years of occupational experience in a subject matter area plus 12 units in designated courses on the community college.
2. A baccalaureate degree in which the student can establish two years of occupational experience and a major or minor in a subject matter area related to this occupational experience plus six units in designated courses on the community college
3. A master's degree in a subject matter area designated in Title 5, Section 5, \#52210 (subjects commonly taught at a community college).

Baccalaureate Degree Candidates
Education 156, 157, 158 and 159 are offered to students who have been recommended by the following departments: Industrial Studies, Recreation, Business Administration, Family Studies and Consumer Sciences, Criminal Justice Administration, Health Science and Safety, Microbiology, Nursing, Public Administration and Urban Studies, Social Welfare, and Telecommunications and Film. Students may also enroll if they presently hold a partial Education in a Californianal area or obtain an endorsement by the Dean of Occupational Programs Coordinator is recommended Master's
No formal courses in education are required under the current interpretation of the Education Code. The program is elective and selective. It is strongly suggested, however, that graduate students enroll in the professional courses in teacher education in order to enhance employment possibilities as most community colleges require some professional preparation and/or experience. Students desiring further information are urged to consult

the Higher Education Programs Coordinator, Room 128, Education Building. Admission to Education 316 is based upon selection by the Community College Admissions Committee Most departments on the San Diego State University campus have developed programs permitting graduate students to obtain the master's degree and enroll in the education courses concurrently in as little as one year of full-time study. The courses in education are typically offered in the summer session and after three o'clock in regular semesters.

The following courses are suggested to enhance employment in the community college Education 201 The Community College (3)
Education 223 Educational Psychology: Community College (2)
Education 251 Instructional Methods and Materials Community College (2)
Education 316 Directed Teaching (4)
assignment.
Teacher assistants or others now teaching in secondary school who cannot enroll in the student teaching sequence are urged to enroll in Education 209, Workshop in Community
College Education (2-6).

## Bachelor of Vocational Education Degree

This degree is available only to vocational teachers in either the secondary schools or the community colleges who are recommended by the Board of Examiners for Vocational Education. The requirements are the same as those for the A.B. in applied arts and sciences. The specific program to be followed is to be selected with the approval of the Dean of the School of Education after obtaining Board of Examiners approval.

## School of Engineering

## Accreditation

The undergraduate curriculum in Engineering, with options in aerospace, civil, electrical and mechanical engineering, is accredited by the Engineers' Council for Professional Development.

## Courses in Engineering

The School of Engineering offers courses at the undergraduate and graduate levels. These individual courses are described in the section of this catalog on Announcement of Courses At the undergraduate level, the School prescribes certain patterns of its courses, combined with those of other academic divisions of the university, as a program of 132 semester units leading to the degree, Bachelor of Science in Engineering. This program is described
detail below. At the graduate level, the School offers the Master of Science degree in specific detail below. At the graduate
major fields of engineering.

## Graduate Program

The Master of Science degree is offered in aerospace, civil, electrical and mechanica engineering. For further information, refer to the Graduate Bulletin and to the section in this catalog on the Graduate Division.

## Undergraduate Program

The objective of the engineering program at San Diego State University is to provide the intellectual and physical environment best calculated to encourage students to develop their capacities toward a successful career in the profession of engineering. The graduate of this program is able to assume personal responsibility for the development and application of engineering knowledge with wisdom and judgment for the benefit of mankind. He is qualified to take the Engineer-in-Training examination as a first step to professional registration, to enter industry at the junior engineer level, or to continue his forma education at the graduate level. Because the engineer's work is predominantly intellectua and varied, and not of a routine mental or physical character, this program places emphasis the engineering sciences of broad continuing study of the sociohumanistic facets of our civilization, because the engineering graduate must expect to find his best expression as a leader of men, conscious of the socia and economic implications of his decisions.

Although the profession of engineering presents in practice a variety of specialties, the undergraduate student confines his attention during the first two years of the four-year program to a common pattern of course work in fundamentals. During his junior and senior years he may give outlet to his interest in a broad field of engineering by electing course work in aerospace, civil, electrical or mechanical engineering. Even here, during this upper division work, the student is involved with his fellows in the study of a common core of the engineering sciences; these courses, together with those elected in a specialty field, are taught with an emphasis on universal application and cross-fertilization of thought.

## Requirements for the B.S. Degree in Engineering <br> Graduation Requirements

1. A minimum of 132 semester units for the B.S. degree in engineering
2. At least 24 units earned in residence, half of which must be completed among the last 20 units counted toward the degree.
3. A scholastic grade point average of 2.0 (grade of C on a five-point scale) or better in (a) all units attempted, (b) all units in the major, and (c) all units attempted at this university.
4. At least 36 upper division units. (However, a typical program usually consists of at least 53 upper division units.)
5. A major in engineering as prescribed by the School
6. Satisfactory completion of competency tests in mathematics, speech, and writing, or
completion of appropriate courses designated in liematics, speech, and writing, or
7. All regulations established by the university.
8. American institutions, to include competence in American history, institutions and ideals; U.S. Constitution; and California state and local government.
9. Forty units in general education courses in addition to the major, distributed as prescribed in the section of this catalog on Graduation Requirements.
10. Application for graduation.

## Major in Engineering

The major consists of 53 upper division units in a prescribed pattern. The program of study for the first two years is the same for all students in the school; thereafter there is diferentiation according to the student's selected field of specialization. The requirements are as follows:

Freshman Ye
Fall Semester
Freshman Yea
Chem. 1A, Genera
Units Spring Semester

Engr. 5, Intro, to Engineering..............

P.E. Activity ...

Math. 51, Calc, and Engrs. Math. 51 , Calc. and Linear Alg......
Engr. 1 or $20 .$.
Engr. 30, Engr. Meas. Anal.
Engr. 40, Engr. Prob. An
P.E. Activity
$\overline{16}$

## Fall Semester

Sophomore Year
Units
Math. 52, Multivariable Calc
Phys. 4E, Principles.
Engr. 50A, Engr. Mech. I
Engr. 25, Engr. Materi

American Institutions
Spring Semester
Phys. 4C Principle Engr. 50B, Engr. Mech. II Engr. 60, Electric Circuits Speech Communication 3. American Institutions Free Elective.

NOTE: Community college students who anticipate transferring to this int engineering are urged to remain at the community college to comp to this institution in requirements in chemistry, engineering, mathematics and physics insofar as ther division are offered by the community college in question.


## Upper Division Requirements

The program of study for the last two years embraces the fundamental engineering sciences and their application to specific problems in selected fields of engineering practice together with an opportunity for the student to approach an intellectual maturity in social, economic, ethic and aesthetic thought.
The student must complete (1) the upper division requirements for all students; (2) the requirements of the selected field of specialization in accordance with an approved master plan filed during the first semester of the junior year; and (3) the remaining units of general education.
Recommended patterns in the four fields of specialization are shown below.

## Aerospace Engineering

Each student with the option in Aerospace Engineering includes in his program a sequence of fundamental courses. In addition the student has the opportunity to satisfy his particular areas of interest by selecting a pattern of study indicated in the sequence below as "electives within major." This pattern may include typical aerospace engineering topics, such as aerospace vehicle design, performance, structural analysis, aerodynamics, and propulsion; some elective opportunity is also available in other disciplines at this university. The student's choice of elective courses must be made in consultation with his adviser and year
 year.


Electives within major must be approved as part of the student's master plan. A partial list of courses from which electives may be chosen follows:

Engr. 120B. Structural Analysis II
Engr. 123B. Water Resources Engineering
Engr. 124. Foundation Engineering
Engr. 125. Sanitary Engineering
Engr. 128B. Advanced Surveying and Photogrammetry
Engr. 129. Highway Materials
Engr. 170. Intermediate Engineering Problem Analysis
Engr. 180. Principles of Engineering Economy
Engr. 190A. Civil Engineering Structural Design ................
ist ...... Engr. 196A. Advanced E 3

## Electrical Engineering

All students with the option in Electrical Engineering include in their programs a sequence of courses designed to develop an understanding of the basic principles, laws and methodology of Electrical Engineering. The student, through the proper selection of electives, has the opportunity to develop proficiency in his area of special interest. This pattern of study is indicated in the sequence below as "electives within major" and may be selected from available courses in communications, control systems, microwave circuits, digital systems, power systems and solid state electronics. The student's choice of elective courses must be made in consultation with his adviser and documented by the filing of an approved master plan during the first semester of his junior year

Junior Year
Fall Semester Units
Engr. 100, Elect. Energy
Conversion Lab.....................
Engr. 101, Funds. Engr. Elec Engr. 101L, Electronics Lab Engr. 111, Network Analysis ...... Engr. 187A, Methods of Analysis ... General Education.

Spring Semester
*Engr. 102, Elect. and Mag. Fields or Engr. 176, Log. Des. and Sw. Circ. or Engr. 167\&16/L, Contr. Comp. Lab. Engr. 112, Adv. Network Anal Engr 114L, Electronic Circ. Engr. Elective General Educ General Education

Units


Senior Year

## Fall Semester

Eng 102, Elect. \& Mag. Fields and/or
*Engr. 176 Log. Des. \& Sw. Circ. thin *Electives within major .................... 9-10 Core Elective... Spring Semester

General Education
**Electives within major
*** Core Elective 3 ***Core Laboratory 3
1
3
. Engineering 102 and 176 are required courses.
... One unit of advanced laboratory in the option is required.
... One unit of advanced laboratory in the option is required.
Core electives include: E108 or E110 or E118, E115, E116, and E187B. Core laboratory: E108L or E115L or E116L

The following "electives within major" for areas of special interest are available. It is recommended that courses in more than one area be included to achieve a broad program.

|  | 6th Sem. | 7th Sem. | 8th Sem. |
| :--- | :--- | :--- | :--- |
| Communications <br> and Microwaves | 102 | 135,134, | $133,139,174$, |
|  |  | $134 \mathrm{~L}, 137$ | $139 \mathrm{~L}, 191$ |
| Control Systems | 167 | $113 \mathrm{~L}, 168$ | 169 |
| Digital Systems | 176 | 172,174, | $175,177,178$, |
|  |  | $196 \mathrm{~A}, 170$ | $179 \mathrm{~L}, 188$ |
| Electronics | 102 or 176 | $134,134 \mathrm{~L}, 135$, | 162,175 |
|  |  | $164,172,174$ |  |
| Power Systems | $167,167 \mathrm{~L}$ | 193 | 194 |

## Mechanical Engineering

All students in the Mechanical Engineering option pursue a common program of mechanical engineering fundamentals. In addition the student is provided with the opportunity to select a pattern of study to satisfy his areas of interest. This pattern of study is indicated in the sequence below as "electives within major" and may be selected from available course in controls, energy conversion, gas dynamics, heat transfer, machine design, materials, ther modynamics, vibrations, and other areas. The student's choice of elective courses must be made in consultation with his adviser and documented by the filing of an approved master plan during the first semester of his junior year.


## School of Social Work

## Accreditation

The graduate program of the School is accredited by the Commission on Accreditation of the Council on Social Work Education.

## Program and Objectives

The School of Social Work offers a two-year graduate curriculum leading to the Master of Social Work degree under approval granted by the Trustees of the California State University and Colleges in May, 1963. Students with a bachelor's degree from an accredited colleror university can be considered for admission to this program. The School also offers program of professional education leading to the Master of Science in Social Work degree tudents who have completed the undergraduate social welfare major at San Diego State niversity, or its equivalent, can be considered for admission to this program. The Chancel The objectives of the School of Social Work dee program on February 12, 1970.
The objectives of the School of Social Work at San Diego State University are to equip students with the essential knowledge, philosophy and basic skills for their responsible assist students: to develop a philosophy which recognizes indive objectives, the School wil purpose and goal of social policy; to acquire attitudes which will permit the welfare as the and maintenance of professional relationships and professional standards; to developen discipline and self-awareness essential to the professional social worker; to to develop the competence necessary for professional practice; to acquire knowledge in methods of re search in social work; and to accept responsibility for the continued development of their competence in the practice of social work
For detailed information regarding admission to the School and to its graduate curriculum,
see the Graduate Bulletin.


## Courses and Curricula

## Course Numbering

Courses numbered from 1 to 99 are lower division（freshman or sophomore）courses；those numbered 100 to 199 are upper division（junior or senior）courses；those numbered 200 to 299 are graduate courses；those numbered 300 to 399 are professional education courses to be taken at the graduate level．Courses numbered X－900 X X－999 are those courses offered
exclusively in the extension program to meet the professional needs of specific community exclusively in the extension program to meet the professional needs of specific community groups and are listed in the Extension Bulletin only．These courses are not acceptable on
advanced degree programs．

## The Unit or Credit Hour

In the listing of courses that follow，figures in parentheses indicate the unit value of the course．One unit or credit hour represents 50 minutes of recitation or lecture，together with the required preparation，or three hours of laboratory work or two hours of activities，each week for a semester．

## Prerequisites for Undergraduate Courses

Prerequisites for each course are stated in the course description．
The student should not register for any course for which he has not completed the indicat ed prerequisites．The one exception to this is that he may register for the course withou

## Prerequisites for Graduate Courses

Graduate level（ 200 －numbered）courses require，as general prerequisites，graduate stand ing，and competence in the specified field as indicated by a substantial amount of upper division study in the field or in a closely related field．Unless otherwise specified in the course description，graduate level courses are open to classified graduate students with the permis－ instructor and thuctor．Unclassified graduate students must obtain the permission of the course．Undergraduate students araduate Division before they may enroll in a graduate leve under special circumstances（see section＂Cortted to enroll in 200 －numbered courses except ized enrollment of undergraduate students in 200 －numerer Master＇s Degree Credit＂）．Unauthor f the course is completed before graduate in 200 －numbered courses may be cancelled or will be earned for the course．

## Semester in Which Courses are Offered

In the listing of courses that follows，Roman numeral I indicates a course offered in the indicates a course offered in the indicates a course offered in the spring semester．An＂ S ＂ indicates a course offered in the summer．
Following the course title are designations of credit and the semester in which course is
offered．Examples：
（3）I II
（3－3）II normally beg
$(3-3)$
I，II
（3－3）I，II
ning in the fall semester
Three units．Offered in fall semester
course beginning either semeste．．．．．．．．．．．．．．．．．．．．．．．．．．．．．．． Three units Offered in spring semester

Although the either semester
curses，it reserviversity fully expects to carry out the arrang p to the minves the right to make changes．Classes in arrangements planned in the list of not be offered or may be postponed．Trustees of the State University and Colleges may

## Common Courses

Experimental Topics Courses（99
Any department，school，or college may offer courses under the number 99，Experimental Topics（2－4）under the following conditions：Each course must be approved by the Dean of
the School or College concerned Such a the School or College concerned．Such a course may be offered no more than three years
with the same title and content．Limit of nine which no more than three units．Limit of nine units applicable on a bachelor＇s degree of courses are applicable to the minor or to preparation general education requirements．Such the department．

General College Courses（ 99 or 199）
General College 99 or 199 provides credit of up to six units（total）applicable to the university activity．Tutoring，volunteerience in an educationally significant community or viewing voters，and serving on anteer work－university a social service agency，registering or inter activities．To be eligible to enroll all－university academic committee are examples of suc nd must have a gible to enroll，a student must have completed 12 units of college work
An interested student should，before registration or better
tee or a faculty adviser for an on－campus解 Units thus earned may not apply to a major or and evaluate it for credit purposes．
Honors Courses（166）
These courses are intended for students with superior scholastic records and aptitude．An interested student should direct his inquiries to the chairman of the department concerned Special Study（199）
These courses provide opportunity for individual study of a subject not offered in the regular curriculum．The student does this outside of the classroom．He should seek out an instructor under whose supervision he wishes to work，discuss the topic with him，and come to an understanding on the amount of time he is to devote to the topic，the credit he is earn，and his mode of investigation and report．As with regular courses，the expectation is解 Graduate Studies（300）
This course is intended solely for those graduate students who have had prior registration 300 （ 0 units， $\mathrm{Cr} / \mathrm{NC}$ ） 300 （ 0 units， $\mathrm{Cr} / \mathrm{NC}$ ）in any semester or term following assignment of SP in Course 299 which he expects to use the facilities and resources of the university；also he must be registered in the course when the completed thesis is granted final approval．

## Credit／No Credit Courses

Courses which are offered for credit／no credit are indicated by the symbols $\mathrm{Cr} / \mathrm{NC}$ in the course title．

## Aerospace Studies

 In the College of Professional StudiesFaculty
Professor：Pralle（Chairman）
Assistant Professor：Conner
Offered by the Department
A．F．R．O．T．C．curriculum．
Minor in Aerospace Studies

## A．F．R．O．T．C．Curriculum

The department offers a two－year Air Force Reserve Officers＇Training Corps program designed to develop officers who have broad understanding and high growth potential Cadets participate in dialogues，problem solving，and other planning activities designed to develop leaders and managers．All coursework is done on campus with the exception of the Field Training Unit conducted at an active Air Force base and the Flying Instruction Program conducted at a local civilian flying school．Summer training is required of all Upon completion of the program and all requirements fampus courses．
Upon completion of the program and all requirements for a bachelor＇s degree，cadets are duty．Graduates who are qualified may apply for pilot or navigator training immediative upon graduation．Other graduates go on active duty in a specialty consistent with thely academic major and existing Air Force needs．Graduates may request a delay from their active duty to continue their education in graduate programs．Graduates may apply for air Force sponsored graduate study after entry on active duty．

## Applying for the Program

Any student or prospective student may take the Air Force Officer Qualifying Test and the physical examination during the year preceding entry into the program.
When selected, applicants attend a six-week field training course at an Air Force base in the summer prior to their last two years of college. No further summer training is required. (Note: Veterans who are granted credit for prior military service may enter the program as miors and attend a four-week field training between their junior and senior year.) Field amiliarization. Cadets receive physical training and participate in competitive sports They are trained in the use of weapons, drill and ceremonies, and observe selected Air Force units perform everyday operations of the Air Force

## Flight Instruction and Pay

The Flight Instruction Program (FIP) is offered to qualified senior cadets who have elected to enter pilot training when reporting for active duty. The cost of the flight training is paid by the Air Force. Instruction is divided between class work taught on the campus and
ying training conducted by a civilian contractor in the area.
Cadet retainer pay of $\$ 100$ per month is given for 20 months of the program. Cadets receive approximately $\$ 350$ during the Field Training Unit and are reimbursed for the cost of travel and from the unit.

## Aerospace Studies Minor

The minor in aerospace studies consists of a minimum of 15 units in aerospace studies. Upper Division Courses
31A-131B. Growth and Development of Aerospace Power (3-3)
Three lectures and one hour of leadership laboratory
Semester I: The nature of war; development of air power; Air Force doctrine.
33. Field Training Unitics and space operations; United States space programs.
133. Field Training Unit (3)

Required for advanced cadets; military orientation and flight familiarization. Credit pproval of the Ae Extension Division on basis of individual student application with $141 \mathrm{~A}-141 \mathrm{~B}$. The Aerospace Studies Department Chairman
41A-141B. The Professional Officer (3-3)
Three lectures
Three lectures and one hour of leadership laboratory
Semester I: The professional officer; the Military Justice System; leadership theory and
practice.
Semester II: Management principles and functions: problem solving; briefing for commissioned service,
151. Flight Instruction (2) I

Available only to qualified senior AFROTC students.
Ground school is provided by the Aerospace Studies Department. Flight instruction is ertificate contracted civilian flying school. Students may qualify for the FAA private pilot
. Special Study (1-3) I, II
Individual study. Maximum credit six units.
Prerequisite: Consent of Aerospace Studies Department chairman.

## Afro-American Studies

Faculty
Professor: Chambers
Associate Professor: Meadows
Assistant Professors: Foster, McKinney, Oakes (Chairman), Thomas, Weber
Lecturer: Shelton
Offered by Afro-American Studies
Major in Afro-American Studies with the A.B. degree in liberal arts and sciences.
Minor in Afro-America

## Afro-American Studies Major

With the A.B. Degree in Liberal Arts and Sciences
All candidates for the degree in liberal arts and sciences must complete the graduation requirements listed on page 60 of this catalog. A double major is strongly recommended for A minor is not required with this major
Preparation for the major. Afro-American Studies 20, 30, 32 and 50. (12 units.)
Major. A minimum of 24 upper division units to include Afro-American Studies 120 (six units) and 12 units selected from one of the following areas and six units from the remaining wo areas.
Area I. Afro-American Studies 130, 131, 140, and 145 or 151.
Area II. Afro-American Studies 143, 160, 161, 170 and 180
Foreign language requirement. Twelve units in a foreign language or demonstration of equivalent knowledge in a reading examination administered by the foreign language

## Afro-American Studies Minor

The minor in Afro-American Studies consists of a minimum of 15 units in Afro-American Studies, nine units of which must be in upper division courses.

Lower Division Courses
M. Fundamentals of Computation (0) I

Basic mathematical concepts. A review in arithmetic and its basic operations. Topics nclude set notation, first degree equations in one unknown, factoring, graphs and systems f linear equations
A. Written Communication for the Afro-American (3) I, II

Precise and expository writing based on selections by noted Black personalities in essays,
short stories and selections from longer works.
1B. Intensive Writing (3) I, II
Practice of composition skills utilizing an analytical and critical approach to the ideals and hilosophies of Black American writers.
A. Composition and Reading (3) I

Practice of composition skills utilizing analytical and critical writing and readings, as
exemplified by various nonfictional works of scholarly Black personalities.
B. Composition and Literature (3) I, II

Outstanding works of fictional writings by Black authors.
4. Communications (3) I, II

Practice in speaking, critical listening, reasoning and organizing. Theory and technique of communications used to evaluate the effect they have on the lives of Blacks and other
5. Intermediate Computation (3) I, II

Introduction to basic mathematical concepts such as properties of real numbers, linear and quadratic equations, polynomials, fractions, exponents and logarithmic functions
7A-7B. Afro-American History (3-3) I, II
American history from a Black perspective. (Satisfies American Institution ments.)
8. Afro-American Music (3) I, II

Musical contributions of Black Americans from African Music to today. Musical styles events, significant contributors, and the role of sociocultural variables in the developmen of the music. In addition to African Music, the blues, spirituals-gospel, jazz and art music wil be studied.
20. Economics and Management in Urban Development (3) I, II

Principles of economics and management and their application to urban development. May be used for General Education requirement in social sciences.
30. Ethnicity and Social Competence (3) I, II

An exploration into the concept of Ethnicity as a positive mental health model for Afro-Americans in the process of identity formation and coping strategies. May be used for General Education requirement in social sciences.
31. Cultural Patterns and Identity (3) I, II

An analysis of institutions in society and their socializing effect upon Afro-Americans, and the cultural parameters that guide behavior.
32. Afro-American Life Styles (3) I, II

Afro-American Life Styles in the past, present, and future. Examination of contemporary problems, their roots and their effects on Twentieth Century America.
zom
50. Psychology of Blackness (3) I, II

Facts, principles, and concepts which are basic to understanding human behavior. An analysis of the psychological motivations and behavioral responses of and toward Afro-Americans
0. Afro-American Literature (3) I, II

Modern and contemporary writing of Black-American authors. The sociopolitical impact the literature has had upon the Afro-American culture.
86. Statistics and Research (3) I

Prerequisite: Afro-American Studies 5.
Fundamentals of research and statistics as used for writing reports, papers, books
99. Experimental Topics (2-4)

Refer to the catalog statement on Experimental Topics on page 106. Limit of nine units applicable to a bachelor's degree in courses under this number of which no more than three units may be applicable to general education requirements.

Upper Division Courses
120. Integrative Schemes in Organizational Management (3) I, II

Two lectures and three hours of laboratory.
Prerequisite: Afro-American Studies 20.
An investigation of relevant approaches to administration and organization management in relation to the acquisition of skills for the analysis, development, and management of urban programs. May be repeated with new content. Maximum credit six units.
130. Black Child Development (3) I, II

Attitudes, needs and problems of the Afro-American child with emphasis on new approaches and insights into the development of positive changes for the child's growth and development.
131. The Black Family (3) I, II

Structure and functions of the Black Family in contemporary American Society.
140. Communications and Community Action (3) I, II

Prerequisite: Afro-American Studies 4 (field assignments are a major part of this course) Application of the basic theories of communication through field projects. Study of the men

## 142. Rhetoric of Black America (3) II

Prerequisite: Three units in Afro-American history or communications
played in the history of Blicans from David Walker to the present, the role rhetoric has Black experience.
black experience
143. The Structure of Black English (3) I, II

The history and structure of Black English. Its similarities to and differences from standard 145.
145. Social Psychology (3) I, II

Examination of social problems which Blacks encounter and the ways in which they approach solving them.
151. Black Consumer Psychology (3) I, II

Prerequisite: Afro-American Studies 50
Attitude values and decision making of Black people as consumers. Laws and techniques
of manipulating consumers. ipulating consumers.
Study of how the in Western Literature (3) I, II
the attitudes and images of the Black has been portrayed in Western (white) literature and 161. Afro-American Litere non-Black writers towards Blacks.

Prerequisite: Afro-American Studies 60
Contemporary writings of Studies 60
Afro-American fiction, poetry and drama. 170. Comparative History,

Conceptual framework: Afro-American and African Heritage (3) I, II
history and a comparative study of Afro-American
171. The Black Man in the Twentieth Century (3) I, II

History of social movements and institutions from 1890 to the present
172. Black Protest Before the Civil War (3) I, II

Antislavery movement and the resistance I, II
and the culmination of the movement during Afro-Americans to the institution of slavery 180. Twentieth Century Afr-Am

Historical development of jazz frican Jazz (3) I, II
identify people, discuss musical styles and events, and to the present, based on the ability to
times. times.
181. Urban Music Education (3) I, II

Teaching the "culturally different" music student. Investigation of cultural and environmental conditions that might influence the teaching of music to the "culturally different" music student.
199. Special Study (1-3) I, II

Individual study. Maximum credit six units.
Prerequisite: Consent of instructor

## American Studies

(Refer to the section of this catalog on Interdisciplinary Programs.)

## Anthropology

In the College of Arts and Letters

## Faculty

Emeritus: Rogers
Professors: Anderson, Ezell, Goldkind, Shutler, Watson, Whitne
Associate Professors: Himes, Leach (Chairman), Lippold, Pendleton, Staniford
Assistant Professors: Dubbs, Greenfeld, Moore, Pillsbury, Rohrl, Sonek, Wagner

## Department

Master of Arts degree in anthropology
Major in anthropology with the A.B. degree in liberal arts and sciences.
Minor in anthropology.

## Anthropology Major

With the A.B. Degree in Liberal Arts and Sciences
All candidates for a degree in liberal arts and sciences must complete the graduation requirements listed on page 60 of this catalog
A minor is not required with this major.
Preparation for the major. Anthropology 1 and 2. (Six units.)
Major. A minimum of 24 upper division units in Anthropology to include Anthropology 101, 102, 103, 104, 167, and nine units of electives selected from Anthropology with approval of the adviser. (Anthropology 100A and 100B may not be counted in the upper division

## Anthropology Minor

The minor in anthropology consists of a minimum of 15 units in anthropology, nine units of which must be in upper division courses (except for Anthropology 100A-100B).

1. Physical and Cultural Origins of Man (3) I, II

Man's place in nature; fossil evidences of early man; theories of human development; racial variability; the growth and development of man's culture; the rise of civilization. Not open to students with credit in Anthropology 100A. (Formerly numbered Anthropology 1A and 1B.)
2. Introduction to Cultural Anthropology (3) I, II

May be taken before Anthropology 1 .
Man's relationship to his environment; types of preliterate society; system of social organization, politics, economics, religion, and language. Not open to students with credit in Anthropology 100B. (Formerly numbered and entitled Anthropology 1C, Introduction to Ethnology.)
4. Archaeological Field Methods (3) I, II

May be taken before Anthropology 1.
One lecture and six hours of laboratory
Application of the methods and techniques of archaeology through excavation, laboratory nalysis, and preparation of report
99. Experimental Topies (2-4)

Refer to the catalog statement on Experimental Topics on page 106. Limit of nine units applicable to a bachelor's degree in courses under this number of which no more than three

## Upper Division Courses

100A-100B. Principles of Anthropology (3-3)
Anthropology 100A: Human evolution as a biocultural process from the perspectives of human paleontology and prehistory. Anthropology 100B. Systems of cultural cognition, family organization, government, and religion in non-Western societies, comparison with analogous Western institutions. Anthropology 100A is not open to students with credit in Anthropology 1. Anthropology 100B is not open to students with credit in Anthropology 2. Anthropology 100A-100B may not be used to fulfill minimal upper division requirements in the anthropology major or minor or the special major.
101. Principles of Physical Anthropology (3) I

Prerequisite: Anthropology 1 or 100 A . Recommended for majors only
Primate comparative anatomy and human paleontology. Physical measurement of the living subject and skeletal specimens. The statistical treatment of data in physical anthropology. Applications of physical anthropology in industry and medicolegal problems. (Formerly numbered Anthropology 102.)
102. Principles of Archaeology (3) II

Prerequisite: Anthropology 2 or 100B. Recommended for majors only
The historic background and basic techniques of archaeological excavation. Methods of site excavation with particular emphasis on California and the Southwest. Principles of culture dynamics utilzed narchaed
103. Principles of Cultural Anthropology (3) II

Prerequisite: Anthropology 2 or 100B. Recommended for majors only
Primary emphasis on the principles and fundamentals guiding the study of cultural anthropology and its various topics of interest. An overview of the more recent trends within will be presented.
104. Principles of Anthropological Linguistics (3) I

Prerequisite: Anthropology 1 or 2 or 100A or 100B. Recommended for majors only.
The structural nature of language. How languages differ, change and influence each other. The language families of the world. The significance of language for human social life in a variety of cultures. (Formerly numbered Anthropology 120.)
115. Primatology (3) I

Prerequisite: Anthropology 1 or 100A.
Description, taxonomy
lesser primates. Primate behavior as a basis for thy of the anthropoid apes, monkeys, and lesser primates. Primate behavior as a basis for the reconstruction of prehistoric human 116. Human Paleontole of the primate collections of the San Diego Zoo.
116. Human Paleontology (3) II

Prerequisite: Anthropology 1 or 100A.
cultural associations. (Formerly numbered other primates; evolutionary relationships and 122. Language in Culture (3) II
122. Language in Culture (3) II
interests in the sociocultural context interests in the study of language, and of linguistic interests in the sociocultural context of language. Designed for students in language in other 126. Field Methods in anthropology.
(Same course as Linguistics 188.)
Prerequisites: Three units of linguistics or Anthropology 104, and consent of instructor. Principles and techniques of linguistic analysis. Problems and methods in the phonetic phonetics, phonemics, field techniques, and work with
147. Prehistory of South America (3)s, and work with informants.

Prerequisite: Anthropology 102.
century. Emphasis on major historimerican cultures from initial occupation to the 16 th 148. Cultures of Europe historical trends, particularly of the Andean area.
148. Cultures of Europe (3) I, II

Prerequisite: Anthropology 2 or 100B.
materials. The relationship of culture in contemporary Europe, utilizing current ethnographic materials. The relationship of such studies to European culture growth and to the definition
of European sociocultural regions. 149. Kinship and Colura regions.
149. Kinship and Social Organization (3) I

Comparison of kinsopology 2 or 100B.
world. The methodological stems and the structure of social relationships throughout the emphasis on non-Western orientations and theories relating to social organization with 150. Ethnological Field Methe

Prerequisite: Anthropology 152 (3) I
The problems anthropology 152.
field work; preparation, gaining and maintaining ethnological and social anthropological observation. A review of literature followaintaining rapport, evaluating data, participant解

151-S. Ethnographic Field Research Project (6) S
A six-week course. No other course may be taken concurrently.
is foreign to the students. is foreign to the
152. World Ethnography (3) I, II

Prerequisite: Anthropology 2 or 100B.
organization and supernaturalism organization and supernaturalism considered with a view to environmental adjustment, applied in interpreting illustrative aboriginal societies. Ethnological theories reviewed and 153. Primitive Religion (3) II

Prerequisite: Anthropology 2 or 100B
Beliefs and ritual of primitive man. Magic and religion. Forms of animism and polytheism. Primitive mentality and the supernatural.
154. Social Anthropology (3) II

Prerequisite: Anthropology 152.
The development of social anthropology as a distinct subfield of cultural anthropology. Readings and analysis of functionalism as theory and methodology in the explanation of social
and cultural processes. and cultural processes.
155. Peasant Society and Culture (3) II
Prerequisite: Anthropology 2 or 100 B

Prerequisite: Anthropology 2 or 100B
The social organization and culture of present-day small agricultural communities with emphasis on changes brought about by modernization.
156. Cultural Change and Processes (3) I
Prerequisite: Anthropology 2 or 100B.

Prerequisite: Anthropology 2 or 100 B .
The individual and the culture pattern: the acquisition of culture, innovation and invention, direction of cultural development, diffusion and interpenetration of cultures Illustrations from contemporary and historic peoples: Indians of the Southwest, Eskimos,
aboriginal groups of Australia, Africa and Oceania.
157. Mesoamerican Ethnohistory (3) II

Abrequisite: Anthropology 1 or 2 or 100 A or 100 B .
develongents developments, changes, and characteristics of aboriginal, mestizo, and creole society in 158. Economic Anthropology (3) II
58. Economic Anthropology (3) II
Prerequisite: Anthropology 2 or 100B.

Social relationships and cultural values inherent in the economies of primitive and peasant societies. Cross-cultural comparisons made of various means by which goods and services are acquired and distributed in non-Western, non-market-industrial societies.

## 159. Cultural Ecology (3) I

Examination and comparison of the relationships which exist between the natural environment and the sociocultural processes in nonliterate and peasant communities. 160. Primitive Technology (3) I

Prerequisite: Nine units of anthropology.
Techniques of tool manufacture, subsistence, shelter, clothing and arts and crafts of 161. The peoples.

Prere California Indian (3) I
Prerequisite: Anthropology 2 or 100 B .
Native California Indian cultures with stress on the Indian groups of Southern California. The industries, arts, social organization, folklore and religion will be considered as revealed through the study of living peoples and archaeological evidences.
162. Cultures of South America (3) II

Prerequisite: Anthropology 1 or 2 or 100 A or 100 B
Indian cultures in terms of origins, migration, relation to habitat, cultural variation and relevance to contemporary trends. Development of Inca civilization, the effects of the Spanish conquest and its aftermath
163. Contemporary Latin American Cultures (3) I

Prerequisite: Anthropology 2 or 100B.
A social anthropological approach to the structure and dynamics of contemporary conditions and problems, especially as revealed in studies of particular communities. population change, social consequences of economic changes, changing stratification, systems, values, institutional change.
164. Urban Anthropology (3) I
164. Urban Anthropology (3) I
Prerequisite: Anthropology 2 or 100B.

Prerequisite: Anthropology 2 or 100 B .
Cultural roles of urban centers and processes of urbanization in non-Western nonindustrial societies of past and present. Urban influence on traditional peasant and primitive peoples of Africa, Asia, and Latin America.
165. Culture and Personality (3) I, II

Prerequisite: Anthropology 2 or 100B.
The relationship of individual personality to culture in a variety of cultures. A consideration of various theories and studies in the social and personality sciences.
166. Honors Course (1-3) I, II
Refer to Honors Program.
onors Program.
167. History of Anthropological Theory (3) II

The development of theories which lie behind the modern sciences of ethnology and archaeology. Applications of the theory of culture to field methods and interpretation of indings.
168. Evaluative Procedures in Culture and Personality (3) II

Prerequisite: Anthropology 165.
Methods of eliciting and evaluating cross-cultural information about patterns of behavior. Such field methods as the interview and participant observation will be reviewed and evaluated.
169-S. Backgrounds of Mexican Civilization (3) S
Mexico's archaeological past and its bearing on historic and recent peoples and cultures. Conflicts between Aztec and Mayan cultures and western civilization. The relationship of exican civilization to other Latin American cultures.
170. Archaeology of North America (3) I

Prerequisite: Anthropology 1 or 100A.
Origin of the American Indian and survey of the main prehistoric cultures of the North an continent
171. Ethnology of North America (3) II

Prerequisite: Anthropology 2 or 100B
Native cultures and the role of environmental and historical factors in North America Prerequisite: Ann Prehistory (3) I
Prerequisite: Anthropology 1 or 100A. cultural influences.
172B. Southwestern Ethnology (3) II

> PB. Southwestern Ethnology (3) II Prerequisite: Anthropology 2 or 100 B .

Indian cultures of the American Southwest in historic times; ecological adaptations, esponses to white contact, adaptations to modern American life:
173. Advanced Archaeological Field Methods (3) I, II

One lecture and six hours of laboratory.
Prerequisite: Anthropology 4.
Advanced projects in excavation and stabilization of ruins, archaeological surveys,
laboratory analysis and preparation of reports.
174. Prehistoric Archaeology of Europe (3) I

Prerequisite: Anthropology 1 and 2 or 100A and 100B
East. Industries, Bronze Age, and Iron Age cultures of Europe, North Africa, and the Middle investigation used in reconstructing of peoples antecedent to recorded history. Methods of 175. Cultures
75. Cultures of Southeast Asia (3) II

Prerequisite: Anthropology 2 or 100B.
Asia. Includes both primitive of Indonesia, Philippines and nearby mainland Southeast environmental, historimitive and peasant societies and reviews them with respect to
176. Early Near and Midil social factors.

Prerequisite: Anthropology 1 or 100 Civilizations (3) I
Prerequisite: Anthropology 1 or 100A.
in their early phases of develop historic primary civilizations of the Near and Middle East 178. Cultures of Oceania (3) II
18. Cultures of Oceania (3) II

Trerequisites: Anthropology 2 or 100B
prehistoric, historic, and modern times Melanesia, Australia, Micronesia, and Polynesia in 179. Applied Anthropology (3) II

Trerequisites: Anthropology 154 and 156, and consent of instructor
change in industry, corporate organizationts to the solution of practical problems of culture
180. Preclassic Cultures of Mesoamerica (3) II

Prerequisite: Anthropology 1 or 100A
The development of civilization in pre-Columbian Mexico and Central America antecedent to the Tolteca, Classic Maya, and related cultures.
181. Classic Pre-Columbian Civilizations of Middle America (3) I

Prerequisite: Anthropology 1 or 100A.
Aboriginal Mexican and Central American civilizations through the Age of Exploration and Conquest. Aztecs, Mixtecs, Zapotecs, Mayas, and related cultures.
182. Post-Conquest Cultures of Middle America (3) II

Prerequisite: Anthropology 2 or 100B.
Aboriginal and mixed cultures of Mexico and Central America in Colonial and recent epochs. Aftermath of Conquest and exploitation.
183. Archaic Hellenic, Aegean, and Italian Cultures (3) II

Prerequisite: Anthropology 1 or 100A.
Anthropological foundations of primary civilizations of Greece, the Aegean, and Italy, in their prehistoric phases of development as revealed by archaeological and other sources. 184. Archaeology of Sub-Saharan Africa (3) I

Prerequisites: Anthropology 1 or 100A.
A chronological review of the major archaeological cultures in sub-Saharan Africa. The archaeological evidence for the evolution of man and his culture in Africa will be presented in a conjunctive approach
185. Cultures of Sub-Saharan Africa (3) I

Prerequisite: Anthropology 2 or 100 B .
Indigenous peoples and cultures of Africa south of the Sahara. A comparison of cultura traditions, social organization, and modern trends in newly emergent nations of the area. 186. Cultures of India (3) II

Prerequisite: Anthropology 2 or 100B.
Indigenous peoples and cultures of India and contiguous areas of South Asia. The development of cultural traditions, social organization, and modern trends.
187. Political Anthropology (3) II

Political processes, institutions, and ideologies in primitive and peasant societies
188A-188B. Archaeological Laboratory Methods (3-3) I, II
Two lectures and three hours of laboratory.
Prerequisite: Anthropology 173. Anthropology 188A is a prerequisite to 188B
Semester I: Application of palynology, paleontology and technologies. Semester II Practical applications of materials from 188A. Individual laboratory research project required
189. Topics of Arctic Archaeology (3) I

Prerequisites: Anthropology 1 or 100 A , and 102
Discussion of selected areas, periods or problems in the context of broad considerations of prehistoric cultural development and human ecology throughout the arctic and subarctic regions of North America.
190. Archaeology of East Asia (3) II

Prerequisite: Anthropology 1 or 100A
A chronological review of prehistoric cultural development and human ecology in East Asia.
191. Chinese Society (3) II

Prerequisite: Anthropology 2 or 100B.
Culture and social organization of Chinese people. Traditional China, overseas Chinese contemporary Taiwan and Hong Kong, recent social change in Mainland China.
192. Japanese Society (3) I, II

Prerequisite: Anthropology 2 or 100 B .
Culture and social organization of Japanese people. Traditional Japanese economic, social political and religious institutions. Korea, Okinawa and overseas Japanese. Recent industrial and urban changes in modern Japan.
196. Topics in Anthropology (3) I, II

Prerequisite: Nine upper division units in anthropology,
A senior level undergraduate proseminar, topic to be announced in the class schedule. Maximum credit six units.
197. Investigation and Report (3) I, II

Prerequisites: Grade point average of 3.0 in the anthropology major and consent of instructor.
Analysis of special topics in anthropology and preparation of reports on the results of the study. Course is intended for advanced majors only who plan to continue in advanced degree programs.
199. Special Study (1-3) I, II

Individual Study. Maximum credit six units.
Prerequisite: Consent of instructor.
Graduate Courses
200. Seminar (3)

An intensive study in advanced anthropology, topic to be announced in the class schedule. Maximum credit six units applicable on a master's degree.
201. Seminar in Physical Anthropology (3)

Prerequisites: Anthropology 1 or 100 A and 12 upper division units in anthropology.
History and theory in physical anthropology stressing the significant literature on such topics as functional anatomy, human paleontology, population genetics, and primatology.
202. Seminar in Archaeology (3)

Prerequisites: Anthropology 1 or 100A and 12 upper division units in anthropology.
History and theory in archaeological data collection, analysis, and interpretation.

## 203. Seminar in Ethnology (3)

Prerequisites: Anthropology 2 or 100B and 12 upper division units in anthropology.
History and theory in ethnology stressing the significant literature on such topics as cross-cultural comparison, structural-functional analysis and description, personality and culture, and sociocultural change
204. Seminar in Linguistics (3)

Prerequisites: Anthropology 104 or 122 and 12 upper division units in anthropology. History and theory of linguistics stressing the significant literature on such topics
220. Seminar in Reginal Ane
220. Seminar in Regional Anthropology (3)
Prerequisite: Twelve upper division units in anthropology.

Prerequisite: Twelve upper division units in anthropology. the Middle East, North America, Oceania, or South Asia. Maximum credit six units applicable on a master's degree.
221. Seminar in Topical Anthropology (3)

Prerequisite: Twelve upper division units in anthropology.
Study of a major subdiscipline such as Political Anthropology, Economic Anthropology, Social Anthropology, Psychological Anthropology, Cultural Ecology, Applied Anthropology, Race and Variation, or Environmental Archaeology. Maximum credit six units applicable on a master's degree.
222. Historical Linguistics (3)

Prerequisites: Anthropology 104 and 126.
Principles and techniques of historical linguistics, with concentration on the dynamics of linguistic change, comparative linguistics, and historical reconstruction as applied to non-Indo-European languages.
233. Social Structure (3)

Prerequisite: Twelve upper division units in anthropology.
An examination and functional approach to the social organization of a wide range of cultures. An examination of theories and generalizations regarding the stability and integration of a 255. Culture
255. Culture and Society in the Nahua Area (3)

Prerequisites: Anthropology 1 or 2 and 12 upper division units in anthropology.
A course designed to permit concentrated studies of the area and those related to it, based on archaeology, aboriginal records, colonial accounts, and modern studies; and to permit 256. Cultureaches to such studies
256. Cultures and Societies in Southern Mesoamerica and Central America (3)

Concentrated studies of any 1 or 2 and 12 upper division units in anthropology
archaeology, approaches to such studies. 257. Classical Nahuatl (3)

Prerequisites: Anthropology 1 or 2 and 12 upper division units in anthropology including Anthropology 157, or 180, or 181; reading knowledge of Spanish recommended.
Nahuatl language study and analysis for translation of 16 th-17th century texts, use ancient and modern grammatical works and vocabularies; reading of manuscripts; relationship of the language to appropriate aspects of Nahua culture.
258. Ethnoscience (3)

Analysis and Twelve upper division units in anthropology.
knowledge as demonstrated in native categories, classifications, and bodies of systematic knowledge as demonstrated in preliterate and literate societies.

## 297. Research (3) $\mathrm{Cr} / \mathrm{NC}$

Prerequisite: Advancement to candidacy.
Independent investigation in the general field of the thesis.
298. Special Study (1-3) Cr/NC

Prerequisite: Consent of staff; to be arranged with department chairman and instructor Maximum credit six directed ttoward the preparation of a paper on a specific problem. Maxi mum credit six units.
99. Thesis (3) $\mathrm{Cr} / \mathrm{NC}$

Prerequisites: An officially appointed thesis committee and advancement to candidacy.
Preparation of a project or thesis for the master's degree.

## Faculty

Lecturer: Jadon
Offered by the Department of Classical and Oriental Languages and Literature Courses in Arabic
Major or minor work in Arabic is not offered
Lower Division Courses

1. Elementary (4) I

Four lectures and one hour of laboratory. Pronunciation, oral and written drills, essentials of grammar, and introduction to basic texts.
2. Elementary (4) II

Four lectures and one hour of laboratory.
Prerequisite: Arabic 1.
Continuation of Arabic 1.
99. Experimental Topics (2-4)

Refer to the catalog statement on Experimental Topics on page 106. Limit of nine units applicable to a bachelor's degree in courses under this number of which no more than three unts may be applicable to general education requirements.

Upper Division Courses
103. Readings in Literary Arabic (4) I

Prerequisite: Arabic 2.
Application of principles of grammar and readings on advanced level in literary Arabic.
104. Readings in Literary Arabic (4) II

Prerequisite: Arabic 103.
Continuation of Arabic 103.
99. Special Study (1-3) I, II

Individual study. Maximum credit six units.
Prerequisite: Consent of instructor

## Art

In the College of Professional Studies
For purposes of exhibition and reference, the department reserves the right to retain for a limited period some of each student's work produced in class.
Faculty
Emeritus: Andrews, Jackson, Ruocco
Professors: Baker, Baxter, Berg, Bigelow, Dirks, Fisch, Higgins, Hopkins, Lingren (Chairman), Longenecker, Rogers, Swiggett, Tanzer, Wallace
Associate Professors: Bowne, Covington, Groover, Hodge, Hunter, Miller, Orth
Assistant Professors: Austin, Childress, Frick, Moaney, Papworth, Perczel, Peterson, Ray Lecturers: Brownlee, Forster, Gronborg, Heivly, Kimball, Litrownik, Miedzinski, Pendell, Tibbs, Tuttle, Veitzer

## Offered by the Department

Master of Arts degree in art
Major in art with the A.B. degree in liberal arts and sciences.
Major in art with the A.B. degree in applied arts and sciences
Minor in art.
Teaching major in art for the single subject teaching credential.

## Art Major

## With the A.B. Degree in Liberal Arts and Sciences

All candidates for a degree in liberal arts and sciences must complete the graduation
requirements listed on page 60 of this catalog
This major in art may be planned with an emphasis in studio arts or art history.
A minor is not required with this major in art.
Emphasis in Studio Arts
Preparation for the major. Art 1A, 1B, 2A, 2B, 5, 15A, 16A, 17A, 50A, 50B; Philosophy 1. u.ts.

Major. A minimum of 24 upper division units in art to include Art 100A, 115A, 116A, 156A,
190; Philosophy 141; and six units selected with the 190; Philosophy 141; and six units selected with the approval of the adviser from Art $106 A-106 \mathrm{~B}, 112 \mathrm{~A}-112 \mathrm{~B}, 116 \mathrm{~B}, 117 \mathrm{~A}-117 \mathrm{~B}, 117 \mathrm{C}, 118 \mathrm{~A}-118 \mathrm{~B}, 120 \mathrm{~A}-120 \mathrm{~B}, 153,154,155 \mathrm{~A}, 155 \mathrm{~B}$,
and 192 .

## Emphasis in Art History

Preparation for the major. Anthropology 1; Art 50A, 50B, 52A, 52B; French, German or Italian, or a reading knowledge of the language selected. ( 15 units.)
Major. A minimum of 24 upper division units selected from Art 151A, 151B, 153, 154 A of the department from anthropols 158 ; and three units of electives selected with the approval the department from anthropology, art, history or philosophy.

## Art Major

## With the A.B. Degree in Applied Arts and Sciences

All candidates for a degree in applied arts and sciences must complete the graduation requirements listed on page 60 of this catalog.
ommunication, painting and printhath an emphasis in crafts, environmental design, graphic design and in graphic communication havg, or sculpture. The programs in environmental a strong liberal arts background. Environmental planning. Graphic communication prepares the esign can lead to interior design or city graphics, art direction, visual design for the contudent for the areas of environmental illustration or editorial illustration. The the contemporary media of advertising, fashion prepare students for professional attitudes toward painting and printmaking and sculpture educational experience in graduate schools with the goal arts and the continuance of their learning. The preprofessional program in art education prepares the student for teaching in in ceramics, furniturecondary schools. The crafts program can be developed to specialize
industrial design, jewelry, A minor is not required with this minor is recommended.

## Emphasis in Crafts

Preparation for the major. Art $1 \mathrm{~A}, 1 \mathrm{~B}, 2 \mathrm{~A}, 2 \mathrm{~B}, 50 \mathrm{~A}, 50 \mathrm{~B}, 61$, and six units of art electives
Major.
three of the following areas upper division units in art to include nine units selected from of the selected areas; six units of art electives; and six three units of extended work in one advanced work in one area are strongly recommended units of art history. Twelve units of Emphasis in recommended.
Preparation for the major. Art 1A $, 1 \mathrm{~B}, 2 \mathrm{~A}, 2 \mathrm{~B}, 14 \mathrm{~A}, 50 \mathrm{~A}, 50 \mathrm{~B}$; and six units selected from
Art $7,14 \mathrm{~B}, 15 \mathrm{~A}, 16 \mathrm{~A}, 18 \mathrm{~A}$. ( 27 units.)
Major. A minimum of 24
three additional units of art history; division units in art to include Art 114A, 114B-114C, 156A 193A-193B, 194A-194B, 196A-196B ; and nine units selected from Art 107, 114B-114C, 156A

## Emphasis in Environmental Design

Preparation for the major. Art 1A, 1B, 2A, 2B, 8, 33A-33B, 50A, 50B, 95A, 95B; and three Industrial Arts from Major. A minimum Major. A minimum of 24 upper division units in 19 ,
Group I. Art with an adviser:
Group I: Art 135A-135B, 156A 195A 195C 160 . Group II. Art 187, 188, 191A, 195B, 195E, 195 D and six units selected from Art 113A, 133 135A-135B, 195A, 195C, 195D.

## Emphasis in Painting and Printmaking

Preparation for the major. Art 1A, 1B, 2A, 2B, 50A, 50B; and nine units selected from Art -15B, 16A, 16B, 18A, 27 units.)
Major. A minimum of 24 upper division units in art to include Art 156A; three additional units of art history; and 18 units selected in consultation with the adviser from Art $100 \mathrm{~A}, 100 \mathrm{~B}$ $126 \mathrm{~A}, 126 \mathrm{~B}, 126 \mathrm{D}-126 \mathrm{E}, 136 \mathrm{~A}, 136 \mathrm{~B}, 136 \mathrm{C}-136 \mathrm{D}$. Emphasis in
Preparation for the major. Art 1A, 1B, 2A, 2B, 17A-17B, 50A, 50B; and three units selected from Art 13, 15A, 16A, 19A, 61, 70, 80A. (27 units.)
Major. A minimum of 24 upper division units to include Art 117A or 127, 117B, 117C, 156A, 198; three additional units of art history; and six units selected from $100 \mathrm{~A}, 113 \mathrm{~A}, 115 \mathrm{~A}$

## Alternate Program for Advanced Degree Prepáration

Students planning to pursue an advanced degree may elect a 63 -unit ( 27 units lower division, 36 upper division) alternate degree program in Applied Arts and Science. Thi program involves the completion of the requirements for one of the emphasis areas listed above and 12 additional units of art planned in consultation with the adviser in the student's
area of emphasis.

## Art Minor

The minor in art consists of a minimum of 15 units in art, six units of which must be in upper division courses

## Art Major

For the Single Subject Teaching Credential
All candidates for a teaching credential must complete all requirements for the applicable specialization as outlined in the section of this catalog on the School of Education. the A.B. degree in applied arts and sciences. A.B. degree in applied arts and sciences.

Preparation for the major. Art 1A, 1B, 2A, 2B, 50A, 50B, 61, and six units of electives in
Art. (27 units.) t. (27 units.)

Teaching Major. A minimum of 26 upper division units in Art to include Art 156A; three units of Art History; and twenty units from Group I or Group II in consultation with the Art Education Adviser.
Group I: Seventeen units of one major emphasis area, including Art 175 and 176, and three units of one other emphasis area. ( 20 units.)
Group II: Six units of drawing and painting, six units of crafts or sculpture, three units of graphic communication or environmental design, and Art 175 and 176. ( 20 units.)

## Lower Division Courses

1A. Drawing and Composition (3) I, II
Six hours.
The ordering of two-dimensional space through drawing.
1B. Drawing and Composition (3) I, II
Six hours.
Prerequisite: Art 1A
Drawing of mechanical and natural forms by the use of line and value. Emphasis on proportion and structure. Some quick sketching, gesture and contour drawing.

## A. Design and Aesthetics (3) I, II

Six hours.
Fundamentals of space and color design. Basic course used as a prerequisite for advanced work.
2B. Design and Aesthetics (3) I, II
Six hours.
Prerequisite: Art 2A
Continuation of Art 2A. Original work in creative design including projects in three dimensions.

## 5. Art Orientation (3)

An illustrated lecture course dealing with aesthetic meaning and a survey of the history f western art. Designed to increase the understanding and appreciation of art.
7. Graphic Imagery (3)

Six hours.
Prerequisite: Art 2 A .
The organization concepts of design applied to experimental photographic and technical The organization concepts of design ap graphics.
8. The House and Its Environment (3) I, II
8. The House and Its Environment ( 3 Architecture, interior design, landscape and city planning for forming man's physical and aesthetic environment
14A. Beginning Graphic Communication (3) I, II
4A. Beginn
Six hours.
Prerequisites: Art 1A and 2B.
Creative projects exploring the interrelation of fundamental art principles and design using phonetic symbols and typography.
14B. Intermediate Graphic Communication (3) I, II
Six hours.
Prerequisite: Art 14A
Typographic and design concepts applied to layout for contemporary media
15A-15B. Life Drawing (3-3) I, II
Six hours.
Prerequisite: Art 1B. Art 15A is prerequisite to 15B.
Drawing from the nude model.
16A. Painting (3) I, II
Six hours.
Prerequisite: Art 1B.
Pictorial composition and techniques of painting.
16B. Oil Painting (3) I, II
Six hours.
Prerequisite: Art 16A.
Landscape and more advanced composition in color
17A-17B. Sculpture (3-3) I, II
Six hours.
Prerequisite: Art 2B. Recommended: Industrial Arts 5. Art 17A is prerequisite to 17 B .
Three dimensional design using varied materials.
18A-18B. Watercolor Painting (3-3) I, II
Six hours.
Prerequisite: Art 1B. Art 18A is prerequisite to 18B.
Composition of still-life and landscape in watercolor.
19A. Ceramics (3) I, II
Six hours.
Prerequisite: Art 2 A .
19B. Ceramics (3) I, II
Six hours.
Prerequisite: Art 19A
Continuation of Art 19A. Introduction to use of the potter's wheel and application of glaze
for surface enrichment.
27. Life Modeling-Sculpture (3) I, II

Six hours.
Prerequisite: Art 2B.
Creative experimentation with sculptural forms from the human figure.
33A-33B. Visual Presentation (3-3) I, II
Six hours.
Prerequisites: Art 1B, 2A. Art 33 A is prerequisite to 33 B , and Art 18 A is recommended Methods, materials, and toots of the professional environmental designer stressing art
principles. (Formerly numbered Art 133 A and 133 B .)
50A. Appreciation and History of Art (3) I, II
Art development in painting, sculpture, architecture, and handicrafts from the dawn of art to the Renaissance. Illustrated
50B. Appreciation and History of Art (3) I, II
The period from the Renaissance through the modern school treated in the same manner as in Art 50A.
52A. Japanese Art (3) II
A study of the arts of Japan.
52B. Chinese Art (3) I
A study of the arts of China

111A-111B. Industrial Design (3-3) I, II
Six hours.
Prerequisites: Art 1A and 2B. Art 111A is prerequisite to 111B
Design of objects for manufacture with reference to their use, materials, and in accordance with factory practices and machine techniques. Practice in the techniques of presentation, working drawings, rendering and perspective and scale models.
112A-112B. Design and Composition (3-3) I, II
Six hours.
Prerequisites: Art 2B and 16A. Art 112A is prerequisite to 112B.
Structure in picture making. The controlled use of line, value, color, and texture to organize the effect of depth, movement, volume, etc., in the recognizable image. Oil technique.
113A. Furniture Design (3)
Six hours.
Prerequisite: Art 2A. Industrial Arts 51 is recommended.
Study of the principles of design through the making of furniture.
113B. Advanced Furniture Design (3) I, II
Six hours.
Prerequisite: Art 113A.
Advanced individual design: Exploration of materials, process and function. Maximum credit nine units.
113C-113D. Advanced Furniture Design (3-3) I, II
Total credit in Art 13, 113A, 113B, 113C, and 113D limited to nine units. Six hours.
Prerequisite: Art 113B. Art 113C is prerequisite to 113D.
Advanced individual design; exploration of materials, process and function.
114A. Graphic Communication (3) I, II
Six hours.
rerequisite: Art 14B.
Investigation of design concepts relating to advertising.
114B-114C. Advanced Graphic Communication (3-3) I, II
Six hours.
Prerequisite: Art 114A. Art 114B is prerequisite to 114 C
The relation of art structure and the aspects of visual communication.
114D. Problems in Graphic Communication (3) I, II
Six hours
Refinement of personally developed design concepts for visual communication with emphasis on individually directed solutions. The development of a portfolio of professiona quality. Maximum of six units selected from 114 series applicable on a master's degree.
115A-115B-115C-115D. Life Drawing and Painting (3-3-3-3) I, II
Six hours.
Prerequisites: Art 15 A and 16 A . Art 115A is prerequisite to $115 \mathrm{~B}, 115 \mathrm{~B}$ to $115 \mathrm{C}, 115 \mathrm{C}$ to 15D.
Drawing and painting from nude and costumed models.
116A-116B. Advanced Painting (3-3) I, II
Six hours.
Prerequisite: Art 16A. Art 116A is prerequisite to 116 B
Pictorial composition.
Pictorial composition
116C-116D. Advanced Painting (3-3) I, II
Six hours.
Prerequisite: Art 116B. Art 116C is prerequisite to 116D.
painting. painting.
117A-117B. Advanced Sculpture (3-3) I, II
Six hours.
Six hours
Prerequisite: Art 17A. Art 117A is prerequisite to 117B.
applicable on a master's degree. pplicable on a master 's degre
Six Advanced Sculpture (3) I, II
Six hours.
The influence of art media and tools on aesthetic organization in sculpture in relief and in the round.
118A-118B. Advanced Watercolor Painting (3-3) I, II
Six hours.
Prerequisite: Art 18B. Art 118A is prerequisite to 118B.
Composition of still life and landscape in watercolor

119A. Ceramics (3) I, II Six hours.
Prerequisite: Art 19B.
the use of the potter's wheel. 119B. Cof the potter's wheel
119B. Ceramics (3) I, II
Six hours.
Prerequisite: Art 119A.
Continuation of Art 119A. Further development of knowledge, skills and philosophy of ceramics through individual creative projects.
119C. Ceramics (3) I, II
Six hours.
Prerequisite: Art 119B
Continuation of Art 119B with advanced creative projects.
119D. Advanced Ceramics (3) I, II
Six hours.
Prerequisite: Art 119C
Study of ceramic design through creative projects of clay forms.
120A-120B. Advanced Design (3-3) I, II
Six hours.
Prerequisites: Art 1B and 2B. Art 120A is prerequisite to 120B.
Advanced work in pure design,
Advanced work in pure design, two and three dimensional. Reexamination of color theory and
121. Clay and Glaze Technology in Ceramic Design (3)
Six hours.

Six hours.
Prerequisite: Art 119B
Experimentation and application of research concerning the use of ceramic materials and

Six hours. Printmaking (3) I, II
Prerequisites: Art 2 A and 15A. Art 100A and 115A are recommended.
Creative intaglio-etching, drypoint, aquatint, engraving and variations. Emphasis on fine 26B. Intaglio Printical development.

Six hours.
Prerequisite: Art 126A.
Advanced creative intaglio. Emphasis on fine print quality and the color process.
126C. The History of Printmaking (3) Irregular
Prerequisites: Art 50A and 50B.
The history of printmaking from its inception to the present.
126D-126E. Intaglio Printmaking in Color (3-3)
Six hours.
Prerequisite: Art 126B.
Advanced creative intaglio printmaking in color, including zinc and copper plate; etching, drypoint, aquatint, engraving, embossing and color variations. Emphasis on fine print quality and technical development in the color process unique to this medium.
127. Advanced Figurative Sculpture (3) I, II

Six hours.
Prerequisites: Art 17A and 27.
Figurative study with emphasis on individual exploration.
129A-129B. History of Ceramics (3-3) I, II
Prerequisite: Art 129A is prerequisite to 129B
ceramics. Field trips. ceramir
133. Environmental Media (3)

Two lectures and four hours of laboratory.
The communication of
and transfers with terminal emphasis in Design using photography, miniatures, mock-ups, and transfers with terminal emphasis in transparency projection
135A-135B-135C. History and Theory of Environmental Design (3-3-3) I, II
Environmental arts A and 50B.
II: 15 th to the 19th Century. Semester II: 15th to the 19th Century. Semester III: 19th and 20th Centuries.

Six hours. $\qquad$
Prerequisites: Art 2A and 15A. Art 100A and 115A are recommended. quality and technical development.
136B. Lithography Printmaking (3)

## Six hours.

Prerequisite: Art 136A.
Advanced creative lithography-emphasis on the color process and fine print quality.
136C-136D. Lithography Printmaking in Color (3-3)
Six hours.
Prerequisite: Art 136B.
Prerequisite: Art
Advanced creative lithography printmaking in color. Emphasis on fine print quality in
color process and color technology unique to this medium.
146A-146B. Serigraphy (3-3)
Six hours.
Prerequisite: Art 15A. Art 146A is prerequisite to Art 146B
Techniques of reproducing original prints by means of the silkscreen process.
151A. Pre-Columbian Art of Middle and South America (3) Irregular
Prerequisites: Art 50A and 50B.
South and Middle American art and architecture from earliest time to the arrival of Spaniards.
151B. Colonial Art of Latin America (3) Irregular
Prerequisites: Art 50A and 50B.
The art and architecture of Latin America from the colonial period to the present. Field trips included.
152A. The Art of India and Southeast Asia (3) Irregular
Prerequisites: Art 50A and 50B
History of the art, architecture, and sculpture of India and Southeast Asia.
152B. The Art of Persia and the Islamic World (3) Irregular
Prerequisites: Art 50A and 50B
History of the art, architecture, sculpture and minor arts of Persia and the Islamic World. 153. Ancient Art (3) I

Prerequisites: Art 50A and 50B.
Prevequisites: Art 50 A and 50 B . fall of Rome.

## 154A. Medieval Art (3) II

Prerequisites: Art 50A and 50B
Development of painting, sculpture and architecture from the time of Constantine through the Gothic period. (Formerly numbered Art 154.)
154B. Coptic and Byzantine Art (3) Irregular
rerequisites: Art 50A and 50B
The art of the Eastern Church from the reign of Justinian to the Russian Revolution.
155A. Renaissance Art in Italy (3) Irregular
rchitecture, painting and sculpture of the Renaissance period in Italy
155B. Northern Renaissance Art (3) Irregular
Prerequisites: Art 50A and 50B
Architecture, sculpture, and painting north of the Alps during the Renaissance period
155C. Baroque and Rococo Art (3) Irregular
Prerequisites: Art 50A and 50B
Architecture, sculpture, and painting of the Baroque and Rococo periods. (Formerly numbered Art 155B.)
156A. History of Modern Art (3) I, II
Prerequisites: Art 50A and 50B.
Development of painting, sculpture, and architecture from the French Revolution to the 20 th century. Field trips included
156B. Contemporary Art (3) Irregular
Prerequisite: Art 156A.
Current movements in sculpture, painting, graphics, and architecture.
157. The History of American Art (3) Irregular

Prerequisites: Art 50A and 50B.
Development of painting, sculpture, and architecture from Colonial times to the present

## 158. Art of Primitive Peoples (3) Irregular

Prerequisites: Art 50A and 50B.
influence upon the art of the twentieth South Seas, and the North American Indians and their 160. The History

Prerequisitesy of Architecture (3) Irregular
Architecture. Art 50 A and 50 B , or Art 5
A10 10 primitive times to the present
Six hours
Prerequis
Prerequisite: Art 61. Art 161A is prerequisite to 161B, 161B to 161C, 161C to 161D master's degree.
master's degree.
164. History of Costume (3) Irregular

Prerequisites: Art 50A and 50B
The historic origins of costume traced through aesthetic, social and political influences 166. Honors Course (1-3) I, II

Refer to Honors Program II
170A. Beginning Jew
170A. Beginning Jewelry Design (3) I, II
Six hours.
Presign isites: Art 2B and 61
170B. Jew open to students with credit in Art 70
Six Jewelry and Metalwork (3) I, II Six hours.
Design and production of jewelry and hollow ware
170C-170D. Jewelry and Metalwork (3-3) I, II
Six hours.
Prerequisite: Art 170B. Art 170C is prerequisite to 170D.
Advanced individual problems in jewelry.
175. Problems in Art for Teachers (3) I, II

Six hours.
Art principles and materials as related to teaching situations.
176. Practicum in Art (2) I

Prerequisite: Consent of instructor
Professional course usually taken concurrently with student teaching and covering teaching strategy.
180A-180B. Advanced Weaving (3-3) I, II
Six hours.
Total credit in Art 80A, 80B, 180A, 180B, 180C, and 180D limited to nine units.
Prerequisite: Art 80B. Art 180A is prerequisite to 180B.
Advanced problems in fabric design and weave construction including tapestry and rug
weaving techniques. weaving techniques.
180C-180D. Advanced Weaving (3-3) I, II
Total cred
Total credit in Art 80A, 80B, 180A, 180B, 180C, and 180D limited to nine units.
Prerequisite: Art 180B. Art 180C is prerequisite to 180D
81 Nonwoven
81. Nonwoven Textile Construction (3) I, II

Six hours.
Textile structures with an emphasis on nonloom techniques.

## 182. Textile Design (3)

Six hours.
Prerequisite: Art 61
Application of design for the textile surface, using a broad variety of media and process appropriate for both the individual designer and commercial reproduction. Media incluse tencil, block, silkscreen, batik, and tie-dye. Maximum credit six units. 186. Synergetic Environments (3)

Two lectures and four hours of laboratory.
Prerequisite: Art 195B.
Synthesis of materials, space, sound and light using exploratory methods in full scale projects.
187. Environmental Prototypes (3)

Two lectures and four hours of laboratory.
Prerequisite: Art 195B.
Research and development of creative architectural concepts with emphasis in space enclosure systems and cybernetics.
188. Environmental Theory (3)

Prerequisite: Art 8 or 108
Survey of alternative solutions to the problem of design of the physical environment.
190. Principles and Elements of Visual Aesthetic Organization (3)

Three hours.
Prerequisites: Senior standing and Art 5
Visual aesthetic materials and the psychological principles involved in aesthetic organization.
191A. Gallery Exhibition Design (3) I, II
Six hours.
Prerequisite: Fifteen units of art
Fundamental art elements and principles applied to the theories and techniques of gallery exhibition design.
191B. Gallery Exhibition Design (3) I, II
Six hours.
Advanced problems in the theories and techniques of gallery exhibition design
93A-193B. Drawing and Illustration for Graphic Communication (3-3)
Six hours.
Prerequisites: Art 2A and 115A. Art 193A is prerequisite to 193B.
The disciplines of realistic descriptive illustration including problems in imaginative aesthetically refined painterly illustration. Media to include gouache, watercolor, scratch board, mixed media, and pen and ink.
194A-194B. Advanced Fashion Imagery (3-3) I, II
Six hours.
Prerequisite: Art 2A. Art 94B is recommended. Art 194A is prerequisite to 194B
Emphasis on developing individual drawing concepts and creative techniques in fashion lustration. Creation or fashion drawings and fashion advertising layouts. Development of
professional portfolio

## 95A. Resid Six hours.

Six hours.
Prerequisites: Art 95A and 95B
Survey, analysis and conceptual design methods of residential interiors stressing materials equipment, components and structural detailing.
195B. Environmental Design (3) I, II
Six hours.
Prerequis.
Prerequisite: Art 195A.
Survey, analysis and design synthesis of problems of more complexity, through interiors, 195C Prape, to architectural planning and, finally, concern for city design.
195C. Profe
Six hours.
Six hours.
Prerequisite: Art 195A.
Techniques and
budget studies and analyses of specification writing, estimating, contractual agreements
195D. Contract Interior Design (3)
Six hours.
Prerequisite: Art 195C.
Projects in nonresidential architectural interiors involving space planning systems analysis, specification writing, equipment and materials appropriate to commercial functions.
195E. Interior Design Practicum (3)
Nine hours of laboratory.
Frerequisite: Credit or concurrent enrollment in Art 195C
procedures, supervision of subcontracted whterior designers in client relationships, business 196A-196B. Visual Communicontracted work and installation, and execution of contracts. Six hours.
Prerequisite: Art 114A. Art 196A is prerequisite to 196B
Experimental, creative and practical exploration 196 B .
related to magazine and editorial layout. Prodution of contemporary communication as in
197. Advanced Graphic Imagery (3) I, II

Six hours.
Prerequisite: Art 7.
credit six units. Maximumental photographic and technical reproductive media. Maximum 198A. Senir
198A. Senior Project (3) I, II
Investigation in art For the instructor
198B. Senior Investigationmal presentation of project. (Formerly numbered Art 198.)
198B. Senior Investigation and Report in Art History (3) I, II
Prerequisites: Six upper division
Individual research into areas of units in art, and consent of the instructor.
199. Speial segular courses.
199. Special Study (1-3) I, II

Individual study. Maximum credit six units.
Prerequisite: Consent of instructor.
Graduate Courses
206A-206B. Printmaking (1-3) (1-3)
Two hours for each unit of credit
Advanced creative work in selected printmaking media based upon the analysis of the Maximum credit six Maximum credit six units applicable on a master's degree.
214. Graphic Communication (1-3)

Prerequisite: Art 114D
master's degree. mas
216A-216B. Painting (1-3) (1-3)
Two hours for each unit of credit
rerequisites: Art 112B and 116B
Aesthetic organization of selected visual subject matter in the medium of color in oils. Maximum credit six units applicable on a master's degree
17A-217B. Sculpture (1-3) (1-3)
Two hours for each unit of credit.
Aesthetic er: Arization of selected subject matter in the media of sculpture Maximum credit six units applicable on a master's degree.
219A-219B. Crafts (1-3) (1-3)
Two hours for each unit of credit
Prerequisite: Six upper division units in crafts.
Advanced creative work in selected craft media. Maximum credit six units applicable on
221. Advanced Clay and Glaze Technology in Ceramic Design (3)

Six hours.
Prerequisite: Art 119B.
Experimentation with the use of ceramic material and techniques as an integral part of the design process. Maximum credit six units applicable on a master's degree.
222. Art Education Colloquium (3)

Prerequisite: Fifteen upper division units in art
Historic and current art education philosophies.
270. Seminar in Jewelry and Metalwork (3)

Prerequisite: Art 170 A
Problems in the design and execution of works in precious metals. Projects will be determined by the individual student in conference with the instructor. Maximum credit six units applicable on a master's degree.
280. Seminar in Textile Design (3)

Prerequisite: Art 180A.
Problems in textile design and technology. Projects will be determined by the individual student in consultation with the instructor. Maximum credit six units applicable on a master's degree.
290. Bibliography and Research Methods (2)

Introduction to research methods and materials, compiling of a specialized bibliography,
291. Seminar in Creative Art (3)

Independent research in specified areas including the presentation of a paper with its oral defense.
Each course may be taken to a maximum of six units. Maximum credit six units of 291 applicable on a master's degree.
B. Seminar in Sculptur
C. Seminar in Printmaking
D. Seminar in Ceramics
E. Seminar in Crafts
F. Seminar in Graphic Communication
G. Seminar in Environmental Design

292A. Seminar in Ancient Art (3)
Prerequisites: Art 50 A and 50 B
Studies in problems of the development of art styles or important artists within broad limits of ancient art.
292B. Seminar in Medieval Art (3)
Prerequisites: Art 50A and 50B.
Studies in problems of the development of art styles or important artists within broad limits of medieval art.
292C. Seminar in Renaissance Art (3)
Prerequisites: Art 50A and 50B.
Studies in problems of the development of art styles or important artists within broad limits of renaissance art.
292D. Seminar in Baroque and Rococo Art (3)
Prerequisites: Art 50A and 50B.
Studies in problems of the development of art styles or important artists within broad limits of baroque and rococo art.
292E. Seminar in Modern Art (3)
Prerequisite: Art 156A
Studies in problems of the development of art styles of important artists within broad limits of modern art.
292F. Seminar in Primitive Art (3)
Prerequisite: Art 158.
Studies in problems of the development of art styles or important artists within broad limits of primitive art.
294A-294B. Seminar in the Principles of Design in the Space Arts (3-3)
Prerequisite: A semester course in art appreciation.
An intensive study of the activity of creative expression and aesthetic appreciation in the area of visual experience. The aesthetic analysis of original works of art
295. Creative Environmental Design (1-3)

Prerequisite: Six upper division units in interior design, architecture or city planning. applicable on a master's degree.
298. Special Study (1-3) Cr/NC

Trividual study. Maximum credit six unit
Prerequisite: Consent of the staff; to be arranged with department chairman and the instructor
299. Thesis or Project (3) Cr/NC

Prerequisites: An officially appointed thesis committee and advancement to candidacy. Preparation of a project or thesis for a master's degree.
99. Experimental Topics (2-4)

Refer to the catalog statement on Experimental Topics on page 106. Limit of nine units applicable to a bachelor's degree in courses under this number of which no more than three units may be applicable to general education requirements.

Upper Division Courses
103. Astronomical Optics (3) II

Two lectures and three hours of laboratory.
Prerequisites: Physics 4C, or Physics 2B and 3B.
Theory and applications of optical instruments used in astronomy. In the laboratory the students are required to complete an approved project in optical instrumentation.
104A-104B. Advanced Astronomy (3-3)
Prerequisites: Astronomy 1 and 9 and credit or concurrent registration in both Pathematics 51 and Physics 4C.
Problems in practical astronomy, such as atmospheric refraction, proper motion photographic and photoelectric photometry, solar system astrophysics, and stellar dynamics 105. Historic Development of Astronomy (3) I

A study of the more important problems and astronomical concepts in the light of their historical development. Particular attention is given to the biography and contributions of the more important astronomers, such as Galileo, Kepler, Newton, Herschel, Bessel, etc.
112A-112B. Astrophysics (3-3)
Prerequisites: Astronomy 1 and Physics 4C. Astronomy 112A is prerequisite to 112B.
An application of modern physics to a study of the sun and the stellar system. A large par of this course will deal with the application of spectroscopy to the study of celestial objects 166. Honors Course (1-3) I, II

Refer to Honors Program.
170. Astrophysical Spectroscopy (3)

Theory of atomic spectratics 52 and credit or concurrent registration in Astronomy 112A
Theory of atomic spectra and atomic structure leading to interpretation Astronomy 112A sectra. Optics of spectrograph design; line identification, spectral classification, radial 8.
80. Celestial Mechanics (3) I, II

Prerequisite: Mathematics 52 .
The problem of two bodies based on the solutions of differential equations using calculation of planetary. Potential theory; geometrical interpretation of perturbations alanetary positions.
Prerequisite: Consent Astronomy ( 2 or 3 ) I, II
Selected topics inent of instructor
content upon approval of instructor astronomy or astrophysics. May be repeated with new 198A. Senior Project (1) I
One lecture-discussion (1)
One lecture-discussion period
Consists of the selection and design plan for graduation within one year
reports.
Six hours of laboratory
Prerequisite: Astronomy 198A.
99. Spety work, progress reports, oral and written reports

Individual Study (1-3) I, II
Prerequal study. Maximum credit six units.

200. Seminar (2 or 3)

Graduate Courses
Prerequisite: Consent of instructor
Maximum credit six units applicable on a many, topic to be announced in the class schedule 210. Binary Stars (3)

Prerequisite: Astronomy 112B.
determination of orbits.
220. Galactic Structure (3)

Prerequisite: Astronomy 112B
extragalactic structure.
225. Extragalactic Structure (3)

Prerequisite: Astron
The individual and collective properties of normal and peculiar galaxies. Topics include classification, spectra, masses, luminosity distributions, distance indicators, clustering, and redshifts.
Prerequisite: Astronomy 112B.
Structure of the interior of stars including the details of the reactions by which energy is obtained and the evolution of stars.

## 240. Interstellar Matter (3)

Prerequisites: Astronomy 112B and Mathematics 119.
Interstellar absorption and polarization, theory of interstellar grains, physics of a low density gas in a dilute radiation field, nebulae, interstellar absorption lines, dynamics of the interstellar medium, and radio observations of the interstellar medium
250. Stellar Atmospheres (3)

Emission and absorption of radiation, continuous spectra, spectral lines, modal stella atmosphere calculations, and non-L.T.E. problems.
297. Research (1-3) $\mathrm{Cr} / \mathrm{NC}$

Prerequisite: Classified graduate standing
Research in one of the fields of astronomy. Maximum credit six units applicable on a master's degree.
298. Special Study (1-3) Cr/NC

Prerequisite: Consent of staff; to be arranged with department chairman and instructor
Individual study. Maximum credit six units.
299. Thesis (3) $\mathrm{Cr} / \mathrm{NC}$

Prerequisites: An officially appointed thesis committee and advancement to candidacy. Preparation of a project or thesis for the master's degree.

## Athletics

## In the College of Professional Studies

## Faculty

Professor: Karr (Chairman
Head Coaches: Davis, Hill, Gilbert, Templeton
Coaches: Dietz, Kofler, Madison, Matson, Tollmer, Zampese
Coaching Specialist: Vezie
Offered by the Department
Courses in Athletics.
Major or minor work in athletics is not offered.
Lower Division Courses
99. Experimental Topics (2-4) I, II

Refer to the catalog statement on Experimental Topics on page 106. Limit of nine units applicable to a bachelor's degree in courses under this number of which no more than three units may be applicable to general education requirements.

Upper Division Courses
166. Honors Course (1-3) I, II

Refer to Honors Program.
180. Intercollegiate Sport Practicum (2-3)

Laboratory experience in field of interest, with emphasis on skill, rules, and organizational procedures for varsity team members. A sport may be taken only once for credit in Athletics 180 and or 181. (Formerly numbered and entitled Physical Education 180, Theory and Practice of Intercollegiate Sports.)
Subject fields of 180 are as follows:
Offered in the Fall
A Basketball (3)
B Cross Country (2)
C Football (3)
D Gymnastics (3)
E Swimming (2)
F Water Polo (2)
G Wrestling (3)
N Soccer (2)

Offered in the Spring
H Baseball (3)
I Golf (2)
Rowing (2)
K Tennis (2)
L Track (3)
M Volleyball (2)
181. Competitive Sport Practicum (2-3)

Laboratory experience in field of interest, with emphasis on skill, rules, and organizational procedures for athletic coaching minors. A sport may be taken only once for credit in Subject fields of 181
Offered in follows:
Offered in the Fall
A Basketball (3)
A Cross Country (2)
C Football (3)
D Gymnastics (3)
E Swimming (2)
F Water Polo (2)
G Wrestling (3)
N Soccer (2
199. Special Study (1-3) I, II

Individual study. Maximum credit six units.
Prerequisite: Consent of instructor. <br> \section*{\section*{Biology <br> \section*{\section*{Biology <br> <br> In the College of Sciences} <br> <br> In the College of Sciences}

Faculty
Offered in the Spring
Offered in the
$H$ Baseball (3)
I Golf (2)
${ }_{\mathrm{K}}^{\mathrm{J}} \underset{\text { Rewnis (2) }}{ }$
K Track (3)
M Volleyball (2)
$\qquad$

Professors: Baer, Brandt, Clark, Collier, Cooper, Cox, Farris, Flittner, Ford, Hazen Chairman), Johnson, McBlair, Miller, Neel, Parsons, Ratty, Rinehart, Shepard, Sloan, Taylor Associate Professors: Awbrey, Daugherty, Diehl, Ebert, Futch, Hurlbert, Krisans, Paolini,
ecturer: Duksors: Barnett, Davis, Hays, Zedler, J
Offered by the Departmen
Doctor of Philosophy degree in genetics and in ecology
Master of Arts degree in biology.
Master of Science degree in biology.
Major in biology with the A.B. degree in liberal arts and sciences.
Major in biology with the A.B.
Major in biology with the A.B. degree in applied arts and sciences.
Major in biology with the B.S. degree in applied arts and sciences.
Minor in biology
Minor in biology.
Curricula which prepare for the fields of dentistry, conservation, fisheries, marine biology,
medicine, veterinary medicine, and wildife Single subject teaching medicine, and wildlife.

## Biology Major

With the A.B. Degree in Liberal Arts and Sciences
All candidates for a degree in liberal arts and
requirements listed on page 60 of this catalog. Studentes must complete the graduation
A minor is not requirign language requirement for graduation. French, German, or
A minor is not required with this major.
Preparation for the major. Biology 1, 2 and 15; Chemistry 1A-1B and 11 or 12;
Mathematics 21 and 22; Physics 1A-1B
Major. A minimum of 24 upper division $2 \mathrm{~A}-2 \mathrm{~B}$ and $3 \mathrm{~A}-3 \mathrm{~B}$, or $4 \mathrm{~A}-4 \mathrm{~B}-4 \mathrm{C}$. ( $35-39$ units.)
taken in the junior year); an advanced course in the biode Biology 101, 110 and 155 (to be 101,110 or 155 is prerequisite; Biology 190 course in the biological sciences for which Biology selected with the approval of the adviser. 191 or 195; and electives from natural science

## Biology Major

With the A.B. Degree in Applied Arts and Sciences
All candidates for a degree in
requirements listed on page 60 of this catalog. In sciences must complete the graduation 3 or $8 \mathrm{~A}-8 \mathrm{~B}$. of reading or Russian 1,2, and 3 or $8 \mathrm{~A}-8 \mathrm{~B}$ ), or equivalent 3 or $8 \mathrm{~A}-8 \mathrm{~B}$; or German 1, 2, and consultation with the administered by the foreign languledge demonstrated by a test A minor is not req Department of Biology. A minor is not required with this major.

Preparation for the major. Biology 1,2 and 15 ; Chemistry $1 \mathrm{~A}-1 \mathrm{~B}$ and 11 or 12 ;
Mathematics 21 and 22 ; Physics $1 \mathrm{~A}-1 \mathrm{~B}$, or $2 \mathrm{~A}-2 \mathrm{~B}$ and $3 \mathrm{~A}-3 \mathrm{~B}$, or $4 \mathrm{~A}-4 \mathrm{~B}-4 \mathrm{C}$. ( $35-39$ units.)
Major. A minimum of 24 upper division units to include Biology 101, 110 and 155 (to be taken in the junior year); an advanced course in the biological sciences for which Biology 101,110 or 155 is prerequisite; Biology 190 or 191 or 195; and electives from natural science selected with the approval of the adviser.

## Biology Major

With the B.S. Degree in Applied Arts and Sciences
All candidates for a degree in applied arts and sciences must complete the graduation requirements listed on page 60 of this catalog.

Preparation for the major. Biogy 1, 2 and 15; Chemistry 1A-1B and 11 or 12 ; Mathematics 21 and 22 ; Physics 1A-1B, or $2 \mathrm{~A}-2 \mathrm{~B}$ and $3 \mathrm{~A}-3 \mathrm{~B}$, or $4 \mathrm{~A}-4 \mathrm{~B}-4 \mathrm{C}$ ( $35-39$ units.) 12
Major. A minimum of 36 upper division units to include Biology 101, 110 and 155 (to be taken in the junior year); an advanced course in the biological sciences for which Biology 101, 110 or 155 is prerequisite; Biology 190 or 191 or 195; and electives from natural science selected with the approval of the adviser.

## Biology Minor

The minor in biology consists of a minimum of 16 units in biological sciences to include Biology 1 and 2, and nine upper division units in biological sciences selected with approval

## Biology

For the Single Subject Teaching Credential in Life Sciences
All candidates for a teaching credential must complete all requirements for the applicable specialization as outlined in the section of this catalog on the School of Education.
The requirements for the single subject teaching credential in life sciences which includes the area of biology are being revised. For further information consult the department.

1. General Biology (3) I, II

Prerequisites: None; concurrent registration in Biology 2 recommended
A beginning course in biology stressing processes common to living organisms.
2. General Biology Laboratory (1) I, II

Three hours of laboratory.
Prerequisite: Credit or concurrent registration in Biology 1.
A laboratory course in biology stressing processes common to living organisms.
4. Natural History of Plants and Animals (3) I, II

Two lectures and three hours of laboratory.
Prerequisite: Biology 1.
An introduction to plants and animals in relation to their environments and to one another, with emphasis on local forms and their habitats.

## 9. Human Physiology (5) I, II

Three lectures and six hours of laboratory
Prerequisites: Zoology 8 or 60; Chemistry 2A and 2B
Functions of the human body; emphasis on the circulatory, muscular, and nervous systems.
Not open for credit to students with credit for Biology 140 .
15. Introduction to Quantitative Biology (3) I, II

Two lectures and three hours of laboratory.
rerequit and Bexpence in defining and solvin
Methods and experience in defining and solving quantitative problems in biology ncluding the design of experiments, and parametric and nonparametric statistical techniques.
25. Introduction to Heredity (3) I, II

Hereditary mechanisms and consideration of the social implications of recent and expected developments in the field of heredity. Not open to biology majors.
99. Experimental Topics (2-4)

Refer to the catalog statement on Experimental Topics on page 106. Limit of nine units pplicable to a bachelor's degree in courses under this number of which no more than three units may be applicable to general education requirements.

## 101. Cellular Physiology (4) I, II

Two lectures and six hours of laboratory
Prerequisites: Biology 15; Chemistry $1 \mathrm{~A}-1 \mathrm{~B}$, and 11 or 12 ; Physics $1 \mathrm{~A}-1 \mathrm{~B}$, or $2 \mathrm{~A}-2 \mathrm{~B}$ and $3 \mathrm{~A}-3 \mathrm{~B}$, or $4 \mathrm{~A}-4 \mathrm{~B}-4 \mathrm{C}$.

Physiological processes at the cellular level.
109. Regional Field Studies in Biology (1-3)

One- to three-week periods during vacations and summer sessions
Prerequisites: At least 12 units in the biological sciences, including Biology 1 and 2, and consent of instructor. Application for collecting permit must be made at least six weeks before class begins at Bureau of Marine Sciences (AS-111).
Extended field studies of the flora, fauna, and biotic communities of major natural regions
of western North America. May be repeated with new content. Maximum credit six units.
110. Ecology (4) I, II

Two lectures and six hours of laboratory.
Prerequisites: Biology 15 and Chemistry 1A-1B.
Relationships between organisms and the environment; field study in local marine, fresh
111. Aquatic Biology (4) I, II

Two lectures and six hours of laboratory
Prerequisites: Biology 15 and laboratory.
Prerequisites: Biology 15 and 110; Chemistry 1A-1B
erations of inland waters.
112. Fisheries Biology (3) II

Two lectures and three hours of laboratory.
Frerequisite: Biology 110
Fisheries of commercial importance. The dynamics of exploited populations.
113. Biological Oceanography (4) I, II

Pre lectures and six hours of laboratory
Prerequisites: Biology 110, Zoology 50, Physics 2A. Application for collecting permit must Ecological concepts as applied to pelagic and bureau of Marine Sciences (AS-111). environment. Field and laboratory experience in coastal environment.
114. Advanced Ecology (3) I, II

Two lectures and three hours of laboratory.
Trerequisite: Biology 110.
content. Maximum individuals, populations, or communities. May be repeated with new
115. Cix units applicable on a master's degree.
115. Conservation of Wildlife (3) I, II

Plant and animelogy 1.
121. Systems Ecology (5) I, II
121. Systems Ecology (5) I, II

Prerequisites: Bind three hours of laboratory.
Provides a foundation 110 and consent of instructor
ecology, including computer theories and techniques necessary for a systems approach to systems analysis. 122. E

Two lectures and three homent (3) I, II
Prerequisites: Biology 110 and consent
The utilization of electronic equipment of instructor
including field power supplies, effects of to record ecological data under field conditions, sensors, amplifiers and data recorders, and the inter in environmental conditions, types of 123. Simulation of Ecological Systems (4) I, II

Two lectures and six hours of laboratory I, II
Prerequisites: Biology 121 and consent
Properties of different types of models instructor
experiments, ways of evaluating models, the use of carlo methods, the design of simulated
research. The computer will be extensively used.
140. Principles of Human Physiology (3) I II

Prerequisite: Biology 1 or Zoology 8.
open to students with credit in Biology 9. (Formerly and nerve and muscle physiology. No
141. Human Physiology Laboratory (1) I, II

Three hours of laboratory.
Prerequisite: Credit or concurrent registration in Biology 140
Laboratory work in human physiology. Not open to students with credit in Biology 9 (Formerly numbered Biology 23.
142A-142B. Comparative Animal Physiology (4-4) I, II
Two lectures and six hours of laboratory
Prerequisites: Biology 101 and consent of instructor. Application for collecting permit for 142A must be made at least six weeks before class begins at Bureau of Marine Sciences (AS-111).
Semester I: Feeding and digestion, blood and circulation, nutrition, respiration and metabolism, excretion and osmoregulation. Semester II: Receptor, effector, and integrative systems. In both semesters, consideration of function ranges from molecular to organismal levels. All major phyla are considered. Individual laboratory research. (Formerly numbered Biology 142.)
144. Comparative Endocrinology (3) I, II

Prerequisite: Biology 101, Botany 130, Microbiology 105, or Zoology 140. Recommended: Chempry
Endocrine mechanisms at cellular, organismic, and population levels in plants and animals.
144L. Comparative Endocrinology Laboratory (2) II
Six hours of laboratory
Prerequisite: Credit or concurrent registration in Biology 144.
Standard and recent experiments with endocrine systems in vertebrate and invertebrate animals; analysis of mechanisms of hormone action; the role of pheromones in behavioral responses; the effects of auxins on plant growth
148. Photophysiology (3) II

Preluminescence and the physiological effects of visible and ultraviolet radiations on plants and animals.
148L. Photophysiology Laboratory (1) II
Three hours of laboratory
Prerequisite: Credit or concurrent registration in Biology 148
The generation, measurement and control of visible and ultraviolet radiations, and the measurement and analysis of selected biological effects of these radiations.
150. Radiation Biology (3) I, II

Prerequisites: Biology 1 or equivalent; Physics 2A-2B and 3A-3B. Recommended: Chemistry 1A-1B, Biology 101 and Physics 121.
Principles underlying radiological reactions of ionizing radiations. Effects of ionizing radiations at the biochemical, cell, organ, and organism levels.

## 150L. Radiation Biology Laboratory (2) I, II

Six hours of laboratory.
Prerequisite: Credit or concurrent registration in Biology 150
The laboratory determination of the effects of ionizing radiation on biological systems.
151. Radioisotope Techniques in Biology (3) I, II

One lecture and six hours of laboratory
Prerequisites: Biology 1 A , 1 B , or $2 \mathrm{~A}-2 \mathrm{~B}$ and $3 \mathrm{~A}-3 \mathrm{~B}$. Recommended: Chemistry 4 or 5 and Biology 101
The prines and applicautionraphy techniques
155. Genetics (4) I, II
155. Genetics (4) I, II
Two lectures and six hours of laboratory.

Two lectures and six hou
Prerequisite: Biology 15.
Principles of plant and animal genetics with experiments and demonstrations illustrating the mechanisms of heredity.
156. Developmental Biology (4) I, II

Two lectures and six hours of laboratory.
Prerequisites: Biology 155 and Chemistry 11 or 12. Recommended: Biology 101
Analysis of development with emphasis on embryonic differentiation.
157. Cytogenetics (4) I

Two lectures and six hours of laboratory.
Prerequisite: Biology 155
The physical basis of heredity. Study of the chromosomes and chromosome behavior in relation to problems in heredity and evolution.
158. Human Genetics (4) I, II

Two lectures and six hours of laboratory.
Prerequisite: Biology 155
Genetics as related to human biology, with consideration of the applied fields of medical genetics, genetic counseling, and population studies.

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159. Human heredity (3) I, II

Prerequisite: Biology 1.
rerequisite: Biology , human studies. Not open to students with credit in Biology 155 or 158 or to biology majors. 160. Evolution and Population Genetics (4) I, II

Two lectures and six hours of laboratory.
Prerequisite: Biology 155.
Theory of evolution and modeling of genetic systems.
161. History of Biology (3) I, II

Prerequisite: A college course in biology.
Lectures and reports tracing scientific development of biology with emphasis on the fluence of personalities and trends of the times. Not more than three units in the history of biology may be counted for graduate credit
162. Source Material in the History of Biology (3)

Prerequisite: Biology 161.
study of original papers of significance to the history of biology. Not more than three nits in the history of biology may be counted for graduate credit.
163. Microbial Genetics (4) I, II

Two lectures and six hour
The design, methods and execution of research in microbial genetics.
165. Biology of Natural Populations (3) I, II

The relation of modern concepts of genetics, ecology and physiology to natural populations with emphasis on the problems of human populations. Not open to majors in the biological sciences.
166. Honors Course (1-3) I, II

Refer to Honors Program.
167. Biology for Teachers (4)

Two lectures and six hours of laboratory.
Prerequisites: Biology 1 and 2.
Advanced study of biological principles including classification, physiology, morphology, and evolution. Designed primarily for those electing a biology minor for elementary or secondary teaching curricula. Not open to students majoring in the biological sciences.
169. Ecological Genetics (4) I, II

Two lectures and six hours of laboratory
Prerequisites: Biology 110 and 155 .
Field and laboratory study of genetic adjustments and adaptations of natural populations to their environments.
170-S. Contemporary Problems in Biology (1) S Cr/NC
A series of six weekly lectures on varied aspects of biology by scientists engaged in open to the public. Maximum credit three units.
171. Mutagenesis (3)

Basic principles and 155. levels of biological organization. Emphasis on mutation induction by chemicals and ionizing levels of bi
172. Behavioral Genetics (3) I,

Prerequisite: Biology 155
The genetic involvement of single and multiple gene systems in animal behavior
173. Advanced Genetics (3) I, II

Prerequisite: Biology 155.
Current topics in molecular, organismal or population genetics. Maximum credit six units.
175. Statistical Methods in Biology (3) I

Two lectures and three hours of laboratory
Prerequisite: Biology 101, 110 or 155
Application of statistical techniques to biological data. Not open to students with credit for another upper division course in statistics except with written approval of the chairman of the department offering the student's major to be filed with the Evaluations Office.
181. Advanced Cellular Physiology (3) I, II

Prerequisite: Biology 101
Current topics in cellular physiology
182. Immunochemistry (3) I, II

Prerequisite: Biology 101 or Microbiology 103
Structure and function of the immunoglobulins and the chemical and physical nature of the antigen-antibody reaction.

## 182L. Immunochemistry Laboratory (1) I, II

## Prerequisite: Credit or concurrent registration in Biology 182

The characterization of the immunoglobulins and the measurement of the antigen antibody reaction.
190. Senior Investigation and Report in Physiology (2) I, II

Prerequisites: Biology 101, senior standing and consent of instructor
Investigation and report on current physiological literature
191. Senior Investigation and Report in Ecology (2) I, II

Prerequisites: Biology 110, senior standing and consent of instructor
Investigation and report on current ecological literature
195. Senior Investigation and Report in Genetics (2) I, II

Prerequisites: Biology 155, senior standing and consent of instructor
Investigation and report on current genetic literature.
198. Methods of Investigation (2) I, II

One hour of discussion and three hours of laboratory
Prerequisites: Junior standing and a major in the life sciences.
Individual and original investigations in biology; class reports. Maximum credit four units for Biology 198 or a combination of this course with Microbiology or Zoology 198. 199. Special Study (1-3) I, II

Individual study. Maximum credit six units
Prerequisites: Fifteen units in biological sciences with grades of A or B and consent of
instructor.

## Graduate Courses

200. Seminar (2 or 3)

Prerequisite: Consent of instructor
An intensive study in advanced biology, topic to be announced in the class schedule Maximum credit six units applicable on a master's degree.
210. Seminar in Cellular Physiology (2)
ent of instructor
units applicable on a master's degree
220. Seminar in Developmental Biology (2)
rerequisite Biology 156
May be repeated with new content. Maximum credit four units applicable on a master's degree.
221. Developmental Genetics (3)

Prerequisites: Biology 101 and 156
Regulation of genetic information in developing systems.
222. Morphogenesis (3)

Prerequisites: Biology 101 and 156.
Regulation of pattern formation in developing systems; cell migration, cell division, cell death, dependent differentiation.
230. Speciation (3)

Prerequisites: Biology 110 and 155, or Biology 160
Concepts and principles of the origin of species.
231. Seminar in Ethology and Comparative Psychology (3)
(Same course as Psychology 231.) graduate adviser.
Current problems in ethology and comparative animal behavior. Maximum credit six units applicable on a master's degree
240. Seminar in Terrestrial Ecology (2)

Prerequisite: Biology 110
Ecological concepts as applied to the terrestrial environment. May be repeated with new content. Maximum credit four units applicable on a master's degree.
241. Seminar in Aquatic Ecology (2)

Prerequisite: Biology 110.
Ecological concepts as applied to the fresh water and marine environment. May be repeated with new content. Maximum credit four units applicable on a master's degree. 242. Population and Community Ecology (3)

Two lectures and three hours of laboratory
Prerequisite: Biology 110.
Frermulation, analysis, and experimental testing of the theories of the structure and dynamics of ecological systems at the population and community level.

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243. Physiological Ecology (3)

Two lectures and three hours of laboratory.
Two lectures and three hours of laberatory.
Prerequisites: Biology 110 and consent or instral natural plant and animal populations in relation to their habitats and environments.
244. Physical Aspects of Ecology (3)

Prerequisite: Biology 110.
Two lectures and three hours of laboratory
Analysis and measurement of physical factors of the environment and of the processes by Anch energy and matter are exchanged between organisms and the environment; the which energy and physical environment in ecological processes.
245. Aquatic Ecology (3)

Prerequisites: Bigy Prequites: Biology in weeks before class begins at Bureau of Marine Sciences (AS-111)
must be made at lectures and three hours of laboratory
Two lectures and three hours of laboratory. Ecological concepts as applents
246. Behavioral Ecology (3)

Two lectures and three hours of laboratory. Psychology 141.
Psychology 141.
Behavioral mechanisms relating animals to their physical and biotic environment.
250. Biogeography (3)

Prerequisite: Biology 110 or 160 .
Concepts and principles of the distributional history of plant and animal groups, and the
origins and dispersal of modern faunas and floras
260. Seminar in General Physiology (2)

Prerequisite: Biology 101.
May be repeated with new content. Maximum credit four units applicable on a master's degree.
261. Seminar in Environmental Radiation (2)

Prerequisites: Biology 150 and 151
The sources, characteristics, distribution, measurement, and fate of radioactive mints applicable on a master's degree.
262. Cytoplasmic Inheritance (3)

Prequites: Biol 101, 155, and consent of instructor
Literature and techniques related to research in non-Mendelian genetics.
263. Seminar in Comparative Physiology (2)

Prerequisites: Biology 142A or 142B and consent of instructor. redit four units applicable on a master's degree
264. Methods in Physiology (2)
264. Methods in Physiolo
Six hours of laboratory.

Pix hours of laboratory.
Current methods employed in physiological measurements. Maximum credit four units applicable on a master's degree.
265. Molecular Biophysics (3)

Prerequisites: Biology 101 and Mathematics 22.
The description and analysis of biological processes and systems in terms of the properties of molecules and of basic principles.
270. Seminar in Genetics (2)

Maximum credit four units applicable on a master's degree
276. Physiological Genetics (3)

Prerequisites: Biology 155 or 158; Chemistry 12.
Recommended: Chemistry 115A-115B.
Biochemical aspects of genetics of microbial and human systems.

## 290. Bibliography (1)

Exercises in the use of basic reference books, journals, and specialized bibliographies, preparatory to the writing of a master's project or thesis.
291. Investigation and Report (3)

Analysis and research techniques in biology.
297 . Research (1-3) $\mathrm{Cr} / \mathrm{NC}$
Research in one of the fields of biology. Maximum credit six units applicable on a master's degree.
298. Special Study (1-3) Cr/NC

Prerequisite: Consent of staff; to be arranged with department chairman and instructor. Individual study. Maximum credit six units.
299. Thesis or Project (3) $\mathrm{Cr} / \mathrm{NC}$

Prerequisites: An officially appointed thesis committee and advancement to candidacy Preparation of a project or thesis for the master's degree.

## Botany <br> In the College of Sciences

## Faculty

Emeritus: Harvey
Professors: Gallup, Kummerow, Wedberg
Associate Professors: Alexander (Chairman), Preston, Rayle Assistant Professors: Carmichael, Johnson

## Offered by the Department

Master of Arts degree in biology with an emphasis in botany
Major in botany with the A.B. degree in liberal arts and sciences.
Major in botany with the B.S. degree in applied arts and sciences.
Minor in botany.
Single subject teaching credential in life sciences in area of botany.

## Botany Major

## With the A.B. Degree in Liberal Arts and Sciences

All candidates for a degree in liberal arts and sciences must complete the graduation requirements listed on page 60 of this catal it is recommended that students choose French, German, or Russian to meet the foreign language requirement for graduation.

A minor is not required with this major.
Preparation for the major. Biology 1, 2, and 15; Chemistry 1A-1B, and 11 or 12 ; Mathematics 21 or 40 ; and Physics $1 \mathrm{~A}-1 \mathrm{~B}$, or $2 \mathrm{~A}-2 \mathrm{~B}$ and $3 \mathrm{~A}-3 \mathrm{~B}$. ( 32 units.)
Major. A minimum of 24 upper division units to include Biology 155 and either Biology 110 or Botany 114, Botany 100 and 101 or 102 or 103 , and 130 and 190A, 190B, and electives in the natural sciences. Recommended: Botany 140 and Microbiology 101.

## Botany Major

With the B.S. Degree in Applied Arts and Sciences
All candidates for a degree in applied arts and sciences must complete the graduation requirements listed on page 60 of this catalog

A minor is not required with this major.
Preparation for the major. Biology 1, 2, and 15; Chemistry 1A-1B, and 11 or 12 ; Mathematics 21 or 40 ; and Physics $1 \mathrm{~A}-1 \mathrm{~B}$, or $2 \mathrm{~A}-2 \mathrm{~B}$ and $3 \mathrm{~A}-3 \mathrm{~B}$. ( 32 units.) Recommended: German or French or Russian; Geology 2 and 3 or 4 and 5.

Major. A minimum of 36 upper division units in the biological sciences to include Biology 110 and 155; Botany 100 and 101 or 102 or 103; Botany 114, 130, 190A, and 190B; Microbiology 101; and five units of electives. Recommended: Botany 140.

## Botany Minor

The minor in botany consists of a minimum of 15 units in botany, six units of which must be in upper division courses.

## Botany

For the Single Subject Teaching Credential in Life Sciences
All candidates for a teaching credential must complete all requirements for the applicable All candidates for a teaching credential must complete all requirements for the app
The requirements for the single subject teaching credential in life sciences which includes the area of botany are being revised. For further information consult the department

Lower Division Courses

1. Plants and Man (3) I, II

Basic structure and function of plants with emphasis on the interrelationships of plants and man.

99．Experimental Topics（2－4）
Experime Topics on page 106．Limit of nine units Refer to the catalog statement on exper under this number of which no more than three units may be applicable to general education requirements．

## Upper Division Course

100．General Botany（4）I，II
Three lectures and three hours of laboratory．
Prerequisites：Biology 1 and 2 ．
Prerequisites：Biology 1 and 2 ．
Primarily for majors in the biological sciences．Structure，physiology，reproduction and evolution of the major plant groups．
101．Phycology（4）I，II
Two lectures and six hours of laboratory．
Prerequisites：Biology 1 and 2.
Morphology and phylogenetic relationships of the algae
102．Mycology（4）I，II
Two lectures and six hours of laboratory．
Prerequisites：Biology 1 and 2.
The structure，food relations，and classification of fungi．
103．Vascular Plants（4）I，II
Two lectures and six hours of laboratory．
Prerequisites：Biology 1 and 2.
Structure，development and phylogenetic relationships of the bryophytes and vascular plants．
111．Advanced Phycology（3）I，II
Prerequisite：Botany 101.
Physiology，ecology culture and economic aspects of the algae．Maximum credit six
with three units applicable on a master＇s degree．
112．Cultivated Trees and Shrubs（3）I
One lecture and six hours of laboratory，field trips
common cultivated trees and shrubs of the San Diego region．Trips to local parks and private gardens．
114．Plant Taxonomy（4）II
Two lectures and six hours of laboratory，field trips．
Prerequisite：Biology 155.
The study of variation，primarily in flowering plants；classification，identification， nomenclature，distribution．
118．Plant Study of the California Deserts（3）
Formerly X－119．Offered in Extension only
Flowering plants of the desert region．
119－S．Field Botany（4）S
Two lectures and six hours of laboratory
Prerequisite：A course in college biological science or consent of instructor
Local native vegetation with emphasis on ecological units within floristic areas．Primarily
for students not majoring in the College of Sciences．
126．Plant Pathology（4）I
Two lectures and six hours of laboratory．
Prerequisites：Biology 1 and 2．Recommended：Botany 102
A practical course dealing with the principles of disease in plants，control measures，and quarantine procedures．Emphasis is placed on the determination and control measures of those pathogenic organisms which affect crops，trees and shrubs and nursery stock．
130．Plant Physiology（4）I，II
Two lectures and six hours of laboratory．
Prerequisites：Biology 1，2；Chemistry 1A－1B，and 11 or 12
The activities of plants，including food manufacture，absorption，conduction， ransportation，respiration，growth and movement
32．Plant Metabolism（3）
Prerequisite：Botany 130 or Biology 101
An examination of metabolic pathways in plants and their regulation and control．
133．Experimental Plant Metabolism（2）
Six hours of laboratory．
Prerequisites：Credit or concurrent registration in Botany 132 and consent of instructor Experimental approaches to the study of plant metabolism and development．

140．Plant Anatomy（4）II
Two lectures and six hours of laboratory．
Prerequisites：Biology 1 and 2．Recommended：Botany 100.
The arrangement of structural elements within plant organs，with emphasis on cell and tissue types．
162．Agricultural Botany（2）
Field trips to be arranged．
Prerequisites：Biology 1 and 2．Recommended：Botany 100 or Zoology 121.
California crop plants，their general identification，cultural methods，and regional distribution
166．Honors Course（1－3）I，II
Refer to Honors Program．
172．Palynology（3）I
One lecture and six hours of laboratory．
Prerequisite：A course in college biological science
Principles and methods of pollen and spore diagnosis，with reference to use in taxonomy，
paleontology，anthropology，and medicine．
190A．Senior Investigation and Report（1）I
One discussion period and two additional hours to be arranged
Prerequisites：Botany 101 or 102 or 103 ，and senior standing
II
190B．Senior Investigation and Report（2）II
One discussion period and five additional hours to be arranged
Individual investigation
progress reports，oral and written final reports．
196．Selected Topics in Botany（2－3）I，II
Prerequisite：Consent of instructor
Selected topics in classical and modern botany．May be repeated with new content Maximum credit six units with three units applicable on a master＇s degree
199．Special Study（1－3）I，II
Prerequisite：Fifteen units in botany with grades of A or B or consent of instructor

## Graduate Courses

200．Seminar（2 or 3）
Prerequisite：Consent of instructor
An intensive study in advanced botany，topic to be announced in the class schedule Maximum credit six units applicable on a master＇s degree．
201．Seminar in Phycology（2）
Recent developments in phycology．Maximum credit four units applicable on a master＇s degree．
202．Seminar in Mycology（2）
Prerequisite：Botany 102 ．
Current problems in the taxonomy，morphology or physiology of the fungi．Maximum credit four units applicable on a master＇s degree．
203．Seminar in Vascular Plants（2）
Prerequisite：Botany 103
Problems in the evolution of the vascular plants．Maximum credit four units applicable on a master＇s degree．
226．Seminar in Plant Pathology（2）
Prerequisite：Botany 126
Advanced topics in the biology of plant pathogens．Maximum credit four units applicable on a master＇s degree．
230．Seminar in Plant Physiology（2）
Prerequisite：Botany 130.
Current investigations in one of the areas in plant physiology．Maximum credit four units applicable on a master＇s degree．
297．Research（1－3）Cr／NC
Research in one of the fields of botany．
Maximum credit six units applicable on a master＇s degree．
298．Special Study（1－3）Cr／NC
Prerequisite：Consent of staff；to be arranged with department chairman and instructor． Individual study．Maximum credit six units．
299. Thesis or Project (3) $\mathrm{Cr} / \mathrm{NC}$

Prerequisites: An officially appointed thesis committee and advancement to candidacy. Preparation of a project or thesis for a master's degree.

## Business Administration <br> In the School of Business Administration A member of the American Assembly of Collegiate Schools of Business

## Faculty

Accounting Department
Emeritus: Brown, Wright
Professors: Brodshatzer, Dodds, Ferrel, Harned, Meier (Chairman), Odmark, Snudden Associate Professors: Bailey, Lightner, Williamson
Assistant Professors: Meigs, Samuelson, Toole
Lecturer: Sykes
Finance Department
Professors: Chapman, Hippaka, Hungate (Dean), Nye, Reints, Reznikoff, Wijnholds Associate Professors: Block, Fisher, H., Hutchins, Neuberger, Schmier, Short, Smith
andenberg (Chairman)
Assistant Professors: Cowan, Fisher, R.T., Potter, Wilbur
Information Systems Department
Emeritus: Gibson
Professors: Archer, Crawford (Associate Dean), Langenbach,' LeBarron, Pemberton (Chairman), Straub
Associate Professor: Spaulding
Assistant Professors: Chrysler, Mahoney, Stenvall, Tilaro
Lecturers: Crownover, Padelford, Richardson, Wight
Management Department
Emeritus: Torbert
Professors: Atchison, Belasco, Belcher, Galbraith, Ghorpade, Hampton, Mitton, Peters, Pierson, Sherrard (Chairman), Srbich
Assistant Professors: Beatty, Boschken, Hesse, Trippi
Marketing Department
Emeritus: deJulien
Professors: Barber, Darley (Chairman), Haas, Hale, Lindgren, McFall, Sharkey, Wotruba Associate Professors: Akers, Soldner, Vanier
Assistant Professors: Brooks, Redinbaugh, Settle, Vidali
Offered by the School of Business Administration
Master of Science degree in business administration, Master of Business Administration. (Described in the Graduate Bulletin. Also refer to the section in this catalog on the Graduate Division.)
Majors with the B.S. degree in business administration in the following fields: accounting, finance, information systems, insurance, management, marketing, real estate. (Described in the section on the School of Business Administration.)
Minors in the following fields: accounting, business management, employee relations, finance, information systems, insurance, marketing, production and operations management,
Teaching major in business for the single subject teaching credential.

## Lower Division Courses

1A-1B (4) or 1A-1B (2-2). Accounting Fundamentals I, II
A-1B (4) or $1 \mathrm{~A}-1 \mathrm{~B}(2-2)$. Accounting Fundamentals I, II
Three hours of lecture and laboratory per two units of credit.
Three hours of lecture and laboratory per two units of credit.
Organizing, recording, and communicating economic information relating to the business entity.
30A. Business Law (3) I, II
Introduction to legal institutions; nature and sources of law; the judicial system; legal concepts and cases involving contracts, agency, and sales.

30B. Business Law (3) I, II
Prerequisite: Business
Prerequisite: Business Administration 30A
Legal concepts and cases to be selected from business organization, negotiable and labor law, property, security devices, creditors' rights and bankruptcy, trade regulation 118 instead of 30 B .
40. The Business E

Not open to stud Enterprise (3) I, II
Administration.
The business enterprise and its function in society; interrelations of ownership, entrepreneurship, and administration; interactions within the firm and within and among
industries. industries.
71. Beginning Typewriting (2)

Four hours.
Fundamentals of typewriting. Development of personal-use skills. Not open to students with credit for high school typewriting.
72. Advanced Typewriting (2)

Four hours.
Application of typewriting skills in solution of typical business problems.
73. Computational Machines Laboratory (1) I, II

Two hours of laboratory.
Laboratory course in figuring and calculating machine principles and operation.
74. Communicative Machines Laboratory (2) I, II

Four hours of laboratory.
Prerequisite: Business Administration 71
Laboratory course in communication and duplicating machine principles and operation. 75A-75B. Shorthand (3-3)
Prerequisite. lecture and activity.
Prerequisite: Business Administration 72; 75A is prerequisite to 75B
Gregg shorthand theory; dictation and transcription.
76. Advanced Shorthand (3)

Prerequisite: Business Administration 75B
Development of speed in writing and transcription
80. Written Communications in Business (3) I, II

Prerequisite: English 5 or 6 .
Prerequisite: English 5 or 6 .
Principles of effective writing applied to business and industrial situations and to th 83. Information presentation of reports.

Ind Computer Programming (3) I, II
to concepts of information processing and computer programming
84. Systems Programming (3) I, II
rerequisite: Business Administration 83
The theory and techniques of data manipulation, utilizing a problem-oriented language 99. Experimental Topics (2-4)

Refer to the catalog statement on Experimental Topics on page 106. Limit of nine units applicable to a bachelor's degree in courses under this number of which no more than three units may be applicable to general education requirements.

## Upper Division Courses

100. Intermediate Accounting (4) I, II

Prerequisite: Business Administration 1B
Theories and principles underlying financial statements and determination of income o partnerships and corporations.
101. Specialized Accounting Problems (4) I, II

Prerequisite: Business Administration 100 .
Problems involved in partnerships, consignments, consolidations, receiverships, foreign exchange, fund accounting, and other specialized areas
102. Managerial Cost Accounting (4) I, II

Prerequisite: Business Administration 1B
Management use of accounting data for planning and control; theories and practices of cost accounting, standard cost systems, distribution analysis, and capital budgeting.
103. Accounting for Managers (4) I, II

Prerequisite: Credit or concurrent registration in Business Administration 132 Managerial accounting and financial accounting for nonaccountants. Not open to students
with credit in Business Administration 100 or 102 .
106. Income Tax Accounting (4) I, II

Prerequisite: Business Administration 1B. Theory and procedures in the preparation
individuals, partnerships and corporations. (2) I, II
107. Advanced Income Tax Accounting (2) I,

Prerequisite: Business Administration 106. Theories of taxation as related fo pers return preparation; brief survey of gift, estate and liquidation and capita
social security taxes.
108. Governmental Accounting (2) I, II

Prerequisite: Business Administration 100 . Principles of fund accounting useful with commercial accounting emphasized. Includes colleges, and universities. Comparisons with commerciarances, internal checks and auditing study of budg
112. Auditing (4) I, II
112. Auditing (4) Prerequisites: Business Administration 101 and 102.

Prerequisites: Business Administration 101 and 102 . General principles and concepts of auditing; consideration procedures for verification of systems; duties, ents; auditor's reports.
114. Accounting Systems (3) I, II

Prerequisites: Business Administration 100 and 102
General system theory and system terminology. New mathematical and statistical General system theory and special system problems. Planning, controlling, and reporting procedures will be developed for accounting systems employing the use of digital computers.
115. Accounting Theory (3) I, II

Prerequisites: Business Administration 100 and 102 and one other upper division course in accounting.
Critique of contemporary accounting theory; recommendation for improvement of financial accounting; research in accounting theory.
118. Advanced Business Law (3) I, II

Prerequisites: Business Administration 30A and a major in accounting with at least nine upper division units in accounting.
Legal concepts and cases involving business organization, negotiable instruments, property, security devices, creditors' rights, bankruptcy, insurance, wills, trusts, estates, and cretit in Business Administration 30B.
119. Advanced Accounting Problems (3) I, II

Prerequisite: Business Administration 112 .
An intensive review of the accounting principles and procedures covered in the accounting theory and accounting practice sections of the uniform C.P.A. examination prepared by the American Institute of Certified Public Accountants.
120. General Insurance (3) I, II

History of insurance; economic and social implications; principles of insurance contracts; theory of risk; law of large numbers. Survey of all major insurance fields and policies including life, fire, marine, inland marine, casualty and surety bonding.
121A. Property Insurance (3) I
Prerequisite: Business Administration 120
Standard forms of property insurance including fire and allied lines, business interruption and consequential loss coverages, inland marine, and ocean marine. Other areas including marketing, underwriting, investment, rate-making, loss adjusting, reinsurance, and government regulation.
121B. Casualty Insurance (3) II
inistration 120
Basis for legal liability. Identification of personal business and professional liability situations, liability risk management. Analysis of major liability insurance contracts including underwriting, rate-making, regulation, and reserves of casualty insurers.
122. Social Insurance (3) II

Prerequisite: Economics 1B. compensation; unemployment compensation and disability insurance. Administration coverage, financing, and benefit provisions. Strength and weakness of existing systems.
123. Employee Benefit Plans (3) II

Theory of employee benefit plans. The group technique. Group life and health insurance. Insured pension plans. Trust fund plans. Funding and cost considerations. Profit sharing plans. Self-employed plans. Problems in benefit security. Administration of employee benefit plans.
124. Life Insurance Principles and Practices (3) II

Prerequisite: Business Administration 120.
Economic and social aspects of life insurance; nature of life insurance and annuity contracts; basic legal principles; theory of probabilities, premiums, reserves, nonforfeiture values; company operational activities; agency development and management.
125. Estate Planning (3) I, II

Programming fundamentals with emphasis on economic, actuarial, and legal principles program coordination and integration with wills; guardianships; estate planning fundamentals; taxation; business life insurance. Analysis of life insurance selling as a career
126. Fundamentals of Finance (3) I, II

Prerequisite: Completion of lower division course requirements in major or minor. Objectives of financial management. Financing the business enterprise. Internal financial techniques of present value and its applications. Sources of capital ( Forme leverage and the Business Administration 127.)
127. Planning of Capital Expenditures (3) I, II

Prerequisites: Business Administration 126 and credit or concurrent registration in 190 The capital expenditure decision process. Measuring and evaluating benefits and costs. The cost of capital and the evaluation process. Capital rationing problems. Risk and uncertainty in the decision process. Emphasis on quantitative and computer methods in the decision-making process.

## 128A. Investments (3) I, II

Prerequisite: Business Administration 126.
Investment principles and practices with emphasis on problems of the small investor, such as tests of a good investment, sources of information, types of stocks and bonds, mechanics of purchase and sale, investment trusts, real estate mortgages, and the like. (Formerly
numbered Business Administration 128.)
Prerequisity: Analysis and Investment Strategies (3) I, II Prerequisite: Business Administration 128A
fundamental analysis of security valuation and market behavior by advanced technical and fundamental analysis. Strategies for optimizing profit and minimizing risk in securities 129. Internation Business Finance (3) II II
129. International Business Finance (3) I, II
Prerequisite: Business Administration 126.

Prerequisite: Business Administration 126 . environment; international financial institutions.
130. Financial Analysis and Management (3) I, II

Prerequisites: Business Administration 127 and Economics 135
Evaluation of conditions and trends in the money and capital markets. Utilization of financial data as related to the problems of business enterprises. Emphasis on decision making and research in finance
131. Law in a Business Society (3) I, II

Prerequisite: Business Administration 30A
The nature of law as a process of resolving economic disputes and social conflicts. Analysis of the rationale in statutes, judicial decisions, and doctrine. The role of law in the development of business concepts.
132. Fundamentals of Management (3) I, II

Prerequisite: Completion of lower division courses required in the major or minor.
What a manager does, how he selects objectives, organizes essential activities, plans, directs and controls operations; fundamentals which guide a manager's decisions.
134. The Social Environment of Business (3) I, II

Prerequisite: Senior standing.
An interdisciplinary study of American business enterprise in its cultural environment The foundations of business; historical modifications; present relationship between busines ethical rensibilies of business and the businessman
135. Fundamentals of Production and Operations Management (3) I, II

Two lectures and three hours of laboratory.
Role of the operations function in the organization. Study of production and operations rganizations. Systems analysis, facilities planning, competitive bidding, methods and scheduling and control models.
136. Quality Control (3) I II

Prerequisites: Business Administration 135 and 190.
Techniques for planning and controlling quality of produced and purchased items; emphasis on statistical and quantitative methods particularly applicable to quality, reliability, and maintainability.
137. Systems and Methods Analysis (3) I, II Two lectures and three hours of laboratory Prerequisite: Business Administration 135.
Examination of systems approach as applied to methods analysis and work measurement

138. Operations Planning and Control Systems (3)
Prerequisites: Business Administration 135 and 190 .

Problems in the design of single- and multiple-product integrated production and inventory control systems. Detailed and aggregate scheduling of operations under deterministic and stochastic demand conditions.
140. Employee Relations (3) I, II

Prerequisite: Business Administration 132.
and public policy, staffing, employee develing with employees, special attention to company and public policy, staffing, employee development, labor relations and employee motivation Comparisons of current practices to underlying problems and theories
141. Applications in Management (1-3) I, II

Prerequisites: Business Administration 132 and concurrent registration in Business
Administration 135,140 Administration 135, 140,145 or 149
eas of management
142. Wage and Salary Administration (3) I, II

Major problems in the determination and control of compensation from Comparison of underlying theory to current practice.
143. Problems in Employee Relations (3) II

Prerequisite: Business Administration 140.
The employee relations function. Analysis of current practices as effective solutions to problems in this area. Guided research into the nature of employment relations
145. Human Factors in Management (3) I, II

Prerequisite: Business Administration 132 or Public Administration 144
Organizations as social systems; power and authority; communication,
leadership; impact of technology on power and authority; communication, motivation and needs and the imperatives of management.
148. Management Decision Games (1-3) I, II

Prerequisite: Consent of instructor.
business games. business games.
149. Business Policy (3) I, II

Frerequisites: Senior standing and consent of instructor
development of overall management view; integration of the various specialties in business; 150. Mirkt overnt.
150. Marketing Principles (3) I, II

Mrerequisite: Completion of all lower division course requirements for the major or minor channels of distribution; inties of producers, wholesalers, retailers and other middlemen regulation. 151 .
151. Marketing Management (3) I, II

Prerequisites: Business Administration 156 and 157.
with the aid of social science concepts. Integrates thent of marketing strategy and plans function.
152. Retailing Principles (3) I, II

Prerequisite: Business Administration 150.
Study of retail stores, emphasizing the problems of store managers and merchandising executives; store location, organization, personnel, sales promotion, buying and handling of merchandise, inventory, turnover, and control methods. Problems of profitable operation under changing conditions.
153. Advertising Principles (3) I, II

Prerequisite: Business Administration 150.
product analysis; advertising media; tool in marketing activities; consumer, market and product analysis; advertising media; preparation of advertisements; measurement of advertising effectiveness; economic and legal aspects of advertising; public relations;
adverting campaigns. 154. Marketing

Prerequisite: Business (3) I, II
Complex cases in marketing intration 150.
Complex cases in marketing involving analysis of business situations.
156. Consumer Behavior (3) I, II

Prerequisite: Business Administration 150
Examination of the nature of markets and of the factors influencing market development and change. Study of the individual consumer's behavior in relation to the selling-buying process.
157. Marketing Research (3) I, II

Prerequisites: Business Administration 150 and 190
Formal research techniques and analysis for marketing decisions; principles of decision
158. Marketing Research Laboratory (1)

Three hours of laboratory
Prerequisite: Business Administration $15 \%$
Applications of market research techniques to selected topics. Uses and limitations of various methods of analysis. Orientation and use of computer center is included.
159. Analysis of Marketing Information (3) I, II

Prerequisites: Business Administration 150 and 190
The analysis and interpretation of marketing and business information. Decision-making procedures used in conjunction with marketing information.
160. Advertising Management (3)

Prerequisites: Business Administration 153 and 156
The management of the advertising and sales promotion function
161. Traffic Management (3) I

Prerequisite: Economics 1B or 103B.
Organization and functions of a traffic department, routing policy on shipments, freight rates and classifications, receiving and shipping, loss and damage claims, warehousing, packind 62. Industrial Marketing (3) I, II

Prerequisites. Busil 132 and 150
Study of industrial products and services and how they are marketed; classifications of industrial products and customers; buying procedures; applications of marketing research andrial 163. Sales Management (3) I, II

Prerequisite: Business Administration 150.
Consideration of the structure of sales organization; sales policies; selection, training compensation, evaluation and control of the sales force; sales analysis; sales quotas; sales costs and budgets; markets and product research and analysis; coordination of personal selling with other forms of sales effort.
164. Purchasing and Buying (3) I, II

Prerequisites: Business Administration 132 and 150.
Policies for purchasing raw materials, parts, supplies and finished goods for manufacturing operations, for commercial uses, and for wholesale and retail resale. Buying procedures, inventory control, vendor relations, legal problems, quality control, financing.

## 165. International Marketing (3) II

Prerequisite: Business Administration 150.
Bases and promotion of marketing; foreign marketing; organizations and methods; technical and financial features of international markets; selection of organization and trade channels. Determinants and principles of foreign marketing policies
166. Honors Course (1-3) I, II
170. Peal Esta Pram
170. Real Estate Principles and Practices (3) I, II

Prerequisite: Economics 1B or 103B
Functions and regulation of the real estate market; transfers of property; including escrows, mortgages, deeds, title insurance; appraisal techniques; financing methods; leases;
subdivision development; property management.
171. Law of Real Property (3) I, II

Prerequisites: Business Administration 30B and 170
Legal theory and practice of estates in land; landlord and tenant relationships; land transactions; mortgages and trust deeds; easements; land use; ownership rights in land; environmental law.
172. Property Investment and Management (3) I, II

Prerequisite: Business Administration 170.
The rental markets, property management programs, collection procedures, lease forms, tenant and owner relations, rental techniques, maintenance and rehabilitation procedures, and investment property analysis.
173. Real Estate Finance (3) I, II
73. Real Estate Finance (3) I, II
Prerequisites: Business Administration 30B and 170.

Prerequisites: Business Administration 30 B and 170 .
Methods of financing real estate; sources of real estate credit; loan servicing; governmental financial agencies; acquisition and sale of mortgages and trust deeds.
174. Real Estate Appraisal Theory (3) I, II

Introduction to theories, functions, and purposes of appraisals of residential and income properties: methods of valuation, techniques of market data analysis, rehabilitation estimates.
175. Real Estate Appraisal Problems (3) II

Implementation of advanced value theory and appraisal technique in the solution of valuation problems involving condemnation, and industrial, commercial, land, and special purpose properties.
180-S. Workshop in Business Education (2) S
Developments in business education areas such as (A) bookkeeping, (B) distributive and
basic business education, (C) secretarial, and (D) typewriting. Opportunity provided for work on individual problems. May be repeated with new content. Maximum credit eight units.
182. Consumer Income Management (3) I, II

Functions and responsibilities of consumers; problems of choice making; planning installment fuying bing, hing prond operation, insurance and investments. Economics 183. 183. Executive Secretarial Management (3)

Prerequisites: Business Administration 74 and 75B.
Executive secretarial responsibilities and functions, including a review for the Certified 84. Information Syster. Manation.
184. Information Systems Management (3) I, II

Prerequisite: Business Administration 83; Economics 2 or Mathematics 19
Administrative theories as they apply to typical information systems; interrelationship of personnel, equipment, and services; emphasis on quantitative and qualitative aspects of formation systems.
185. Automated Management Information Systems (3) I, II

Prerequisites: Business Administration 84; Economics 2 or Mathematics 19
Concepts and techniques for the design, development, and implementation of EDP-based anagement information systems to improve decision making
186. Information Storage and Retrieval Systems (3) I, II

Prerequisite: Business Administration 185.
(Formerly numbered Business and retrieving information with automated equipment. 187. Ad

Prerequisite Programming Techniques (3) I, II
Prerequisite: Business Administration 185.
Administration 188.) 188. Data Proces.)
188. Data Processing Practicum (3) I, II

Prerequisites: Business Administration 186, 187, 190
applications to to sharting and computer programming; computer applications to typical automated data processing problems. (Formerly numbered Business
190. Quantitative Analysis for Business (3) I, II

Prerequisites: Mathematics 20; Economics 2 or Mathematics 19
191. Quantitative Methods (3) to business decision making.

P1. Quantitative Methods (3)
Prerequisites: Mathematics 20; Economics 2 or Mathematics 19
simple linear programming and science techniques such as simulation, transportation and 92. Advear programming and queuing theory

Prerequisite: Business Administrat (3)
The derivation and Applicatistration 191
decision making. Simulation of static of management science techniques to management and nonlinear programs. 193. Management Science

Prerequisite: Business Administration 192.
Study of current applications of operations research techniques to the solution of business and industrial problems. Readings, projects, cases, and field work as appropriate.

## 150 / Business Administration

207. Research and Reporting (3)

Prerequisite: Business Administration 202B.
Principles of research design and data accumulation. The analysis and effective presentation of data related to business and industry.
208. Managerial Accounting (3)

Prerequisite: Business Administration 200
Accounting in relation to the decision-making process; various cost systems; relevancy of various cost concepts; direct costing, flexible budgets, distribution costing; break-even analysis; capital budgeting; and other techniques of management planning and control.
209. Computer Programming and Systems Analysis (3)

Prerequisite: Business Administration 202A.
Fundamentals of computers, problem-oriented computer language, flow-charting logic and techniques, analysis of the synthesis of computer-based systems.
210. Theory and Analysis of Financial Statements (3)

Prerequisite: Business Administration 200.
presentation of enterprise and concepts underlying financial statements; measurement and accepted accounting principles; 211. Advancednting principles; consideration of price level problems.
211. Advanced Accounting (3)

Principles and concepts as relatration 210
of resources, equities, and income of parent and affili, determination, and presentation accounting; specialized reporting for parent and affiliated companies; concepts of fund liquidation.
212. Income Tax Accounting (3)

Prerequisite: Business Administration 200
Provisions of the federal tax law, including preparation of returns for individuals, partnerships, corporations, estates, trusts; procedures for reporting deficiency assessments, refunds, and other administrative practices.
213. Auditing (3)
213. Auditing (3)

Prerequisite: Business Administration 211.
statements; review of AICPA and SEC bulletins principles in verification of financial statements; review of AICPA and SEC bulletins and regulations; consideration of trends and developments in auditing procedures, sampling techniques, and report writing: 214. Seminar in anments in auditing profession.

Prerequisites: Business Administration Systems (3)
Prerequisites: Business Administration 202B and 208
in planning and reporting. 215. Seminar in Mana

Prerequisite: Business Administratio (3)
Managerial cost accounting concepts 208.
control, advisory functions, measurement procedures, including budgetary planning, cost investment decisions. 219. Seminar in Accour

Prerequisite: Business Admeory (3)
Historical development of aistration 211.
income determination, and statement presentation. 220. Legal Aspects of Labor-Management Relation

Legal aspects of union organizational activities, repre
practices, collective bargaining and contracts, grievances and arbitroceedings, unfair labor boycotts and injunctions.
221. Insurance Principles and Practices (3)

Nature and extent of personal business, and social risk. Risk hand principles and practices; basic contracts analysis; insurance underwriting ins; insurance insurance problems and trends; personal and business risk managementiting and rating; 222. World Business Environment (3)
Prerequisite: Fin

Prerequisite: Economics 203.
factors. The nature of the multinational International Business. Impact of environmental multilateral controls and policies for Internationation, the importance of national and 223. Seminar in Business Finance (3)
223. Seminar in Business Finance (3)

Application of principles of fintration 205.
emphasis on planning and development of tools for use in in financial management, with of case materials, study of the literature, and development defision making. Consideration

224. Seminar in Investments (3)

Prerequisite: Business Administration 205
developments affecting investment investment point of view; historical and current measurement of risks, returns, and values; sources of information; techniques of analysis;

## measurement of riks, <br> Prerequisite: Business Ad)

Risk manage: Business Administration 221
risk problems. Insurance institutions. 26.

Prerequisites: Business Administration 209 Mand Mangement (3)
Prerequisites: Business Administration 209 and 224.
and reduction analysis. Establishment of performananagement theory. Risk managemen
227. Seminar in Quantitative Analysis for Financial Decisis (3)

Prerequisites: Business Administration 202B, 205 Decisions (3)
Quantitative techniques and the computer as 205 and 209
228. Seminar in International Business Finance (3) Prerequisite: Business Administration 205 .
International finance applied to the business firm.
229. Seminar in Financial Markets (3)

Prerequisite: Business Administration 205.
Analysis of money and capital markets. Emphasis on factors of influence and sources and uses of data. Survey of literature in the field.
230. Production and Operations Management (3)

Prerequisite: Business Administration 202B
Theory, concepts and decision analysis related to effective utilization of major factors of production in manufacturing and service industries. Utilizes the system approach to achieve unification of the production elements in terms of both analysis and synthesis. Not open to stud.
231. Methods Engineering and Job Design (3)

Urerequisite: Business Administration 230.
economy; micromotion analysis, time standent decisions-job simplification and motion allowances, statistical analing, interference and the establishment of properniong
232. Quality Control (3)

Prerequisite: Business Administration 230
control and limit charts for controlling quality, reliability and maintainability; types of control and limit charts.
233. Operations Planning and Control Systems (3)

Prerequisite: Business Administration 230.
Analysis and design of single- and multiple-product integrated production and inventory contron systems. Combined detailed and aggregate planning of operations with deterministic 34 .
234. Seminar in Production and Operations Management (3)

Prerequisite: Business Administration 230.
Case studies of selected industries, emphasizing integration of the manufacturing and major goals of the organization
236. Operations Research: Deterministic Systems (3)
Prerequisites: Business Administration 202B and 209

Mathematical optimization techniques for deterministic systems. Advanced topics in linear programming; nonlinear, dynamic, and integer programming; selected examples of application
237. Operations Research: Stochastic Systems (3)

Prerequisites: Business Administration 202B and 209
Use of probability and statistical decision theory for decision making under conditions of uncertainty. Markov processes, queuing theory, and the theory of games.
238. Computer Applications in Operations Research (3)

Prerequisite: Business Administration 236.
Computer simulation techniques for analysis of complex decision problems Implementation of optimization algorithms through use of the digital computer. 239A. Seminar in Management Science: Theory (3)
Prerequisite: Business Administration 236 .
Examination of recent developments in management science/operations research theory
and methodology.

239B. Seminar in Management Science: Application (3)
Prerequisite: Business Administration 236
Quantitative techniques for managerial planning and decision making. Applications of operations research and other concepts to industrial situations. (Formerly numbered diness Administration 239.
240. Seminar in Manpower Planning and Staffing (3)

Prerequisite: Business Administration 201B, or one of the following: Public Administration 241, Economics 250, Psychology 220, Sociology 220
Theories and models of manpower planning; inventorying and forecasting of manpower eeds and requirements; labor force analysis; recruitment; the staffing process; measurement tools and techniques
241. Seminar in Union-Management Relations (3)

Prerequisite: Business Administration 201B, or one of the following: Public Administration 241, Economics 250, Psychology 220, Sociology 220
Interaction of unions and business organizations with particular emphasis on collective bargaining. Effects on management and society. Trends in collective bargaining and in the rganization of employees
242. Seminar in Compensation (3)

241, Economics 250, Psychology 220 . Son 201 B , or one of the following: Public Administration The organizational process 220 , Sociology 220.
The organizational process of compensating employees. Compensation theory from economics psychology, and sociology. Compensation systems and their effects on
organizations and individuals. organizations and individuals.
243. Seminar in Organizational Development (3)

241, Economics 250, Psychology 220, SociolB, or one of the following: Public Administration The process of developing human resources 220
development; tools and techniques resources and organizations. Theories of organizational programs.
249. Seminar in Human Resources Administration (3)

Prerequisite: Business Administration 201B or six units in Human Pesources Administration.
Analysis of issues and application of behavioral science theory in acquiring, develo rewarding, and utilizing human resources.
250. Seminar in Marketing and the Economy (3)

Prerequisite: Business Administration 203.
ad the economy. and the economy
251. Seminar in New Products Marketing (3)

Prerequisite: Business Administration 203.
marketing strategy products management in relation to planning and implementation of marketing strategy.
252. Marketing Institutions (3)

Analysis of developmess Administration 203
of these institutions in the Americaling and retailing and of growth, change, and efficiency
253. Seminar in Marketing Pres economies.

Prerequisite: Business Adrice Policy (3)
Prerequisite: Business Administration 203
254. Seminar in Sales Management determination in business organizations.

5reminar in Sales Management (3)
Prerequisite: Business Administren
Prerequisite: Business Administration 203
255. Seminar in International Marketing decisions and strategies in business organizations. Prerequisite: Business Administration (3)
The impact of culturs Administration 203
international marketing systems and the decisiomic, and other environmental variables on operations.
256. Seminar in Consumer Behavior (3)

Prerequisite: Business Administration 203
The study of consumer Administration 203
environment of business.
257. Seminar in Industrial Marketing Management

Prerequisite: Business Administration 203.
The management of marketing decisions and strategies peculiar to the industrial market

258. Seminar in Industrial and Government Procurement Management (3)

Prerequisites: Business Administration 201A and 203.
Procurement methods used in industry and government; internal
operations, interrelationships with other departments; supplier internal departmental analysis; contract negotiations, special characteristics of governmer selection, pricing/cost

## 259. Market Analysis and Research (3

Prerequisites: Business Administration 202B and 203
research, and product analysis. 260. Principles of Real Estate (3)

Functions and regulation of the real estate market, real estate finance, property management, real estate appraisal theory, specialized properties, urban development, and contemporary real estate problems. (Formerly numbered Business Administration 222.) 261. Seminar in Real Estate (3)

Prerequisite: Business Administration 260.
Business Administration 226 .) property. Regional land use planning. (Formerly numbered Busi 262 .
262. Seminar in Real Estate Investment (3)
Prerequisite: Business Admentren

Investment Insiness Administration 260
institutions, corporations, individuals, and government. Measuring estate investment by potential of industrial, commercial, and residential pront. Measuring investment yield social policy 263. Seminar
263. Seminar in Real Estate Finance (3)

Prerequisite: Business Administration 260
Theories and factors governing the financial functions of lenders, borrowers, 264. Seminar in Valuation collateral in financing real estate.

Prerequisite: Business Administration 260 , 3 )
Valuation of real property by the cost 260 .
f property taken in eminent domation lease-hold interests.
270. Seminar in Business Education (3)

Study of some phase of business education, such as administration and supervision distributive and basic business education; trends in and methods of teaching shorthand and typewriting
273. Computer Hardware and Software Systems (3)

Prerequisite: Business Administration 209.
Computer architecture, programming languages, programming systems, and operating systems.
274. Information Theory (3)

Prerequisite: Business Administration 209.
addressing and indexing schemes. addressing and indexing schemes.
275. Measurement and Control of Information Systems (3)

Prerequisites: Business Administration 273 and 274.
and systems evaluations, and computer-based ity, performance measurement, applications and 276. Seminar in Advanced Information Topics (3) Prerequisite: Business Administration 274.
778. Seminar in Management of Information systems.
278. Seminar in Management of Information Systems (3)
Prerequisite: Business Administration

Prerequisite: Business Administration 274.
Ad on individual student research
279. Se - in Data Systers
279. Seminar in Data Systems Design (3)
Prerequisites: Business Administration

Presequit in the analysis and designion 202B and 274.
Research in the analy
281. Behavioral Sciences for Management (3)
Prerequisite: Business Administration

Prerequit
Study of organization cultures and subcultures. Impact of humanent problems and decisions
pact of human behavior on the enterprise
282. Group Processes and Leadership (3)

Perceptions and processes in work
Perceptions and processes in work groups. Experience in interpersonal networks,
influence and rewards, stereotypes; managing differences and conflicts.
283. Origins and Nature of American Business Enterprise (3) Prerequisite: Business Administration 201B.
Frerequisite: Business Administration 201B. corporation man, technological change, the business community and politics, and othe significant issues.
284. Policy Formulation (3)

Prerequisites: Advancement to candidacy and consent of instructor.
Building and maintaining enterprises in our society; determining objectives; developing policies and plans for achievement; measuring and controlling organizational activities reappraising objectives and policies on the basis of new developments
285. Seminar in Business Planning (3)

Prerequisites: Business Administration 201A, 203, 205, and nine units in Business Administration courses numbered 210 or above.
Strategic decision making, long-range forecasting, and corporate planning with major emphasis on product-market relationships.
286. Seminar in Comparative Management (3)

Prerequisite: Business Administration 201B.
Concepts, theories, techniques, and practices of management in various countries
287. Quantitative Forecasting and Planning (3)

Prerequisite: Business Administration 236 or 237.
Mathematical approach to intermediate and long-range forecasting of economic and technological variables which affect the firm. Development of solution algorithms and heuristic procedures for solution of dynamic planning problems
288. The Entrepreneur (3)

Prerequisite: Business Administration 201B.
Examination of the entrepreneurial approach; concepts, theory and techniques of
managerial innovation and implementation; analysis of entrepreneurial skills.
289. Seminar in Organization and Management (3)

Anerequisite: Business Administration 201B.
Analysis of problems in business and other organizations. Organization and decision theory
ano
Prerequisite: Advan in Business Administration (3)
Prerequisite: Advancement to candidacy
Preparation for the comprehensive examination for those students in the M.B.A. program
inder Plan B.
295. Seminar in Selected Topics (3)

Selected areas of concern in business administration; topic to be announced in the class shedule
Maximum credit six units applicable on a master's degree.
97. Research (3) $\mathrm{Cr} / \mathrm{NC}$

Prerequisite: Advancement to candidacy.
.
29. Special Study (1-3) Cr/NC

Prerequisite: Consent of staff; to be arranged with department chairman and instructor.
299. Thesis (3) $\mathrm{Cr} / \mathrm{NC}$

Prerequisites: An officially appointed thesis committee and advancement to candidacy Preparation of a project or thesis for the master's degree.


## Faculty

Emeritus: Joseph, Robinson, Rowe
Professors: Abbott, Bennett, Cobble, Golding, Grubbs, Harrington, Hellberg, Isensee Jensen, Jones, Landis, Malik, Mathewson, O'Neal, Richardson, Ring, Sharts, Spangler, Ass, Wadsworth (Chairman), Walba, Wick, Woodson Associate Professors: Coffey, Malley, Roeder
Assistant Professor: Dahms

## Offered by the Departmen

Doctor of Philosophy degree in chemistry.
Master of Arts degree in chemistry.
Master of Science degree in chemistry
Major in chemistry with the B.S. degree in applied arts and sciences with the Certificate can Chemical Society.
Major in chemistry with the A.B. degree in applied arts and sciences, with or without the Mincate of the American Chemical Society.

Minor in chemistry
Single subject teaching credential in physical sciences in the area of chemistry.

## Chemistry Majors

## In Applied Arts and the Sciences

Three majors in chemistry are offered in applied arts and sciences. A chemistry major is also offered in liberal arts and sciences
The chemistry majors available in applied arts and sciences are as follows:
Society for admission to mand types of positions as chemists and (2) Chemistry major with th B. dery;

Society, a program designed to prepare studee and Certificate of the American Chemical (3) Related Professions maje to prepare students for graduate work in chemistry; and premedical or predental curriculum.

Certificate of the American Chemical Society
The Department of Chemistry is on the approved list of the American Chemical Society
Programs leading to a chemistry major with Programs leading to a chemistry major with the B.S. degree or the A.B. degree are designed program leading to the Related Professions major is American Chemical Society. The Provision is made for students taking the chemistry is not offered with the Certificate btain the A.B. degree with or wing the chemistry major in liberal arts and sciences to

## Chemistry Major

With the B.S. Degree in Applied Arts and Sciences
and Certificate of the American Chemical Society
The curriculum outlined below for the B.S. degree in applied arts and sciences is based upon the recommendations of the Committee for Professional Training of Chemists of the American Chemical Society. It qualifies graduates for many types of positions as chemists and provides the training required by most universities for admission to graduate work in provides
A minor is not required with this major.
Preparation for the major. Chemistry 1A-1B, 5, 12, and 13 ; Physics $4 \mathrm{~A}-4 \mathrm{~B}-4 \mathrm{C}$; and Mathematics 50, 51, and 52. (44 units.)
Major. A minimum of 36 upper division units to include Chemistry 110A-110B, 112, 113, $16 \mathrm{~A}, 127 \mathrm{~A}, 155,156 \mathrm{~A}-156 \mathrm{~B}$, one unit of 198, and 12 units of upper division electives in hemistry or in related subjects with approval of the department.
Foreign language requirement. German 8A or Russian 8A.

OUTLINE FOR THE B.S. DEGREE AND CERTIFICATE

| First year | Units |
| :---: | :---: |
|  | 1st 2nd |
|  | Sem. Sem. |
| Chemistry 1A-1B | 5 5 |
| +Mathematics 4, 40, 50 | 5 5 |
| Physics 4A ........... |  |
| *Basic Subject.. | 3 - |
| *Social Sciences.... | 3 3 |
| *Physical Activities | 17 |
|  | 17 |
|  | Units |
|  | $1 s t \quad 2 n d$ |
| Third year | Sem. Sem. |
| Chemistry 110A-110B. | - 3 |
| Chemistry 155 | - |
| Chemistry 156A. |  |
| German 2, 8A or |  |
| Russian 2, 8A.... |  |
| $\ddagger$ American Institutions. | 3 |
| §Biology 1 | 3 |
| *Humanities. | $\underline{3}$ |
|  | 16 |

## Chemistry Major

With the A.B. Degree in Applied Arts and Sciences
This plan is designed for only those students who desire the training in a premedical or prefessional teach in community colleges. intend to earn advanced degrees in chemistry or who plan to department chairman upon. Application for admission to the plan must be made to the division standing must apply before the class standing. All transfer students with upper University. With an appropriate choice of electives, for admission to medical, dental, and pharmaceutical schools can meet the requirements
Preparation for the major. Chemist 1 A -
Mathematics 4, 40 (unless exempted by examination) (or 50, 12 and 13; Physics 4A-4B
Major. A minimum of 24 upper dix. (46 units.) $(109 \mathrm{~A}-109 \mathrm{~B}, 109 \mathrm{C}, 170)$ or $(110 \mathrm{~A}-110 \mathrm{~B}, 155,156 \mathrm{~A}-156 \mathrm{~B})$ in chemistry to include Chemistry electives in chemistry. Chemistry 115A 116A-116B is recommended for al
Minor.
Foreign minor in biology or zoology is expected for preprofessional students.

## Chemistry Major

With the A.B. Degree in Liberal Arts and Science
All candidates for a degree in liberal arts and sciences must complete the graduation requirements listed on page 60 of this catalog. It is recommended that the graduation A minor is not required with this majequirement for graduation
A minor is not required with this major.
and sciences education or as preparation for emphasis in chemistry as part of a liberal arts Prepartion
Preparation for the major. Chemistry 1A-1B, 4 and 12; Physics 1A-1B, or 2A-2B and 3A-3B;
and Mathematics 21 and 22 . ( 33 units.) aja 21 and 22 . ( 33 units.)
Major. A minimum of 24 upper division units in Chemistry to include Chemistry 109A-109B, 109C, 112, 170; and eight units of upper division electives

## Chemistry Minor

The minor in chemistry consists of Chemistry 1A-1B, 4 or 5,11 or 12 , and six upper division
units in chemistry. ( 24 units.)

## Chemistry

For the Single Subject Teaching Credential in Physical Sciences
All candidates for a teaching credential must complete all requirements for the applicable The requirements for the single subject teaching credential in physical sciences which includes the area of chemistry are being revised. For further information consult the
department.

## Chemistry Placement Examination

All students who plan to enroll in Chemistry 1A or 10A and who have not completed Chemistry 2A at San Diego State University with a grade of C or better must take the requirements for Chemistry 1A and may also serve as a basis for to satisfy the prerequisite he honors chemistry program. The schedule for this examination will be of students fo chemistry bulletin board. Provision is also made for this examination to be posted on the entering freshman or the transfer student prior to registration. Refer to the taken by the

Lower Division Courses
1A-1B. General Chemistry (5-5) I, II
Three lectures and six hours of laboratory
Prerequisites: High school chemistry, qualification on Chemistry Placement Examination and two years of college preparatory mathematics; or a grade of C or better in Chemistry 2A at this university
General principles of chemistry with emphasis on inorganic materials. Qualitative analysi is included in the second semester. Duplicate credit will not be allowed for the
Refer to catalog section on General Education requirements.
Students eligible to take Mathematics 50 in their first semester
two to five units of general electives 50 in their first semester should do so and substitute for Mathematics 4 and/or 40


1A and 2A will receive a total of 5 units of credit toward graduation.

1E. General Chemistry for Engineers (3) I, II
Two lectures and three hours of laboratory.
Prerequisite: Chemistry 1A.
A continuation of the study of the principles of chemistry with emphasis on the relationships to the field of engineering. Open only to engineering majors. Not open to students with credit in Chemistry 1B.
2A. Introductory General Chemistry (3) I, II
Two lectures and three hours of laboratory
Elementary principles of chemistry. Not open to students with credit in Chemistry 1A
2B. Elementary Organic Chemistry (3) I, II
Two lectures and three hours of laboratory
Prerequisite: Chemistry 1A or 2A.
Introduction to the compounds of carbon including both aliphatic and aromatic substances. Not open to students with credit in Chemistry 1B or 1E.
3. Introductory Biochemistry (3) I, II

Prerequisite. Chemi demons
rerequisite: Chernistry 2 B
of the chemistry of living processes. This course intended primarily for majors in home economics, nursing, and related fields.
4. Techniques of Analytical Chemistry (5)

Three lectures and six hours of laboratory.
Prerequisite: Chemistry 1B or 2B
Fundamentals of gravimetric, volumetric and instrumental methods of chemical analysis Not applicable to B.S. and A.B. degrees and Certificate of the American Chemical Society for chemistry majors. Not open to students with credit in Chemistry 5.
5. Analytical Chemistry (4) I, II

Two lectures and six hours of laboratory
Prerequisites: Chemistry 1B; and credit or concurrent registration in Mathematics 22 or 50 .
Theory and practice of volumetric, gravimetric and electrical methods of analysis. Not open to students with credit in Chemistry 4. Duplicate credit will not be allowed for
7A-7B. Chemical Principles for the Environment (3-3) I, II
Two lectures and two hours of discussion.
Prerequisite: Chemistry 2B, 7A, 11, or 12 is prerequisite to 7 B
Semester I: Nuclear structure, atomic structure, chemical bonding, organic chemistry. Environment topics include nuclear power, thermal pollution, radiation hazards purification, and sewere, energy balances, chemical pollution, biodegradation, wate purification, and sewage.
Semester ind Natural products such as steroids, alkaloids, and terpenes; biochemistry; contraceptives, chemotherapy, marijistry and metals. Environment topics include fluoridation, corrosion, metal marijuana, addicting drugs, pesticides, nerve gases, 10A-10B. Chemical Principles ants, and food additives.
Three lectures and six hours of laboratory.
Prerequisites: High school chemistry, physics, and mathematics, superior qualification on both the Chemistry and the Mathematics Placement Examinations and high ranking on the ACT or SAT tests. Permission card from the department is required for registration in this The.
The application of modern electronic theory to the study of general chemistry with emphasis in the laboratory on analytical methods. Qualitative and quantitative analysis is included. Chemistry 10A-10B takes the place of Chemistry 1A-1B and 5 for these students
as prerequisites for
Three lectury Organic Chemistry (4) I, II
Prerequisite: Chemistry 1B
Prerequisite: Chemistry 1B
Aliphatic and aromatic compounds including reaction mechanisms. For students needing
only one semester of organic chemistry. Not open to students with credit in Chemistry 12
12. Organic Chemistry (4) I, II

Three lectures and three hours of laboratory
Prerequisite: Chemistry 1B.
Properties and synthesis of organic compounds including reaction mechanisms. First half
of a year course.
Not open to students with credit in Chemistry 11
13. Organic Chemistry Laboratory (1) I, II

Three hours of laboratory.
The theory and practice of laboratory operations.
22. Glass Blowing (1) I, II

Prerequisite. Chaboratory.
Prerequisite: Chemistry 1B
55. Problem Solving in the manipulation of glass

Three hours of laboratory
Prerequisites: Chemistry 5
Prerequisites: Chemistry 5 and 12.
99. Experimental Topics (2-4)

Refer to the
applicable to a bachelor's degree in courses under this num on page 106. Limit of nine units units may be applicable to general education req this number of which no more than three

Upper Division Courses
109A-109B. Fundamentals of Physical Chemistry
Prerequisites for 109A: Chemistry 4 Chemistry (3-3)
students with credit in Chemistry 110A Mathematics 22, and Physics 2B and 3B. Not open to Prerequisites for 109B: Chemistry 109 110B. certificate or B.S. majer of theoretical chemistry. This course cannot apply to the A.B. and 109C. Fundamentals of in chemistry.
Six hours of laboratory
Prerequisite: Credit or concurrent registration in Chemistry 109B
110A-110B. Physical
Prerob. Physical Chemistry (3-3) I, II
and Mathematics 52 Prerequisites for Chot open to students with credit in Chemistry 109A Chemistry 109B

Theoretical principles of chema
112. Organic Chemistry (4) I, II

Three lect Chemistry (4) I, II
Prerequisite: Chemistry hours of laboratory.
A continuation of Chemistry
13. Organic Chemistry
113. Organic Chemistry Laboratory (1) I, II

Three hours of laboratory.
Theory and practice of laboradents enrolled concurrently in Chemistry 112. 14A
Two lectures and six hours of labor (4-4)
Prerequisites: Chemistry 4 or 5 , and 11 or 12.
luids. This course cannot apply to the major in cads applied to blood, urine, and other body 15A-115B. Fundamentals of Bio the major in chemistry
Prerequisites: Chemistry 4 or 5 , and 11 or 12 .
The chemistry of intermediary metabolism and its regulation. Not open to students with credit in Chemistry 116A-116B
116A-116B. General Biochemistry (3-3)
Prerequisites: Chemistry 109B or 110B, and 112
The structure, function, metabolism, and thermodynamic relationships of chemical entities in living systems. Not open to students with credit in Chemistry 115A-115B
117. Biochemistry Laboratory (2) I, II

Six hours of laboratory.
Prerequisite: Credit or concurrent registration in Chemistry 115A or 116A
The theory and practice of laboratory procedures used in the study of intermediary metaborm. is enches, radioactivity tracer techniques, and the isola
118. Advanced Physical Chemistry (3) II

Prerequisite: Chemistry 110B.
Mathematical tools essential to solving problems in chemical thermodynamics, statistical mechanics, chemical kinetics, quantum chemistry and molecular structure and spectroscopy,
with applications.
127A. Inorganic Chemistry (3) I, II
127A. Inorganic Chemistry (3) I, II
Prerequisite: Credit or concurrent registration in Chemistry 109B or 110B
The physical basis of the periodic system, complex inorganic compounds, and the nature
of the chemical bond.

127B. Inorganic Chemistry (3) I, II Prerequisite: Chemistry 127A.
Prerequisite: Chemistry 127A. compounds.
131. Theoretical Organic Chemistry (3) I, II

Prerequisites: Chemistry 109A or 110A, and 112
The application of modern electronic theory to the physical and chemical properties of organic compounds.
135. CHEM Study (3) II

One lecture and six hours of laboratory.
Prerequisite: Chemistry 1B.
New approach to the study of major concepts of chemistry. Based on lecture and aboratory materials prepared by the Chemical Education Materials Study Committee. Open only to secondary teacher candidates.
154. Organic Qualitative Analysis (3) I, II

Prerequisites: Chemistry 112 and credit or concurrent registration in Chemistry 109A or 110A.
The identification of organic compounds and mixtures
155. Advanced Instrumental Methods (2) I, II

Prerequisites: Chemistry 112 and credit or concurrent registration in 110B.
Advanced theory of chemical instrumentation.
156A-156B. Advanced Laboratory Techniques (2-2) I, II
Pix hours of laboratory. Credit or concurrent registration in Chemistry 155. Credit or
concurrent registration in Chemistry 55 is recommended. Chemistry 156A is prerequisite to 156B.

Instrumental methods and physical chemistry concepts applied to advanced projects in chemistry. Emphasis on maintenance of the laboratory notebook with some report writing 160A-160B. Principles of Chemical Engineering (3-3)
(Same course as Engineering 160A-160B.)
Prerequisite: Credit or concurrent registration in Engineering 108 or Chemistry 109A or 110 A.
Industrial stoichiometry; fluid flow and heat transfer as applied to unit operations such a evaporation, distillation, extraction, filtration, gas-phase mass transfer, drying, and others.
Problems, reports, and field trips.
166. Honors Course (1-3) I, II

Refer to Honors Program
170. Radiochemical Analysis (4) II

Two lectures and six hours of laboratory
Prerequisite: Chemistry 109A or 110A
Principles and techniques of radioactivity applied to the various fields and problems of chemistry. Instrumentation, tracer application, activation analysis, nuclear reactions and radiolysis.
180. Chemical Oceanography (3) II

Three lectures and occasional field trips
Prerequisite: Credit or concurrent registration in Chemistry 109B or 110B
The application of the fundamentals of chemistry to the study of oceans.
191. Chemical Literature (1)

Prerequisite: Upper division standing in chemistry
An introduction to the availability, scope and use of the chemical literature.
196. Selected Topics in Chemistry (1-3)

Prerequisite: Consent of instructor
Selected topics in modern chemistry. May be repeated with new content. Maximum credit six units.
198. Senior Project (1-3) I, II Cr/NC

Prerequisites: Three one-year courses in chemistry and senior standing.
An individual investigation and report on a problem. Maximum credit six units.
199. Special Study (1-3) I, II

Individual study. Maximum credit six units.
Prerequisite: Consent of instructor. Open only to students who have shown ability to do
A or B work in Chemistry.

## Graduate Course

200. Seminar (1-3)
An intensive study in advanced chemistry, topic to be announced in the class schedule.
Maximum credit six units applicable on a master's degree.

201. Advanced Topics in Physical Chemistry (1-3)

Prerequisite: Consent of instructor.
degree. . degree.
211. Chemical Thermodynamics (3)

Prerequisite: Chemistry 110B.
Chemical thermodynamics and an introduction to statistical thermodynamics
212. Chemical Kinetics (3)

Prerequisite: Chemistry 110B
Theory of rate processes; applications of kinetics to the study of reaction mechanisms 213. Quantum Chemistry (3)

Quantum mechanics of atomic and molecular systems; applications to chemical bonding theory.
14. Molecular Structure (3)

Prerequisite: Chemistry 110B
Theory and techniques used in the determination of molecular structure
20 . Advanced Topies in Inorganic Chemistry (1-3)
Prerequisite: Chemistry 127A.
Selected topics in inorganic chemistry. Maximum credit six units applicable on a master's degree.
221. Mechanisms of Inorganic Reactions (3)

Prerequisite: Chemistry 127A.
Mechanisms in inorganic reactions with an emphasis on coordination chemistry.
222. Chemistry of the Nonmetals (3)

Prerequisite: Chemistry 127A
An advanced systematic study of the nonmetallic elements and their compounds.
230. Advanced Topics in Organic Chemistry (1-3)

Prerequisite: Chemistry 112.
Selected topics in organic chemistry. Maximum credit six units applicable on a master's degree.
231. Mechanisms of Organic Reaction (3)

Prerequisites: Chemistry 110B and 112
Reactivity and mechanism in organic reactions.
232. Advanced Organic Chemistry (3)

Prerequisite: Chemistry 112.
Applications and limitations of organic reactions from the viewpoint of synthesis. 250. Advanced Topics in Analytical Chemistry (1-3)

Prerequisite: Chemistry 110B.
Selected topics from the field of analytical chemistry. Maximum credit six units applicable on a master's degree.
260. Advanced Topics in Biochemistry (1-3)

Prerequisite: Chemistry 116B
Selected topics in biochemistry. Maximum credit six units applicable on a master's degree 261. Advanced Biochemical Techniques (2)

Prerequisite: Chemistry 116A
Six hours of laboratory. Theory and practice of current research techniques in biochemica research
262. Enzymology (2)

Prerequisite: Credit or concurrent registration in Chemistry 109B or 110B
Theory and techniques used in the study of the mechanism of action of enzymes. 270. Nuclear Chemistry (2)

Theoretical applications of radioactivity to chemistry, radiation chemistry, decay laws and processes, nuclear structure and reactions.
290. Bibliography (1)

Exercise in the use of basic reference books, journals, and specialized bibliographies preparatory to the writing of a master's project or thesis.
291. Research Seminar (1)

Prerequisite: Consent of department chairman.
Prerequisite: Consent of department
Discussions on current research by students, faculty, and visiting scientists. Each student will make a presentation based on the current literature
297. Research (1-3) Cr/NC

Prerequisite: Consent of instructor
Research in one of the fields of chemistry. Maximum credit six units applicable on master's degree.
6-85474
298. Special Study (1-3) $\mathrm{Cr} / \mathrm{NC}$
Prerequisite: Consent of staff, to be arranged with department chairman and instructor. Individual study. Maximum credit six units.
299. Thesis (3) $\mathrm{Cr} / \mathrm{NC}$

Prerequisite: An officially appointed thesis committee and advancement to candidacy. Preparation of a project or thesis for the master's degree.

## Chinese

In the College of Arts and Letters
Faculty
Assistant Professor: Woo
Offered by the Department of Classical and Oriental Languages and Literatures Courses in Chinese.
Major or minor work in Chinese is not offered.

Lower Division Courses
Native speakers of Mandarin Chinese will not receive credit for taking lower division courses except with advance approval from the department.

1. Elementary (4)

Four lectures and one hour of laboratory.
Four lectures and one hour of laboratory.
Pronunciation, oral practice, readings on Chinese culture and civilization, minimum essentials of grammar.
2. Elementary (4)

Four lectures and one hour of laboratory.
Prerequisite: Chinese 1.
Continuation of Chinese 1.
99. Experimental Topies (2-4)

Refer to the catalog statement on Experimental Topics on page 106. Limit of nine units applicable to a bachelor's degree in courses under this number of which no more than three units may be applicable to general education requirements.

## Upper Division Courses

103. Readings in Contemporary Chinese (4) Prerequisite: Chinese 2.
Readings in contemporary authors: poetry, short stories, essays
104. Readings in Classical Chinese (4) rerequisite. Chinese 103.
Readings from Hsiao Ching, Mencius, Confucian Analects, and other classical sources.
105. Advanced Reading in Chinese (3-4)

Prerequisite: Chinese 104.
Extended, intensive reading in Chinese with emphasis on style, content, interpretation May be repeated with new content. Maximum credit nine units
185. Topics in Chinese Studies (1-4)

Topics in Chinese language, literature, culture, and linguistics. May be repeated with new content. Maximum credit eight units.
199. Special Study (1-3) I, II

Individual study. Maximum credit six units.
Prerequisite: Consent of instructor.


## Classical and Oriental Languages and Literatures

 In the College of Arts and Letters
## Faculty

Emeritus: Burnett
Professors: Schaber (Chairman), Warren
Associate Professor: Genovese
Assistant Professors: Eisner, Gefter, Woo, Yun
Offered by the Department
Major in classics with the A.B. Degree in liberal arts and sciences
Teaching major in foreign languages (concentration in Latin) for the single subject eaching credential.
Minor in classical humanities
Minor in classics.
Courses in Arabic. (Refer to this section of the catalog under Arabic.)
Courses in Chinese. (Refer to this section of the catalog under Chinese.)
Courses in classics. (Refer to this section of the catalog under Classics.)
Courses in Greek. (Refer to this section of the catalog under Greek.)
Courses in Hebrew. (Refer to this section of the catalog under Hebrew.)
Courses in Japanese. (Refer to this section of the catalog under Japanese.)
Courses in Latin. (Refer to this section of the catalog under Latin.)
(For other courses in translation see comparative literature, history, humanities and philosophy.)

## Classics

In the College of Arts and Letters
Faculty
Professors: Schaber, Warren
Associate Professor: Genovese
Assistant Professor: Eisner
Offered by the Department of Classical and Oriental Languages and Literatures
Major in classics with the A.B. degree in liberal arts and sciences.
Minor in classical humanities.
Minor in classics.
Teaching major in foreign languages (concentration in Latin) for the single subject teaching credential.

## Classics Major

With the A.B. Degree in Liberal Arts and Sciences
All candidates for a degree in liberal arts and sciences must complete the graduation requirements listed on page 60 of this catalog
A minor is not required with this major.

Concentration in Classical Humanities
Preparation for the major. Greek 1 and 2, or Latin 1 and 2. (10 units.)
Major. A minimum of 30 upper division units to include Classics 102A-102B, History 111A-111B and Philosophy $101^{\circ} ;$ nine units from classics, Anthropology 183, Art 153, Religious Studies 110, or Speech Communication 150; six units of Greek or Latin; and three units of Classics 199 as a directed senior project.

Concentration in One Language
Preparation for the major. Greek 1 and 2, or Latin 1 and 2. ( 10 units.)
Major. A minimum of 30 upper division units to include 15 units from classics, History 111A, 111B, or Philosophy 101; 12 units of Greek, or 12 units of Latin; and three units of classics, Greek, or Latin.

Preparation for the major. Greek 1, 2, and Latin 1, 2. (20 units.)
animum of 30 upper division units to include 12 units from classics, History Major. A minimum of 111 B , or Philosophy 101; nine units of Greek; and nine units of Latin

## Classical Humanities Minor

The minor in classical humanities consists of a minimum of 15 units, nine units of which must be in upper division courses; in addition to courses in classics, up to six units may be selected from Anthropology 183, Art 153, Philosophy 101, Religious Studies 110, or Speech Communication 150.

## Classics Minor

The minor in classics consists of a minimum of 15 units, six units of which must be selected rom upper division classics, Greek, or Latin courses, History 111A, 111B, or Philosophy 101. Nine units must be selected from Latin or from Greek.

## Classics (Concentration in Latin)

## For the Single Subject Teaching Credential in Foreign Languages

All candidates for a teaching credential must complete all requirements for the applicable specialization as outlined in the section of this catalog on the School of Education.
This major may be used by students in Teacher Education as an undergraduate major for The A.B. degree in liberal arts and sciences. information consult the department

Lower Division Courses
(See also courses in Greek and Latin.)
20. Latin and Greek Word Derivation (3)

A general and elementary course in philology. A study of Latin and Greek stems of most frequent occurrence in English, and of the English words derived from them. (Formerly numbered General Language 20.
50. Scientific Terminology (2) I

Etymological and grammatical analysis of scientific terminology of Greek and Latin derivation
70. The Heritage of Greece and Rome (3)

Greek and Roman art, literature, and institutions as reflected in the Western tradition 99. Experimental Topics (2-4)

Refer to the catalog statement on Experimental Topics on page 106. Limit of nine units applicable to a bachelor's degree in courses under this number of which no more than three

## Upper Division Courses

102A-102B. Classical Literature (3-3)
Reading in translation of Greek and Latin masterpieces. Semester I: Prose and the epic authors include Homer, Herodotus, Thucydides, Vergil, Apuleius. Semester II: Drama and the short poem; authors include Aeschylus, Sophocles, Euripides, Arist numbered Comparative Literature 102A-102B.)
110. Greek and Roman Mythology (3)

Mythological elements in Greek and Roman art, literature, and religion.
140. Classical Civilization (3)

Greek and Roman civilization from Bronze Age to Late Empire. Integration of history, philosophy, literature, the arts, and society
185. Topics in Classical Studies (1-4)

Topics in classical languages, literatures, cultures, and linguistics. May be repeated with ew content. Maximum credit eight units
199. Special Study (1-3) I, II

Prerequisite: Consent of instructor. Individual study. Maximum credit six units.

## Comparative Literature

## In the College of Arts and Letters

Faculty
Faculty assigned to teach courses in comparative literature are drawn from department in the College of Arts and Letters.
Offered by Comparative Literature
Major in comparative literature with the A.B. degree in liberal arts and sciences Minor in comparative literature

## Comparative Literature Major

With the A.B. Degree in Liberal Arts and Sciences
All candidates for a degree in liberal arts and sciences must complete the graduation requirements listed on page 60 of this catalog. No more than 48 units in comparative iterature and English courses can apply to the degree.
A minor is not required with this major.
Preparation for the major. Any two lower division courses in comparative literature
Major. A minimum of 24 upper division units to include 18 units in comparative literature courses. With the approval of the adviser, six units in one of the following interest areas (1) Foreign Language Literature. Recommended for students who expect to do greduate work in comparative literature. Courses may be taken in literature of any foreign language (2) English Language Literature. Courses may be taken in American and British liter ature (3) Comparative Studies. Courses may be taken in areas with a "studies" orientatior such s Afro-American Studies, Mexican-American Studies, Urban Studies, Women's Studies, Jewish Studies, and the like

## Comparative Literature Minor

The comparative literature minor consists of a minimum of 15 units in comparative terature, nine units of which must be in upper division courses. The comparative literature minor is not available to students majoring in English.

Lower Division Courses
Since all reading assigned for classes in comparative literature is in English, knowledge of foreign language is not required.
52A-52B. World Literature (3-3) I, II I: since 1500 .
70A-70B. Asian Literature (3-3)
A survey of the literature of Asia. Semester I: traditional literature; Semester II: modern terature.
30A-80B. Third World Literature (3-3)
Modern literature from Third World cultures. Semester I: Literature from Africa, Asia, and Latin America. Semester II: Literature by ethnic minorities in the U.S
0. Topics in Comparative Literature (3) I, II

An introduction to the subject matter of comparative studies in literature. Focus on a ecific movement, theme, figure, genre, etc. May be repeated with new content. Maximum credit six units.
105. The Bible as Literature (3) I, II
105. The Bible as Literature
Same course as English 105 .

Prose and poetry of the King James version. (Formerly numbered Comparative Literature 15.)
20. Medieval Literature (3) From authors of the Middle Ages. (Formerly numbered and entitled Comparative Literature 155, Literature of the Middle Ages.
22. Continental Renaissance (3)

Representative selections from authors of the Renaissance period in continental Europe. Formerly numbered Comparative Literature 156.)
124. Seventeenth and Eighteenth Century Continental Fiction (3)

Selected works by novelists and short story writers of continental Europe prior to 1800 . 25. Nineteenth Century Continental Fiction (3)

Selected works by novelists and short story writers of continental Europe between 1800 nd 1900. (Formerly numbered and entitled Comparative Literature 101A, Modern Continental Fiction.)

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126. Modern Continental Fiction (3)

Selected works by novelists and short story writers of continental Europe since 1900. (Formerly numbered Comparative Literature 101B.)
145. Modern Latin American Literature (3) I, II

Reading selections from major Latin American authors.
150. The Epic (3)
Selected epic poems from world literature; emphasizes the Western epic tradition from Homer to the present.
151. Fiction (3)

A comparative approach to themes and forms in fiction (novel and short story). Focus of course to be set by instructor. May be repeated with new content. Maximum credit six units. 152. Drama (3)

Forms and themes in drama. Focus of course to be set by instructor. May be repeated once Forms and themes in drama. Focus of course to be set by instructor. May be repeated once World Drama.)

## 153. Poetry (3)

A comparative approach to themes and forms in poetry. Focus of course to be set by instructor. May be repeated once with new content.
160. Proseminar (3)

An intensive study of a topic to be selected by the instructor. May be repeated once with new content.
170. Asian Literature (3)

Selections from the literature of Asia: Chinese, Japanese, Indian, etc. Topic to be announced in class schedule. May be repeated with new content. Maximum credit six units.
175. Near Eastern Literature (3) I, II

Selections from the literature of the Near East: Persian, Arabic, Turkish, etc. Specific topic to be announced in class schedule. May be repeated with new content. Maximum credit six units.
180. Afro-American Literature (3)
180. Afro-American Literature (3) intercontinental influences and the theme of black identity.
185. Yiddish Literature (3) I, II
185. Yiddish Literature (3) I, II
Selected works from the Jewish communities of Central Europe
186. Modern Jewish Literature (3) I, II
186. Modern Jewish Literature (3) I, II
Selected works by Jewish authors from the last half of the nineteenth century to the present, with emphasis on the United States and Israel.
190. Literary Movements (3) Cr/NC

A movement or theme in world literature-such as symbolism, realism, existentialism, alienation, or revolution. Maximum credit six units.
191. Literary Use of Legend (3)

Literary treatment of such legendary figures as Don Juan, Faust, and Ulysses, in a wide range of literature and genres.
192. Major Individual Authors (3)

Goethe, Desth study of the works of a major author, such as Sophocles, Dante, Cervantes, Goethe, Dostoyevsky or Proust. Maximum credit six units.
193. Literature and Other Disciplines (3) Cr/NC

Comparative study of relationship between literature and another field, such as art, music, philosophy, psychology, political science, or social science. Examples: novel and film, black literature and black music, theatre and politics. May be repeated with new content. Maximum credit six units.
194. Concepts in Comparative Studies (3)

Basic concepts in comparative studies in literature (e.g., influence, movement, figure, genre, etc.); their validity, usefulness and limitations. May be repeated with new content. Maximum credit six units.
195. Literary Uses of Languages (3)

Study of the functions of language in literary writings. May take the form of translation workshop, stylistic studies, etc. May be repeated with new content. Maximum credit six units. 196. Folk Literature (3)

Studies in the ballad, bardic poetry, oral and popular literature and folklore. May be 199. Special Study content. Maximum credit six units.
199. Special Study (1-3) I, II Cr/NC

Prerequisite: Consent of instructor six units.
Prerequisite: Consent of instructor.

## Criminal Justice Administration

## In Public Administration and Urban Studie

## Faculty

Faculty assigned to teach courses in criminal justice administration are drawn from public administration and urban studies.
Offered by Public Administration and Urban Studies
Major in criminal justice administration; with the B.S. degree in applied arts and sciences. Master of Science degree in criminal justice administration.

## Criminal Justice Administration Major

## With the B.S. Degree in Applied Arts and Sciences

All candidates for a degree in applied arts and sciences must complete the graduation requirements on page 60 of this catalog. A minor is not required with this major
Preparation for the major. Political Science 2, Sociology 1, Public Administration 90 and a lower division course in statistics. Students who plan to enter the criminal justice field (police, courts, corrections) are strongly advised to take a minimum of 21 units of lower-division work in criminal justice or criminology at an institution offering work in this
field.

Major. A minimum of 36 upper division units to include Public Administration 140, 197 or 198; and Criminal Justice Administration 146; and additional upper division courses selected with approval of the departmental adviser, including a three-unit course in statistics
if not taken in the lower division.

Upper Division Courses
110. Law Enforcement Administration (3)

Prerequisite: Sociology 1.
Administrative relationships within the criminal justice process with special reference to problems of courts and police and probation agencies.
111. Administration of Juvenile Justice (3)

110 or 146
Administration of programs for treatment of juvenile offenders by police, probation and courts.
112. The Administration of Criminal Law (3)

Prerequisite: Criminal Justice Administration 110 or 146 or Political Science 135 or 139A. Basic concepts of the criminal law; elements of crime and the administrative processes of law enforcement.
113. Selected Topies in Criminal Justice Administration (3)

Selected current topics in criminal justice administration. Maximum credit six units.
116. Contemporary Correctional Administration (3) II

Prerequisite: Sociology 113 or 114.
The problems encountered in administering modern correctional institutions, forestry and road camps, detention homes, and jails. (Formerly numbered Sociology 116.)
117. Juvenile Deviance and The Administrative Process (3)

Prerequisite: Sociology 114, or Criminal Justice Administration 110 or 146
The activity of those in the administrative system who process juvenile deviance.
146. Administration of Justice (3) I, II

Prerequisite: Public Administration 140 or Political Science 138 or 139A.
Fundamental problems in judicial administration in law enforcement, organization and management, and issues in judicial reform and in public safety.
188. Probation and Parole (3) I

Prerequisite: Criminal Justice Administration 116 or 146.
Basic concepts, history, legislation, and practices used in work with juveniles and adults who have been placed on probation or parole; criteria of selection, methods of supervision, and elements of case reporting. (Formerly numbered Social Welfare 188.)

Graduate Courses
210. Seminar in the Administration of Criminal Justice (3)

Prerequisite: Criminal Justice Administration 110 or 146
Administrative problems of criminal justice systems
211. Seminar in Correctional Group Method (3)

Prerequisite: Sociology 113 or 114 or Criminal Justice Administration 111 or 188 An exploration of current research and use of group methods in the correctional segment of the criminal justice system.

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212. Seminar in the History of Correctional Reform (3)

188 or Sociology 113 or 114
The historical development of concepts and practices in the field of corrections with emphasis upon developments in the United States.
216. Seminar in Correctional Administration (3)

Prerequisite: Criminal Justice Administration 116.
Selected problems in the administration of correctional problems and institutions. Maximum credit six units applicable on a master's degree

## Drama

In the College of Professional Studies
Faculty
Emeritus: Povenmire, Sellman
Professors: Amble, Powell, Stephenson (Chairman)
Associate Professors: Harvey, Howard, Owen
Assistant Professors: Annas, Bellinghiere, Lessley, McKerrow
Offered by the Department
Master of Arts degree in drama
Major in drama with the A.B. degree in applied arts and sciences.
Minor in drama
Single subject teaching credential in English in area of drama.

## Drama Major

With the A.B. Degree in Applied Arts and Sciences
All candidates for a degree in applied arts and sciences must complete the graduation
a A minor is not required with this major.
A minor is not required with this major.
Preparation for the major. Drama 5, 30, 31, 40, and 50. (15 units.)
Note: Drama 10 and 20 should be taken as part of the general education requirements.
Major. A minimum of 24 upper division units in drama to include Drama 120, 132, 140A, $157,158,160 \mathrm{~A}, 160 \mathrm{~B}$, and four units of electives in drama (except Drama 142 and 199) selected
In addition to course requirements the student must participate in a total of five Major Theatre performances and three Studio or Experimental Theatre activities.

Emphasis in Design for Drama
Preparation for the major. Drama 5, 30, 31, 40, and 50. (15 units.)
Note: Drama 5 and 10 should be taken as part of the General Education requirements.
Major. A minimum of 24 upper division units in drama to include Drama 140A, 140B 45A, 148, 152A, 157, 160A, 160B. In addition to course requirements the student must participate in a minimum of five Major Theatre performances and three Studio or Experimental Theatre activities.

Emphasis in Design for Television
Preparation for the major. Drama 5, 40, 50, Telecommunications and Film 2A-2B, 10 and 83. ( 23 units.)

Major. A minimum of 24 upper division units to include Drama 140A, 140B, 148, 152A Telecommunications and Film 150, 156, 180, and 162 or 184

## Drama Minor

The minor in drama consists of a minimum of 21 units in drama to include Drama 5, 30, $31,40,50$ and six units of upper division electives in drama

## Drama

For the Single Subject Teaching Credential in English
All candidates for a teaching credential must complete all requirements for the applicable specialization as outlined in the section of this catalog on the School of Education.
the A.B. degree in applied arts and sciences. Ter Education as an undergraduate major for The requirements for the single subject tes
area of drama are being revised. For further informationtial in English which includes the or drama are being revised. For further information consult the department
5. Introduction to the Theatre (3) I, II

Three lectures per week and 15 hours of laboratory per semester
A survey of theory and practice in the contemporary theatre, including its literary, critical,
and technical aspects viewed against historical backgrounds.
10. Voice and Diction for Theatre (3) I, I

Fxercises and
Exercises and drills to improve the quality, flexibility and effectiveness of the speaking voice leading to good usage in standard American speech. Preparatory to further courses in drama.
20. Dramatic Heritage (3) I

Three lectures and attendance at selected performances.
Survey of dramatic literature from classical to the modern period, including classical, medieval, Renaissance, Restoration, neoclassical, romantic, realistic and modern plays:
30. Elementary Acting (3) I, II

Prerequisite: Drama 5
Three lectures per week and 30 hours of laboratory per semester
Development of the individual's ability to express thought and emotion through the effective use of the voice and body. These fundamental skills may be applied to stage, radio, and television acting.
31. Intermediate Acting (3) I, II

Three lecture-demonstrations per week and 30 hours of laboratory per semester.
Prerequisite: Drama 30.
Continuation of Drama 30, emphasizing the application of fundamental skills to the problems of emotion, timing, characterization, and ensemble acting.
32. Movement and Mime for the Theatre (3) I

Prerequisite: Drama 5.
Two lectures and three hours of laboratory.
Basic disciplines of locomotor and axial body movement for the stage director and actor introduction to mime. The relationship between body expression and character portrayal
40. Dramatic Production (3) I, II

Prerequisite: Drama 5.
Two lectures and three hours of laboratory.
Technical practices and organization of production for theatre and television. Practice in drafting and construction of scenery for the college productions.
47. Sound in the Theatre (2) I

Techniques, theory, and procedures necessary to develop sound, music, and effects integrated into theatre production.
50. Elementary Stage Costume and Makeup (3) I

Prerequisite: Drama 5.
Two lecture-demonstrations and three hours of laboratory
Basic theories, techniques, and procedures of costume production and makeup application for stage, film, and television. Practical training in the construction of stage costumes and application of makeup for departmental productions.
55. Children's Theatre (3) I

Examination of existing philosophies and practices dealing with children's theatre presentations. Theory and technique of selecting and producing plays for children Introduction to directing for children's theatre. Practical experience through participation in university-sponsored productions.
99. Experimental Topics (2-4)

Refer to the catalog statement on Experimental Topics on page 106. Limit of nine units applicable to a bachelor's degree in courses under this number of which no more than three units may be applicable to general education requirements.

## Upper Division Courses

101. Management of Drama Activities (1) I, II
planning, preparation, management and supervision of drama tournaments, festivals and ther interscholastic and intrascholastic activities under the supervision of the drama staff other interscholastic and ins.
102. Creative Dramatics (3) I, II
. Crution and techniques of creative dramatization for rect with emphasis on the development of the child emotionally and socially through dramatic improvisation.

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111. Styles in Creative Dramatics (3) I, II

Prerequisite: Drama 110
Advanced techniques and procedures in the teaching of creative dramatics. Lectures and eading on the application of creative dramatics with emphasis on the different styles of

## children.

15. Directing for Children's Theatre (3) II

Prerequisite: Drama 55.
Staging and technical problems relative to the production of plays for children; casting procedures, blocking and characterization principles, rehearsal and scenic techniques. Practical experience through university-sponsored productions.
120. Play Analysis (3) I, II

Prerequisites: Drama 5 and 20.
Representative dramas for the stage are read, discussed and analyzed in writing in terms onvironment, structure, action, character and style.
121. Theatre Criticism (3) I

Prerequisite: Drama 120.
A consideration of the problems and practices of dramatic criticism as applied to theatrical production in the past and present.
122. Playwriting, the One-Act Play (3) I, II

Lectures, discussion and reading of one-act plays written by the students.
23. Playwriting, the Long Play (3) II

Prerequisite: Drama 122
Lectures and analytical discussions of full-length plays written by students.
125. Original Dramatic Works: Production Laboratory (3) II

Nine hours of laboratory
Prerequisites: Drama 31 and consent of instructor
Staging of original one-act and full-length plays, in traditional and experimental productions, working in conjunction with the students in the playwriting and directing classes.
126. Theory of Production for the Musical Stage (3) I

Prerequisites: Drama 31 and consent of instructor
Theory and principles of production of modern musicals
129A-129B. Children's Theatre Workshop (3-3)
Prerequisite: Drama 115 .
Production of plays for child audiences, with emphasis on elementary and junior high levels. Practical experience through participation in university-sponsored productions.
130. Accents and Dialects for the Stage (3) II

Prerequisites: Drama 10 and 30
various accents and dialects most frequently occurring in stage productions
131. Advanced Acting Theory (3) I, II

The theories and principles of
T2 Advanced
32. Advanced Acting (3) I, I

Prerequisite: Drama 31
terization: acting styles of the great periods in theatre history.
137. High School Play Directing (2)

Two hours of laboratory
Theory and practica 40 and 157
Theory and practice of selecting, directing, and producing dramatic presentations in high school, with emphasis on low-budget and creative methods and techniques most practicable and effive in the high school drama program.
140A. Scenic Design (3) I
Prerequisite: Drama 40
Techniques and procedures in the application of principles of design, color and perspective in the designing and painting of scenery for various types of productions for 140B. Styis and cinema.
140B. Styles in Scenic Design (3) II
Prerequisite: Drama 140A.
dramatic prenc scenic design and the application of contemporary styles to various types of 142. Theatre Worksh for stage, television and cinema.
142. Theatre Workshop (1-3) I, II; (3-6) S Cr/NC

A laboratory to give the unit.
lighting, scenery, costumes and stage variety of experience in the theatre including acting, lighting, scenery, costumes and stage management. Maximum credit six units.

145A-145B. Stage Lighting (3-3) I, II
Two lectures and three hours of laboratory
Prerequisite: Drama 145A is prerequisite to $145 B$
Light, color, lighting instruments, and control equipment, including the design and planning of lighting for plays.
148. Advanced Dramatic Production (3)

Two lectures and three hours of laboratory
Two lectures and three
Scenery drafting and construction, with attention to the multiple-set play. Planning of scenery construction and rigging for stage and television productions.
151. Costume, Movement, and Manners (3) I

Prerequisite: Drama 50 .
Interrelationship of period costumes on the movement and manners of the time and their application on the stage.
152A-152B. Costume History and Design for the Theatre (3-3) I, II
Two lectures and three hours of laboratory.
Chronological study of clothing and theatrical dress from earliest times to the present, with
practical applications in terms of contemporary costume design for the theatre
A. Egyptian through Cavalier periods. Elements and principles of costume design.
B. Restoration period to the present. Designing costumes for the whole play.
154. Costume Construction Techniques (3) I

Two lecture-demonstrations and three hours of laboratory.
Prerequisites: Drama 140A and 152A-152B
Period pattern drafting, draping, cutting, construction. Wig, millinery, armour, mask, accessory construction. Costume paint and dye techniques
157. Stage Direction (3) I, II

Two lectures and three hours of laboratory; attendance of one-act plays and selected performances.
Prerequisites: Drama 120, 132 and consent of instructorleges, and community theatres. A comprehensive study of the various problems confronting a stage director. (Formerly numbered Drama 127A.)
158. Stage Direction: Scenes (2) I, II

One lecture and three hours of laboratory; attendance of one-act plays and selected performances.

Prerequisites: Drama 157 and consent of instructor. numbered Drama 128.)
159. Stage Direction: One-act Plays (3) I, II

One lecture and six hours of laboratory; attendance of one-act plays and selected performances.
Prerequisites: Drama 157 and consent of instructor. (May be substituted for Drama 158 a requirement in directing.)
Experience and group evaluation in directing one-act plays before departmental or public ormerly numbered Drama 127B.
160A-160B. History of the Theatre (3-3) I, II The theatre from primitive times cultural background of the various countries and period in which it is studied. Drama 160B may be taken without 160A.
166. Honors Course (1-3) I, II

Refer to Honors Program
175. Theatre Management and Promotion (3) I, II

Two lectures and three hours of laboratory. heatre; principles of organization, programming, production, budgets, ticket office, and promotional procedures.
178. Directing the Period Play (3) II

Two lectures and three hours of laboratory.
Prerequisite: Drama 159
Staging and directing problems related to the production of plays from the great period Staging anistory. Special attention to dramatic values, style, mood, creative directing and production approaches.
180. Methods and Materials of Instruction (2) I

Professional preparation emphasizing organization and practices in the teaching of Dramatic Arts. (Formerly numbered Education 1210.)
198. Selected Topics in Drama (1-3) I, II

Prerequisite: Twelve units in drama.
A specialized study of selected topics from the areas of drama. May be repeated with new content. Maximum credit six units.
199. Special Study (1-3) I, II

Individual Study Maximum credit six units.
Prerequisite: Consent of instructor.

## Graduate Courses

200. Research and Bibliography (3)

Basic reference works, scholarly and critical journals; introduction to bibliographical techniques; exercises and problems in methods and exposition of research as it relates to the various areas of speech. Recommended for first semester of graduate work, and prerequisite to advancement to candidacy.
235. Seminar in Children's Theatre (3)

Modern developments and trends in children's theatre in educational, civic, an professional programs in the United States and England
243. Seminar in Staging Practices for Theatre and Television (3)
243. Seminar in Staging Practices for Theatre and Television (3) facilities. The application An investigation application of technolo
244. Seminar in Stage Direction (3)

Prerequisite: Drama 157
Projects in the aesthetic principles and the practices of stage direction with an emphasis on styles and historic periods.
245. Seminar in Lighting for Stage and Television (3)

Prerequisite: Drama 145A or 145B.
Projects concerned with the aesthetic and technical problems of stage lighting.
246. Seminar in Design for Stage and Television (3)

The principles of design in the theatre with an emphasis on the historical development of theatrical costume or scenic environment. The investigation of recent tendencies in styles and their evolution. Each section may be taken once for credit.
A. Costume Design

Prerequisite: Drama 152A or 152B.
B. Scenery Design

Prerequisites: Drama 140A and 140B or 148.
247. Seminar in History of Theatre and Drama (3)

Prerequisites: Drama 120, 160A, and 160B
B. American Theatre
B. American Theatre
248. Seminar in Dramatic Theory (3)

Prerequisites: Drama 120, 160A, 160B and 200
Problems in producing works of such playwrights as Ibsen, Strindberg, Chekhov, Shaw. Maximum credit six units applicable on a master's degree.
298. Special Study (1-3) Cr/NC

Individual Study. Maximum credit six units applicable on a master's degree
Prerequisite: Consent of staff; to be arranged with department chairman and instructor.
299. Thesis or Project (3) $\mathrm{Cr} / \mathrm{NC}$

Prerequisites: An officially appointed thesis committee and advancement to candidacy. Preparation of a project or thesis for the master's degree.

## Faculty

## Emeritus: Chadwick, Ryan

Professors: Anderson, Babilot, Barckley, Bridenstine, Flagg, Gifford, Jencks, Leasure, McClintic, Neuner, Poroy, Turner, Venieris
Associate Professors: Clement, Hambleton, Hardesty, Kartman, Madhavan, Nam, Popp,
Sebold (Chairman) Sebold (Chairman)
Assistant Professor: Stewart

## Offered by the Department

Master of Arts degree in economics
Major in economics with the A.B. degree in liberal arts and sciences
Minor in economics.
Single subject teaching credential in social sciences in the area of economics.

## Economics Major

## With the A.B. Degree in Liberal Arts and Sciences

All candidates for a degree in liberal arts and sciences must complete the graduation requirements listed on page 60 of this catalog.
Two plans are provided for the major in economics: Plan A for those students expecting to pursue the study of economics beyond the A.B. degree; and Plan B for those students with a liberal arts interest, or for those who are interested in prelegal education or a combined economics-business program.

Plan A
Preparation for the major. Economics 1A and 1B, or 103A and 103B; 2; and Mathematics 50. (14 units.)

Major. A minimum of 24 upper division units in economics to include Economics 104A $104 \mathrm{~B}, 107,141$, and 12 units of electives. Economics 103A and 103B may not be used to fulfil minimal upper division requirements.
Minor. A minor is not required with this major; however, the student is strongly advised Minor. A minor in mathematics. Recommended courses are Mathematics 40, 50, 51, 52, $121 \mathrm{~A}-121 \mathrm{~B}, 140 \mathrm{~A}-140 \mathrm{~B}$, and $150 \mathrm{~A}-150 \mathrm{~B}$.

## Plan B

Plan B is a flexible program to meet the needs of several groups of students. Advisory programs of study are available in the Economics Department office for the following proups. (a) prelaw majors; (b) a broad-ranging liberal arts interest; and (c) a combined groups: (a) prelaw masors, (b)
Preparation for the major. Economics 1A and 1B, or 103A and 103B, and 2. Students planning careers in law or business are advised to take at least one semester of accounting
Major. A minimum of 24 upper division units in economics to include Economics 100A, 100B, and 12 to 18 units of electives. Six of the 24 units may be in a related field to be selected with the approval of the departmental Academic Requirements Committee. (Economic 103 A and 103 B may not be used to fulfill minimal upper division requirements in the major.)
Minor. A minor is not required with this major.

## Economics Minor

The minor in economics consists of a minimum of 15 units in economics, nine units of which must be in upper division courses; Economics 103A and 103B are not acceptable.

## Economics

For the Single Subject Teaching Credential in Social Sciences
All candidates for a teaching credential must complete all requirements for the applicable pecialization as outlined in the section of this catalog on the School of Education.
This major may be used by students in Teacher Education as an undergraduate major for the A.B. degree in liberal arts and sciences.
The requirements for the single subject teaching credential in social sciences which includes the area of economics are being revised. For further information consult the department.

## Lower Division Courses

1A. Principles of Economics (3) I, II
A. Principles of Economics (3) I, II public policy. In this semester the emphasis is upon macroanalysis including national income analysis, money and banking, business cycles, and economic stabilization. Not open to students with credit in Economics 103A.
1B. Principles of Economics (3) I, II
Prerequisite: Economics 1A.
An introduction to principles of economic analysis, economic institutions, and issues of public policy. In this semester the emphasis is upon the direction of production, the allocation of resources, and the distribution of income, through the price system (microanalysis); and international economics. Not open to students with credit in Economics 103B.
2. Statistical Methods (3) I, II

Prerequisite: Mathematics 3 or qualification on the Mathematics Placement Examination. Introduction to descriptive statistics, statistical inference, correlation, index numbers, and time series. Not open to students with credit for, or concurrent enrollment in, another course in statistics.
3. Current Topics in Economics (3) I, II

A nontechnical course covering selected current policy issues and problems such as poverty, war and defense, educational economics, urban problems, and economics of racial discrimination.
99. Experimental Topics (2-4)

Refer to the catalog statement on Experimental Topics on page 106. Limit of nine units applicable to a bachelor's degree in courses under this number of which no more than three units may be applicable to general education requirements.

## Upper Division Courses

100A. Intermediate Economic Theory (3) I, II
Prerequisite: Economics 1B or 103B.
end and distribution. Credit will not be given for both 100 A and 104A.
100B. Intermediate Economic Theory (3) I, II
Prerequisite: Economics 1B or 103B.
Economic theory with special reference to national income analysis and the theory of
101. History of Economic Thought (3) I, II

The development of economics. Contributions of schools of thought and individual writers are examined with regard to their influence on economic theory and policy
102. Comparative Economic Systems (3) I, II

Prerequisite: Economics 1B or 103B.
The economic aspects of laissez-faire and regulated capitalism, cooperatives, socialism communism, nazism, fascism. Criteria for evaluating economic systems. The individual and government in each system. Planning in a liberal capitalistic society.
103A. Economic Principles, Institutions, and Policies (3) I, II
Prerequisite: Six units in political science, history, or sociology
Income and employment theory and its applications. Not open to students with credit in Economics 1A. May not be used to fulfill minimal upper division requirements in the economics major or minor or special major.
103B. Economic Principles, Institutions, and Policies (3) I, II
Prerequisite: Economics 1A or 103A.
Price theory and its applications. Not open to students with credit in Economics 1B. May not be used to fulfill minimal upper division requirements in the economics major or mino or special major
104A. Microeconomic Analysis (3) I
Prerequisites: Economics 1B or 103B, and Math 50.
100 A and 104 A . 100 A and 104 A .
104B. Macroeconomic Analysis (3) II
Prerequisites: Economics 1B or 103B, and Math 50.
Mathematical interpretation of macroeconomic theory. Credit will not be given for both
100 B and 104 B .

## 105. Welfare Economics (3) II

Prerequisites: Economics 1 B or 103B, and 100A.
Theories of individual and social well-being; economic and ethical bases of optimum welfare arrangements; individual values and social decision making; tests of improvement; interdependence and externalities; public and private sectors; properties of social welfare functions.
107. Quantitative Economics (3)

Prerequisites: Economics 1B or 103B, and Math 50.
The quantitative approach to economic problems. The use of mathematics in economic analysis.
109. Advanced Economic Theory (3) II

Prerequisites: Economics 100 B or 104 B , and 107 . firm, consumer demand, employment and growth.
110. Economic History of Europe (3) I

Prerequisite: Economics 1B or 103B.
Economic development from the Middle Ages to the present. Particular attention is given to the impact of the Industrial Revolution on national economies, especially on England's commerce and industry.
111A-111B. Economic History of the United States (3-3)
Prerequisite: Economics 1B or 103B.
American economic development and national legislation in the fields of agriculture, industry, and commerce. Semester I: 1600-1865. Semester II: 1865 to the present.
112. Capitalist Economy (3)

Prerequisite: Three units in economics.
The relationship between the dominant economic and political institutions of capitalist organization and the major social problems of modern capitalism.
114. Economic Problems of Latin America (3) I

Prerequisite: Economics 1 B or 103 B
Economic development, institutions, and problems of Latin America.
115. Economic Problems of South and East Asia (3) I

Prerequisite: Economics 1B or 103B
Economic development, institutions, and problems of China, India and Pakistan, Japan, and Southeast Asia.
118. The Economies of the Soviet Union and Eastern Europe (3)

Prerequisite: Economics 1B or 103B
The development, institutions, and problems of the Soviet and East European economies 119. Economic Problems of Africa and the Middle East (3) II

Prerequisite: Ecmomics 1 B or 103 B
Economic development, institutions, and problems of Africa and the Middle East.
120. Economics of the Ocean (3)

Prerequisite: Economics zone, and ocean pollution. Economic implications of alternative legal arrangements zone, and ocean poll

## 131. Public Finance (3) I, II

131. Public Finance (3) 1, IB or 103B.

Prerequisles and practices of taxation and public expenditures. Economic effects of public spending debts and taxation. Financing social security and other services. Fiscal policy and prosperity. Relation to inflation and deflation. Special emphasis on social problems involved. 132. Public Economics (3)

Prerequisite: Economics 100A or 131.
General equilibrium. Externalities of consumption and production, their impact on llocative efficiency. Theory of social wants and public goods supply. Theoretical treatment of individual and community preference ordering and decision making. Proposals for improving the allocation of resources.
135. Money and Banking (3) I, II

Prerequisite: Economics 1B or 103B. The elements of monetary theory. History a
to the banking system of the United States.
to the banking system of the United Statics.
136. Policies for Macroecos 1A or 103A.
Prerequisite: Economics

Alternative policies for macroeconomic stabilization, including neo-Keynesian, Chicago adical, and ecological views. Topics include GNP forecasting, dynamic models, monetary vs. fiscal tools, economic surplus, and zero GNP growth.

## 176 / Economics

138. Urban and Regional Economics (3) I, II

Prerequisite: Economics 1 B or $1 \mathrm{103B}$.
Major influences affecting city location and growth; role of private and governmental institutions in influencing residential and other uses of land; major considerations in appraising, managing, financing, marketing, developing and taxation of urban property. Discussion of San Diego problems.
139. Location Theory (3)

Prerequisite: Economics 138
Prerequisite: Economics 138 .
The optimal location of economic activities. The effects of spatial distribution of resources and markets on the locational equilibrium of the firm.
141. Econometrics (3) II

Prerequisites: Economics 2 and 107.
Measurement in economics. The construction and testing of simple economic hypotheses. Use of economic models involving multiple-regression analysis.
142. Business Cycles (3) I

Prerequisite: Economics 1B or 103B.
Fundamental factors in economic fluctuations. Examination of business cycle theories, and various policy proposals for economic stabilization. A consideration of current economic conditions and an examination of methods employed in preparing national economic forecasts.
150. Labor Problems (3) I, II

Prerequisite: Economics 1B or 103B.
Labor organizations and their policies, wages, strikes, unemployment, social insurance, child labor, labor legislation, plans for industrial peace, and other labor problems.
152. Collective Bargaining (3) II

Prerequisite: Economics 1B or 103B.
Structures of labor relations; management and union problems; public policy and collective bargaining; simulation of collective bargaining experiences.
153. Comparative Labor Problems (3) I

Comparative study of labor relations systems and labor movements in both advanced and developing nations. Individual study of a particular country of the student's choice.
154. Economic Aspects of Human Resources (3) I, II
54. Economic Aspects of Human Reso
Prerequisite: Economics 1 B or 103 B .

Analysis of health, education, and manpower within the context of government expenditure, economic growth, and the theory of human capital.
166. Honors Course (1-3) I, II
66. Honors Course (1-3) I,
167. Contemporary Issues (3) I, II

Prerequisites: Economics 100 A and 100B.
Current policy issues and problems from an economic point of view. Maximum credit six units. An undergraduate seminar.
170. Government and Business (3) I, II

Prerequisite: Economics 1B or 103B.
Governmental activities affecting business; the state as an entrepreneur and manager; governmental assistance to business; governmental regulation of business in its historical, egal and economic aspects, including recent developments in the United States and abroad; proposed policies.
171. Transportation Economics (3) I
rerequisite: Economics 1B or 103B,
Economic impact of the availability and cost of transportation services. Organization, rate-making practices, financing and regulation of transportation agencies: air, surface, and water. Current issues of national transportation policy.
172. Public Utilities (3) II
rerequisite: Economics 1 B or 103B
Economics and regulation of utility enterprises. Growth, pricing, demand and cost ehavior, financing, regulatory principles and techniques. Public power and other current policy issues.
173. Economics and Ecology (3) I, II

Prerequisite: Economics 1B or 103 B
Relation of ecological problems to basic economic institutions. Examination of the apparent conflict between economic needs and ecological requirements. Economics of air rnesh water, ocean and land pollution, overpopulation and natural resource utilization.
Investigation of possible solutions.
174. Economic Concentration and Monopoly Power (3) I Prerequisite: Economics 1B or 103B.
The implications of economic concentration and monopoly. The evaluation of mergers, Atter mons power in terms of social and economic goals. Attempts to control monopoly power by antitrust laws, by policies regarding competitive
175. Industry Studies (3) II

Prerequisite: Economics 1B or 103B.
Evaluation of the structure, conduct and performance of selected industries in terms of social and economic goals.
185. Poverty in the United States (3) I

Prerequisite: Economics 1B or 103B
Economic aspects of poverty and racial discrimination. Relation of poverty to the general economic structure and to macroeconomic conditions such as unemployment and inflation. Possible solutions.
189. Population and Economic Growth (3)

Prerequisite: Economics 1B or 103B.
Interrelationship between the components of population change (fertility, mortality, and migration) and economic growth in developed and underdeveloped areas.
190. International Economic Problems (3)

Prerequisite: Economics 1B or 103B. Not open to students with credit in Economics 191 or 192.
or 192 . 191. International Trade Theory (3)

Prerequisites: Economics 100A and 100B, or 104A and 104B.
The pure theory of international trade and commercial policy.
192. International Monetary Theory and Policy (3)

Prerequisite: Economics 100 B or 104 B or 135
Balance of payments, international capital movements and foreign exchange in relation to current theories and policies.
194. Capital and Growth Theory (3)
and 100 B or 104 A and 104 B
Frectors affecting the capital supply and the rate of growth of a developed economy.
195. Economics of Underdeveloped Areas (3) II

Prerequisite: Economics 1B or 103B
The nature and causes of enemic underdevelopment. Problems of and policies for the economic development of underdeveloped areas of the world.
197. Research Design and Method (3) I, II

Prerequisite: Economics 2.
Prerequisite: Econometral application of the various techniques of economic research to a range of problems typically encountered in the economics profession; sources and impact studies, area and regional studies.
198. Investigation and Report (3) I, II
198. Investigation majors only

Independent study and investigation. Guidance in the collection, organization, and presentation of factual material. May be repeated for a maximum of six units; maximum credit in 198 and 199 limited to six units.
199. Special Study (1-3) I, II

Individual study. Maximum credit six units.
Prerequisite: Consent of Instructor.

## Graduate Courses

200A. Seminar in Advanced Economic Theory (3)
200 A . Seminar 100 A and 100 B , or 104 A and 104 B ; and 107 .
Prerequisites: Econom and resource Theory of consumer and producer behavior. Determeral equilibrium.
allocation pattern Advanced Economic Theory (3)
200B. Seminar in Advanced Economic Theory (3)
Prerequisites: Economics 100 A and income determination. Alternative theories of Theory of money, employment, and interest. Causes of instability in short and
consumption, investment, price (3-3)
long run.
01A-201B. Seminar in the Development of (3-3)
Prerequisite: Twelve units in economics
A critical study of the development of economic thought.
202. Seminar in Comparative Economic Systems (3)

Prerequisite: Economics 102 or 115 or 118 .
Topics in comparative economic systems; the Soviet economy, the economy of communist China, and related subjects
203. Economic Analysis (3)

Prerequisite: Classified graduate standing.
The theory of the firm in a market economy. Not open to students with credit in Economics 100A and 100B; not applicable toward a master's degree in economics. 206. The Public Economy (3)

Prerequisite: Economics 131 or Public Administration 162
Determinants of the supply and demand for public goods; the social decision-making processes in determining public goods; supply; financing public goods; taxes and expenditures; planned program budgeting and cost-benefit analysis. Not applicable toward master's degree in economic
Prerequisite: Economics 195.
Prerequisite: Economics
Role of government in development. Choice of target and policy variables. Planning techniques and their application to the national development problems.
210. Seminar in Economic History (3)

Prerequisite: Economics 110 or 111A or 111B
Individual study and group discussion on selected topics in economic history
231. Seminar in Public Finance (3)

Prerequisite: Economics 131.
Advanced study of public finance problems and literature; research
235. Seminar in Monetary Economics (3)

Prerequisite: Economics 135.
Analysis of theoretical issues associated with the demand for money, the money supply and process of money creation. Emphasis upon interaction of monetary and real factors in domestic-international money and financial markets.
238. Seminar in Urban and Regional Economics (3)

Prerequisite: Economics 138.
Urban and regional economics; individual research and reports.
241. Seminar in Econometrics (3)

Prerequisite: Economics 141.
The construction of large economic models. Identification, causal ordering and estimation Simultaneous-equation techniques and other selected topics.
250 . Seminar in Labor Economics (3)
Prerequisite: Economics 150 or 152
Prerequisite: Economics 150 or 152
Individual study and group discussion of selected topics in labor economics.
253. Comparative Labor Seminar (3)
Prerequisite: Economics 150 or 153

Prerequisite: Economics 150 or 153
Research in comparative labor problems, including problems of labor and social legislation medical economics, poverty problems, labor force structural problems, and international labor movements.
272. Seminar in Utilities and Water Resources (3)

Prerequisite: Economics 172 or 173.
and the economics of water resource develected topics in utility economics and regulation, 274. Seminar in Economic resource development.

Prerequisites: Economics 174, or Economics Monopoly Power (3)
Prerequisites: Economics 174, or Economics 100A and 170
290. Bibliography (1)

Exercises in thy (1)
Exercises in the use of basic reference books, journals, and specialized bibliographies, 292. Seminar in Internation of a master's thesis

Prerequisite: Economics 190 Economics (3)
Prerequisite: Economics 190 or 191.
of payments, and international monetry, commercial policies, capital movements, balance 295. Seminar and international monetary institutions

Prerequisite: Economics 195 .
Trerequisite: Economics 195.
underdeveloped countries. 297. Research (3) $\mathrm{Cr} / \mathrm{NC}$

Prerequisites: Classified graduate standing and consent of instructor,
Independent research project in an area of economics.
298. Special Study (1-3) Cr/NC

Prerequisite: Consent of staff; to be arranged with department chairman and instructor, Individual study. Maximum credit six units.
299. Thesis (3) $\mathrm{Cr} / \mathrm{NC}$

Prerequisites: An officially appointed thesis committee and advancement to candidacy. Preparation of a project or thesis for the master's degree.

## Education

## In the School of Education

## Member of the American Association of

 Colleges for Teacher EducationFaculty
Emeritus: Alcorn, Apple, Bacon, Bradley, Campbell, Corbett, Hammack, E., Hammack,
I., Hunter, Kinder, Linley, Madden, White, Yarborough
Professors: Anderson, E.L., Anderson, P.S., Anthony, Arciniega (Dean), Baker, Ballantine, Blanc (Assistant Dean), Briggs, Bruce, Brydegaard, Charles, Crum, Cummins, Erickson, Fishburn, Fisher, Friedrich, Gast, Gates, Gega, Goodson, Gray, Gif, Halfaker, Hawley, Hill, W.O., Holt, Huls, Inskeep, Kendall, La Mow, Mismuels Scren, Tossas, Trimmer, Wetherill, Wilding
Associate Professors: Becker, Becklund, Bee, Berg, Burian Burnside, Carnevale, Chamley, Clark, Cleveland, Doorlag, Duckworth, Elliott, Fearn, Forbing, Ford, Harrison, Holman, Kaatz, Mazon, McCabe, McCoy, McLevie, Melton, Mooers, Moreno, Morris, W. P., Murphy, Nagel, Pehrson, Retson, Richman, Shaw, Steckbauer, Strom, Walsh, Warburton, Yesselman
Assistant Professors: Altamura, Atherton, Birch, Botkin, Cochran, Curry, Dawson, Hill, P.J., Klann, Manjos, McAllister, McFarlane, Morris, J., Reel, Thompson, Treadway, Weir Lecturer: Wright
Offered by the School of Education
Master of Arts degree in education with concentrations in ten areas and a Master of Science degree in counseling. (Described in the Graduate Bulletin. Also refer to the section in this catalog on the School of Education.)
B.V.E. degree. (Described in the section on the School of Education.)

Teaching credentials in all areas. Refer to the section on the School of Education.
Minor in Educational Technology and Librarianship.

## Educational Technology and Librarianship Minor

The minor in Educational Technology and Librarianship consists of a minimum of 15 units in Education in the area of Educational Technology and Librarianship, six units of which must be in upper division courses.

## Lower Division Courses

99. Experimental Topics (2-4) on Experimental Topics on page 106. Limit of nine units Refer to catalog stater degree in courses under this number of which no more than three units may be applicable to general education requirements.

## Upper Division Courses

## Single Subject Credential

100A. The Secondary School (3) I, II
100A. The Secondary schoomplete admission requirements. Includes field work assignment, To screen, advise, and complete writing competencies, and initial teacher professional competencies.
100B. Humanistic and Social Aspects of Teaching (4) I, II
Prerequisites: Education 100A and admission to Secondary Teacher Education. To be Pren concurrently with Education 100 C and 100 F
Teacher competencies as they relate to values, awareness, self-concept, rights and Teacher competencies asization, and secondary school problems.
100C. Behavioral and Psychological Aspects of Teaching (4) I, II Prerequisites: Education 100 A and 100 B an taken concurrently wries as they relate to learning theories, adolescent growth, Teacher competencies and evaluation

100D. Teaching of Reading in the Secondary School (3) I, II Teacher competencies as they relate to the teaching of reading in content areas, including techniques and materials, reading programs, classroom diagnosis, developmental and corrective reading methods.
100 E. Instructional Media, Equipment and Production (1) $\mathrm{Cr} / \mathrm{NC}$ I, II
Basic audiovisual equipment operation, production of inexpensive instructional materials, and application of learning theory to the utilization of instructional materials.
100F. Student Teaching (3) I, II
Prerequisites: Education 100A and admission to Secondary Teacher Education. To be taken concurrently with Education 100 B and 100 C
On-site, part-time experience to implement teacher competencies developed in Education 100 B and 100 C .
100G. Student Teaching II (9) I, II $100 \mathrm{C}, 100 \mathrm{D}, 100 \mathrm{E}, 100 \mathrm{~F}$. To be taken concurrently Prerequisites: Educ
with Education 100 H
with Education 100 H .
On-site, full-time experience to implement teacher competencies as developed from the otal professional sequence.
100H. Student Teaching Proseminar (3) I, II
Prerequisites: Education $100 \mathrm{~A}, 100 \mathrm{~B}, 100 \mathrm{C}, 100 \mathrm{D}, 100 \mathrm{E}, 100 \mathrm{~F}$. To be taken concurrently with Education 100 G .
To plan and organize instruction in relation to all competencies acquired and to be implemented in an on-site, full-time student teaching assignment.

## Social Foundation

00J. The Secondary School (4) I, II
Prerequisite: To be taken concurrently with Education 180B
American education in its social and historical setting. The secondary school curriculum, and philosophies, issues, and social forces that influence the school. Not open to students with credit in Education 101 or 102. (Formerly numbered Education 100.)
101. History and Philosophy of Education (2) I, II, S

Historical backgrounds and underlying philosophies upon which the public school system has been established. Meaning of education, educational aims and values, and democracy and education. Not open to students with credit in Education 100J.
105. Education for Minority Youth (3) I, II, S

Specific behavior patterns of minority youth and their effect upon the school learning process.

## Psychological Foundations

110. Psychological Foundations of Education for Secondary Teachers (5) I, II Five lectures and instructional media laboratory.
Prerequisites: Admission to Teacher Education and education program approved by the Coordinator of Secondary Education. To be taken concurrently with Education 180A
The nature of growth and development, principles and theories of learning, guidance practices, tests and measurements. Not open to students with credit in Education 112 or 113 111. The Learner in the Elementary School (3) I, II, S

Prerequisites: Psychology 1 and admission to Elementary Teacher Education.
Intellectual, emotional, social, and physical development during childhood and early adolescence, including basic principles of child guidance and counseling. Directed observation required. Not open to students with credit in Family Studies and Consumer
112. The Learning Process in the Elementary School (3) I, II, S

Prerequisite: Education 111.
Psychological principles for effective classroom teaching; techniques of measurement and evaluation for the diagnosis and improvement of learning.
113. Growth and Development of the Adolescent (3) Irregular

Adolescent physiological, psychological, social and emotional development, including principles of mental hygiene and guidance. Field work with adolescent groups in the community is required. Not open to students with credit in Education 110 .
114-S. Interpretation of Early Childhood Behavior (3) Irregular
For kindergarten-primary teachers, treating the analysis and interpretation of early childhood behavior. Emphasis on understanding and interpreting the causative factors in typical behavior of children to parents, social workers, teachers, and others concerned with the guidance of kindergarten-primary children.
115. Guidance in Elementary Education (3) I, II, Irregular

As applied in the elementary school.

116A-116B-116C. Child Study Laboratory I, II
Offered only in Extension.
Prerequisite: Education 116A is prerequisite to 116 B , and 116 B to 116 C .
Development of background and procedures for child study and their application to field situations. Field work required. For teachers in service.

## 117. Teacher Effectiveness Training (2 or 3)

Prerequisites: Psychology 1 and credit or concurrent registration in student teaching. Skill training in modifying undesirable behavior of individuals or groups, resolving conflicts, solving problems, and fostering improved thinking through group discussion.

## 137. Reading Difficulties (3) I, S

Two lectures and two hours of laboratory.
Prerequisites: Education 112, and 131A or 122
Reading difficultes, their causes, prevention and correction. Remedial practices in reading useful to the classroom teacher, school counselor and reading specialist
151. Measurement and Evaluation in Elementary Education (3) I, II,

The use of intelligence and achievement tests in the diagnosis
arning constructioneme of learning; construction of objective examinations; problems of evaluation in education; the
152 Measurement and Eva
152. Measurement and Evaluation in Secondary Education (3) Irregular

Problems of evaluation in secondary education; construction of examinations; elements of statistics; selection and interpretation of standardized measures. Not open to students with credit in Education 120.
153. Quantitative Methods in Educance with special reference to the interpretation of educational data.
120. The Teaching Process (3) I, II

To develop teacher competency at the secondary level in professional and community relationships, general methods and materials, planning for teaching, and evaluating learning activities.
121. Methods and Materials of Instruction: Major (2) Minor (2) except Education 121E (3) Lecture courses, except that Education 121 K and 121 N meet for one lecture and three hours of laboratory

Professional courses in specific teaching fields usually taken concurrently with directed teaching. Each course emphasizes the application of best practices with reference to each subject area named
Subject fields for section 121 are as follows:

Offered in the Fall Semester
Offered in the Fans in English
C. Methods in Home Economics
D. Methods in Industrial Arts
E. Methods in Foreign Languages
F. Methods in Mathematics
K. Methods in Physical Science
L. Methods in Speech Communication
M. Methods in Social Science
N. Methods in Life Science

Offered in the Spring Semester
B. Methods in English

## 122. Reading in Secondary Education (3) Irregular

The nature of the reading program, development of techniques and skills, vocabulary deve nature diagnosis, and remediation
126. Workshop in Secondary Education (3 or 6) Irregular Designed to meet the needs of individuals or groups of the university staff and the San Diego County Curriculum Staff. May be repeated with new content. Maximum credit six units.
128A. Principles of Adult Education (2)
History, philosophy, objectives and administration of adult education
128B. Methods and Materials in Adult Education (2)
Identification, selection and utilization of teaching methods, techniques and materials appropriate for adults.

128C. Psychological Foundations of Adult Education (2) Educational psychology and developmental problems of adults.
128D. Human Relations and Counseling in Adult Education (2)
Prerequisite: Possession of a valid teaching credential. education.
128E. Workshop in Adult Education (1-3)
Prerequisite: Possession of a valid teaching credential
Designed to meet the needs of individuals or groups of adult educators who wish to study special problems in adult education.
156. Community College Occupational Education (3)

Prerequisite: Two years of occupational experience in a community college subject matter area.
Principles, practices, scope and functions of education.
157. Community College Occupational Curriculum (3)

Prerequisite: Education 156.
Materials and methods of instruction, curriculum development and evaluation.
158. Occupational Student (3)

Prerequisite: Education 156 or 157.
The learning process and individual differences, behavioral characteristics of youth, race and ethnic relations in the schools.
159. Directed Teaching (2 or 4 )

Prerequisite: Education 156, 157 or 158
Systematic observation, participation, and teaching under supervision in an occupational area in a community college.

## Methods-Elementary

130. First Elementary Education Practicum (2) I, II (3) S

Four hours of activity for 130A; four hours of activity for 130B; six or more hours of activity and instructional media laboratory for 130 C
Prerequisite: Concurrent registration in Education 111, or consent of Coordinator of Elementary Education.
Curriculum, principles, methods and materials of instruction (including educational technology), and participation in elementary education, in the areas listed A through C below.
A. Arithmetic
B. Language Arts
C. Student Teaching (not offered in the summer)
131. Second Elementary Education Practicum (2) I, II, S, except 131D (3) or 131E (4)

Four hours of activity for 131A; four hours of activity for 131 B ; six or more hours of activity and instructional media laboratory for 131C or 131D or 131 E
Prerequisites: Education 111 and 130; concurrent registration in Education 112 or consent ef ementary Education.
(including educationa technology), and participation in elementary education, in the areas listed A through E below.
A. Rocial Studie

C, D, or E. Student Teaching (not offered in the summer)
132. Third Elementary Education Practicum (2) I, II, S, except 132D (4) or 132E (5)

Four hours of activity for 132A; four hours of activity for 132B; four hours of activity fo
132 C ; ten or more hours of activity for 132D or 132E.
Prerequisites: Education 112 and 131.
Curriculum, principles, methods and materials of instruction (including instructional
media), and participation in elementary education, in the areas listed A through E below. A. Science
B. Art

D or E. Student Teaching (not offered in the summer)
133. Children's Literature in Elementary Education (3) Irregular

A survey of children's literature; the selection and use of material in the elementary
classroom.
134-S. Laboratory in Elementary Education (3) S
A general course in observation and theory, including a study of arithmetic, reading, language, music, science, social studies, art, spelling. Students in this course will observe in the summer demonstration school and discuss with the staff the teaching procedures.

135. Workshop in Elementary Education (3 or 6) Irregular

To meet the needs of individuals or groups of teachers who desire to study selected problems in elementary education. The observation of classroom teaching will be provided for members in attendance. Interested persons should correspond with the Coordinator of Elementary Education, San Diego State University. May be repeated with new content Maximum credit six units.
138A. Curriculum in Elementary Education (3) Irregular
Emphasis on the selection and development of content, teaching methods and materials as they relate to social needs; evaluation procedures; psychological principles and the nature of the learner. (Formerly numbered Education 138.)
138B. Social Studies Unit Construction in Elementary Education (3) Irregular
Prerequisite: Education 131B.
Selecting and organizing content, analyzing materials, and developing instructional units in elementary social studies for classroom use.
139. Kindergarten-Primary Practicum (3) I, II, S
The theory of early childhood education and the materials and teaching techniques use The theory of early childhood education and the materials and teaching techniques use student teaching assignment is in the kindergarten

## Educational Technology and Librarianship

140. Educational Technology (3) I, II, S

Two lectures and three hours of laboratory. Applications of educational technology to instruction and learning. Individualizatio through the use of media. Includes film, IV, simulation, programmed instruction, computer and multi-media
141. Production of Instructional Materials (3) I, II, S

Two lectures and three hours of laboratory.
Planning and preparing instructional materials for classroom use. Independent study centers, transparencies, film, charts, lettering aids, learning games.
143-S. Workshop in Educational Television (6) S
(Same course as Telecommunications and Film 172.
Open to teachers and students interested in instruction by television.
The procedures and theories of television production as it pertains to closed circuit and instructional use of television. The selection and utilization of program content and the method of presenting material through the television medium will be discussed and demonstrated
144. Instructional Materials Design (3) I, II, S

Prerequisite: Education 110 or 112 .
Systematic approach to instructional design. Review of research and theory in materials design and programmed instruction. Development and validation of programmed materials in various formats.
145. School Library Media Programs (3) I, II

Backgrounds of media centers in education. Objectives, standards and activities involved in planning, organizing, administering and integrating the school library media program school. (Formerly numbered and entitled Educational Technology and Librarianship 136, School Library Administration.)
146. Basic Reference Materials (3) I, II

General reference books, bibliographies and source materials with emphasis on their use General reference books, center. (Formerly numbered Educational Technology and Librarianship 110.)
147. Selection of Instructional Materials (3) I, II

Prerequisite: Education 145 . media standard catalogs and bibliographies. (Formerly numbered Educational Technology and Librarianship 118.)
148. Cataloging and Classification (3) I, II
148. Cataloging and three hours of laboratory.

Two lectures and Prequisite: Education 145.
A practical approach to organizing instructional materials in school library media center A practical approach classification, and choice of subject headings. Basic knowledge Descriptive catal. (Formerly numbered and entitled Educational Technology and typing helpful. (Formerly numberal Processes.)
149. History of Books and Libraries (3) II
149. History of Boories from earliest times to the present; their influence on our schools and culture. (Formerly numbered Educational Technology and Librarianship 184.)

## 184 / Education

50. Workshop in Educational Technology and Librarianship (1-3)

Selected problems in educational technology and librarianship. Maximum credit six units. (Formerly numbered Educational Technology and Librarianship 191.)

## Honors Course

166. Honors Course (1-3) I, II

Refer to the honors program

## Exceptional Children

161. Measurement and Evaluation in Special Education (4) II Three lectures and three hours of laboratory
Prerequisites: Education 120; 151 or 152; and Psychology 105.
Consideration of representative tests and evaluation procedures appropriate to the several areas of exceptionality; problems in psychoeducational diagnosis and appraisal; assembling 162. Emotionally Disturbed Children and Youth (3) I, S
162. Emotionally Disturbed C
Prerequisite: Education 167.

Prerequisite: Education 167 .
Nature, needs and problems of emotional deviants; survey of settings and roles of those who help, and ways they help.
163. Curriculum and Methods for Teaching Emotionally Disturbed Children and Youth (3) II or Irregular
Prerequisites: Education 162 or 167 . children and youth
164. Education of the Neurologically Handicapped (3)

Prerequisites: Education 167 and Psychology 109
Prerequisites: Education 167 and Psychology 109 .
Educational and psychological problems of brain-injured children and youth; identification procedures, educational programs, instructional methods, preparation of materials.
167. Exceptional Children (3) I, II, S

Characteristics and adjustment problems of mental, physical and emotional deviants. 168. Curriculum and Methods for Teaching Mentally Retarded Children in the Elementary School (3) II, S
Prerequisite: Psychology 109 or Education 167 .
Selection, organization and presentation of curricular materials for mentally retarded children at all levels in the public schools. Concentration will be on the elementary level. (Recommended for students with specialization in Elementary Teaching.)
169. Curriculum and Methods for Teaching Mentally Retarded Children in the Secondary School (3) I, S
Prerequisite: Psychology 109 or Education 167
Selection, organization and presentation of curricular materials for mentally retarded children at all levels in the public schools. Concentration will be on the secondary level. (Recommended for students with specialization in Secondary Teaching.)
170. Workshop in Special Education (2-4) I, II, S

Curriculum and methods of teaching in an area of exceptionality; observation of demonstration class; development of materials of instruction. May be repeated once in a second area of exceptionality. Maximum credit six units applicable on any degree.
171. Practicum in Mental Retardation (2) I, II

One lecture and two hours of laboratory.
Prerequisites: Admission to Special Education, and credit or concurrent registration in
Psychology 109. Psychology 109.
Supervised observation and participation in classroom and related school activities for mentally retarded. Course work includes discussion, analysis and reports of observations.
172. Counseling Exceptional Children (3) I, S

Prerequisites: Education 110 or 112, and Education 167 or Psychology 109
Educational, mental, social and vocational counseling of exceptional individuals and their parents. Interrelationships of home, school and community agencies.
173. Education of the Severely Mentally Retarded (3) II, S

Prerequisites: Education 167 and Psychology 109, and admission to Special Education.
Organization and planning of instructional activities; materials and equipment; utilization of resources, records, and reports; and classroom management of those under 50 IQ and those with neurological impairments.
179. Curriculum and Instruction for Teaching the Deaf (3) It

Prerequisite: Concurrent registration in Education 185
General elementary curriculum principles, methods and materials of instruction in teaching elementary subjects, including reading, to deaf children. Twenty-six hour observation in programs for the deaf.

## Student Teaching

180A-180B. Directed Participation: Secondary (1-1) I, II
Prerequisite: Education 110 to be taken concurrently with 180A; Education 100J to be aken concurrently with 180B.
participation in the classroom to a secondary school with directed observation and participation in the classroom.
180C-180D. Directed Teaching: Secondary (3-3) I, II
252 is requisited Admission to teacher education and concurrent registration in Education 252 is required for Education 180C. Education 180C is prerequisite to 180D
, participation and teaching under supervision in a junior or senior gh school. A weekly seminar or conference is required. Education 180D is also offered in

181A. Directed Teaching: Elementary (1) I, II, S 181B. Directed Teaching: Elementary (2) I, II, S

## 181C. Directed Teaching: Elementary (3) I, II, S

Prerequisites: Admission to teacher education and education program approved by the Coordinator of Elementary Education. Any grade below C is unacceptable for a credential. Systematic observation, participation and teaching under supervision in elementary schools. During each semester of sticated in the time schedule.
182. Directed Teaching: Mentally Retarded (4) I, II

Application to take the course should be made during the preceding semester
Extensive daily participation or teaching in public schools and preparation for the teaching of exceptional children in the area of the mentally retarded.
183. Directed Teaching: Educational Technology and Librarianship (2-4) I, II

Prerequisites: Admission to teacher education and concurrent completion of a teaching minor in library science.
Systematic observation and participation in library and audiovisual service under supervision in a school library and/or teaching materials center. A weekly seminar or conference is required
184. Directed Teaching: Speech Correction (4) I, II

Application to take the course should be made during the preceding semester Extensive daily participation or teaching in public schools and preparation for the teaching of exceptional children in the area of speect
185. Directed Teaching: Hearing Impaired (4)

Application to take the course should be made during the preceding semester
and in public schools and preparation for the teaching of exceptional children in the area of hearing impaired

## Conference and Special Courses

190-S. Conference on the Teaching of Mathematics (1) S
Lectures, discussions and demonstrations on problems in teaching of mathematics in the elementary and secondary schools. Designed for teachers, supervisors and administrators interested in current developments in this area. Maximum credit three units.
191-S. Guidance Conference (1) S
Prerequisite: Consent of conference director.
A series of lecture and discussion sessions centering on current problems in counseling and uidance. Designed to serve the needs of any person desiring to keep informed of evelopments in this area. Maximum credit three units.
192-S. Audiovisual Conference (1) S
Course does not fulfill credential requirement
A series of lectures, discussions and demonstrations centering on problems in the use of udiovisual instructional materials. Designed for teachers, administrators, audiovisual representatives, and interested in current developments in this area. Maximum credit three units.
197. Problems in Education (Credit to be arranged)
197. Problems in Education
Offered only in Extension.

Offered only in Extension.
Prerequisite: Consent of instructor
Class study of specially selected problems in education. Does not apply to pattern requirements for credentials.
199 Special Study (1-3) I, II
Individual study. Maximum credit six units.
Prerequisite: Consent of instructor. Open only to senior and graduate students in education who have shown ability to work independently.

Graduate Courses
Students with undergraduate standing are not admitted to 200 -numbered courses in Education.
Twelve units of professional education are prerequisite for enrollment in all graduate courses, except Coordinat

## Sociological Foundations

201. The Community College (3)
wo lectures and three hours of activity
Overview of philosophy, history, aims, scope, function, outcomes, principles and problems of the community college. Relation of the community college to secondary and higher education.
202. Social Foundations (2 or 3)

Prerequisite: Education fluences on present-day educational practices
204. Comparative Education (3)
204. Comparative Education (3)
The contemporary educational ideas and practices of various countries of the world and their impact on our culture and education
206. Philosophy of Education (3)

Prerequisite: Education 100J or 101
Prerequisite: Education 100J or 101 . backgrounds of educational thought; a study of comparative philosophies, and an analysis of selected current trends and problems.
207. Educational Sociology (3)

Prerequisite: Education 100 or 101
A study of the social, economic, political and moral setting in which present-day American education functions.
208. Workshop in Community Influences on Learning and Curriculum Planning (1-3) Prerequisite: Teaching experience.
Advanced study of community influences on learning and child growth and development, Advanced study of community influences on learning and child group techniques; implications for curriculum planning. Provides opportunity for work on individual problems of the participants. Maximum credit six units
209. Workshop in Community College Education (2-6)

Prerequisite: Teaching or administrative experience in a community college
To provide community college faculty members with opportunities to explore ways to improve curriculum and instruction in the community college.

## Procedures of Investigation and Research

211. Procedures of Investigation and Report (3)

Research methods in education. Location, selection and analysis of professional literature. Methods of investigation, data analysis and reporting. Required of all applicants for advanced degrees in education. (Formerly numbered Education 290A-290B.)
212. Educational Research Design (3)

Prerequisite: Education 211.
Principles and methods of planning and conducting systematic investigations of educational problems-including historical, descriptive and experimental methods of research. Practice in the definition of problems, formulation of hypotheses, construction of samples, control of variables, and interpretation of results.

## Educational Psychology

220. Advanced Educational Psychology (3)
rerequisite: Education 110 or 112.
Advanced study of the research in educational psychology and its application to learning and human growth
221. Seminar in Educational Measurement (3)

Prerequisite: Education 120, 151, or 152.
Problems in educational testing. Emphasis on construction, administration and validation feacher-made tests.
223. Educational Psychology: Community College (2)

Field work required.
Prerequisite: Credit or concurrent registration in Education 201
The nature of the community college student; the learning process, including contributions of audiovisual materials. The functions of student personnel services in the
246. Advanced Diagnosis in Reading (3)

Prerequisites: Psychology 204 and Education 137, or consent of instructor
Principles and techniques of individual and group diagnosis of reading difficulties. Experience in administration and interpretation of individual and group instruments in diagnosis.
247. Advanced Diagnosis and Treatment of Learning Difficulties (3)

Prerequisites: A teaching credential and Education 151 or 152
Principles and techniques of diagnosis and treatment of difficulties in learning the school subjects. Supervised experience in working with individual pupils and their parents.

## Counselor Educatio

## 224. Administration of Pupil Personnel Services (3) <br> Prerequisite: Education 230.

The organization and administration of school guidance services, including the use of community resources and a study of laws relating to children and child welfare,
225A-225B. Determinants of Human Behavior (3-3)
Implications of theory and research in behavioral sciences for the understanding of human behavior. Education 225A deals with personality theories and psychological determinants of behavior; 225B with social and cultural determinants.
226. Guidance Services in Public Education (3)

Historical, philosophical and legal bases of pupil personnel services; staff roles and relationships in a variety of organizational patterns.
229. Workshop in Counseling (3)

Prerequisite: Consent of instructor.
Application of principles and procedures to specific situations for improvement of counseling services. Individual problems emphasized.

## 231. Theory and Process of Appraisal (4)

Three lectures and three hours of laboratory.
Measurement theory and procedures, including interpretation of test results. Not open to students with credit in Education 237. Offered during summer sessions only in combination with Education 232 as Education 237.
232. Theory and Process of Vocational Choice (4)

Three lectures and three hours of laboratory and/or field work.
Vocational choice theory, occupational and educational materials used in career planning. Not open to students with credit in Education 237. Offered during summer sessions only in combination with Education 231 as Education 237
233. Theory and Process of Counseling (4)

Counseling process theories, approaches to and techniques for counseling, and research concerning counseling effectiveness. Supervised practice in counseling, analyzing counseling, and writing counseling reports. Not open to students with credit in Education 238 or Psychology 152 or Psychology 233. Offered during summer sessions only in combination with Education 234 as Education 238.
234. Theory and Process of Group Counseling (4)
234. Theory and Process of Group Counseling (4)
Three lectures and three hours of laboratory.

Three lectures and three hours of 233 .
Group process and individual growth, theories of group interaction, sensitivity training and group leadership techniques. Not open to students with credit in Education 238. Offered during summer sessions only in combination with Education 233 as Education 231.
235A. Introduction to the Rehabilitation Process (3)
Two lectures and three hours of laboratory.
Prerequisite: Admission to Counselor Education
Background and legislation related to vocational rehabilitation; overview of client services Background and legislation related to vocational reha a professional person. Orientation to and role and function of the rencies.

## 235B. Medical Aspects of Disability (3)

Two lectures and three hours of laboratory
Prerequisite Education 235A
Prerequisite. Edmedicine and illness in relation to work capacity and work outlook. Focus Orientation and impairments resulting in vocational disability. Lecture and clinical on major
seminars. Psychological Aspects of Disability (3)
235C. Psychological three hours of laboratory
Two lectures and three hours
Prerequisite: Education and Analysis and vocational implications. Lecture and clinical seminars. (Formerly numbered Education 235A.)

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235D. Placement of the Disabled (3)
Two lectures and three hours of laboratory,
Prequisite: Education 235 C .
Determination of employment needs of disabled clients, case study method. Follow-through to placement. Continuous survey of employment needs and opportunities Follow-through the wider community. (Formerly numbered Education 235C.)
237-S. Appraisal and Vocational Choice (6) S
Five lectures and three hours of laboratory
Five lectures and three hours of laboratory. Measurement Education 231 or 232 . Application to take the course must be made early during the preceding semester.
238-S. Counseling: Individual and Group (6) S
Five lectures and three hours of laboratory. and group. Not open to students with credit
Counseling theory and techniques, indiviaa and grourse during the
in Education 233 or 234 . Application to take the course must be made early during the preceding semester.
239A-239B. Professional Seminar in Guidance (3-3)
Prerequisites: Education 211; six units from Education 231, 232, 233, and 234, or equivalent Study of selected areas in counseling and guidance culminating in a written project with emphasis on research and on counseling as a profession.

## Elementary Education

240. Curriculum Construction and Evaluation in Elementary Education (3)

Prerequisite: Credit or concurrent registration in Education 211.
Advanced study of the research in curriculum development, construction and evaluation
241. Seminar in Arithmetic in Elementary Education (3)

Prerequisite: Credit or concurrent registration in Education 211 . A study of research and practice in the me
242. Seminar in Reading in Elementary Education (3)

Prerequisite: Credit or concurrent registration in Education 21
Advanced study of trends in reading instruction. Topics include developmental sequences reading skills and abilities, reading in the content fields, individual differences and interests. Students will develop individual projects or problems.
243A. Seminar in Social Studies in Elementary Education (3)
Prerequisite: Credit or concurrent registration in Education 211.
Problems in teaching social studies in the elementary school with emphasis on the study of the scientific research in the field. (Formerly numbered Education 243.
243B. Seminar in Elementary Social Studies Curriculum Development (3)
Prerequisite: Education 131B, and credit or concurrent registration in Education 211. Current theories of instruction pertaining directly to elementary social studies teaching experience in elementary social studies curriculum planning at the classroom, school and district levels.
244. Seminar in Language Arts in Elementary Education (3)

Prerequisite: Credit or concurrent registration in Education 211.
Prerequisite: Credit or concurrent registration in Education 211 .
Advanced study of problems in teaching language arts in the elementary school, including spelling, literature and written and oral communication. Emphasis will be on the study of the scientific research in the field.
248. Seminar in Science in Elementary Education (3)

Prerequisite: Credit or concurrent registration in Education 211 .
Advanced study of the problems of teaching science in the elementary school with emphasis on the literature of science education.

## Secondary Education

230. Guidance Problems in Secondary Education (3)

Prerequisites: Education 110 or equivalent, and student teaching or teaching experience The theory and practice of guidance, emphasizing advanced mental hygiene concepts by teachers and counselors.
250. Curricular Problems in Secondary Education (3)
rerequisite: Student teaching or teaching experience
Present status and development of the secondary school curriculum with emphasis on urriculum construction and curriculum evaluation. Opportunities provided for study of problems submitted by students.


266A-266B-266C. Field Experience in Elementary School Administration and Supervision (1-1-1) $\mathrm{Cr} / \mathrm{NC}$
Prerequisite: Concurrent registration in Education $264 \mathrm{~A}, 264 \mathrm{~B}, 264 \mathrm{C}$. district required in Field experience in the element
the semester prior to registration.
2674 267A-1-1) $\mathrm{Cr} / \mathrm{NC}$

Prerequisite: Concurrent registration in Education 265A, 265B, 265 C . Field experience in the secon
semester prior to registration.
268. Seminar in School Administration and Supervision (3) 263 , consent of instructor, and Prerequisites: Teaching credential, Education 260, 261
admission to Program of Educational Administration.
School administration and supervision in a specialized field, such as the community for Eduction 264 C or 265 C
280. Legal and Financial Aspects of School District Management (3)

Prerequisites: Teaching credential, and Education 260, 261, 262,263 .
Principles and practices of davel planning and development, and the operation and maintenance of school facilities and services.
281. School-Community Relationships (3)

Prerequisites: Teaching credential, and Education 260, 261, 262, 263.
Precequisites: Teaching credential aspects of school administration with particular emphasis on broad social policy, contemporary issues, community-school relationships, other social and service agencies of the community.
282. School District Personnel Management (3)

Prerequisites: Teaching credential, and Education 260, 261, 262, 263.
Personnel relationships to include administrative relationships with the Board of education and the school staff. Central office personnel procedures including recruitment employment, placement, evaluation, promotional and training procedures.
283. District Curriculum Development, Evaluation and Improvement (3)

Prerequisites: Teaching credential, and Education 260,261,262,263.
School district curricular development from kindergarten through community college relationships of the superintendent and central administrative staff to regular staff an supervisory staff.
284. Advanced Seminar in School Administration and Supervision (3)

Prerequisites: Teaching credential, and Education 280, $281,282,283$.
An intensive study of a selected area in school admintration and supervision. Typical
An intensive study of a selected area in school administration and supervision. Typical Procedures. May be repeated with new content. Maximum credit nine units.
286A 286B. Se inar Sch Utilization (3-3)
286A-286B. Seminar in School Building Construction and Utilization (3-3)
of Adistration or Supervision Credential, or consent of quisite to 286 B .
School building construction and utilization: the development of new facilities from the
planning stage to complete utilization; remodeling.
Special Education
222. The Gifted Child (3)

Prerequisites: Education 110, or 111 and 112
The abilities and characteristics of the intellectually gifted or talented; related problems of curriculum, teaching, administration and guidance.
270. Seminar in Education of Exceptional Children (3)

Prerequisite: Education 167
Principles, trends and research in the education of exceptional children
271. Seminar in Emotionally Disturbed Children and Youth (3)

Prerequisites: Education 162 or 163 , and 270
Advanced study of the theories, principles and practices in working with the emotionally handicapped.
272. Seminar in Education of the Gifted (3)

Prerequisites: Education 222 and 270
Review of studies and investigation in learning and adjustment of the gifted, including assessment, classification, curriculum provisions, and social and emotional adjustment.
273. Seminar in Education of the Mentally Retarded (3)

Prerequisites: Education 168 or 169, and 270 . including etiology, classification, diagnosis and assessment.

Educational Technology and Librarianship
274. Seminar in Educational Technology (3) I

Prerequisite: Education 140.
Research reviewed and the findings related to current practices. Relationships of educational technology to educational philosophies and current issues. Recent trends evaluated.
275. Seminar in the Administration of Instructional Media Centers (3) I, II

Prerequisites: Education 140 and 145.
The relationship of school, district, and regional media centers to the educational program Concepts of leadership and management, review of current practices and policies.
276. Seminar in Instructional Design (3) I, II

Prerequisite: Education 141.
Design and production of self-instructional sequences. Instructional materials design will be investigated. Student entry behavior, objectives, media characteristics and learning will be considered.
277. Reference Materials in Subject Areas (3)
Prerequisite: Education 146 .

Prerequisite: Education 146.
Reference materials in humanities, social sciences, and sciences with emphasis on their use in the school library media center

## 278. Literature for Children (3)

Prerequisite: Education 147.
Literature and other library materials suited to the elementary school student. Standard classic and current books for children; aids and criteria for selection. (Formerly numbered 279. Literature for Adolescents (3)
279. Literature for Adolescents
Prerequisite: Education 147

Prerequisite: Education 147.
Literature and other library materials suited to the high school student. Standard, classic and current books for the adolescent; aids and criteria for selection. (Formerly numbered Educational Technology and Librarianship 232.)

Special Study and Research
295A-295B. Seminar (3-3)
Prerequisites: Education 211 and advancement to candidacy for the Master of Arts degree in education.
An intensive study in selected areas of education culminating in a written project. Limited to students following Plan B for the Master of Arts degree in education.
298. Special Study (1-6) Cr/NC

Individual study. Maximum credit six units. 299. Thesis (3) $\mathrm{Cr} / \mathrm{NC}$

Prerequisites: An officially appointed thesis committee and advancement to candidacy, Preparation of a project or thesis for the master's degree.

## Student Teaching and Internship

## 316. Directed Teaching: Community College (4)

Prerequisites: Admission to Teacher Education and approval of the Higher Education Programs Coordinator the preceding semester. Credit in Education 201 and 223 and concurrent registration in Education 251
Systematic observation, participation, and teaching under supervision in a community college. Any grade below $C$ is unacceptable for a credential. A weekly seminar or conference is required.
330. Internship (2-6) Cr/NC

Supervised internship experience in counseling activities. Application to take the course must be made early during the preceding semester. May be repeated with new content. Maximum credit six units applicable on a master's degree.
331. Field Work in Counseling (2-6) Cr/NC

Application of concepts and procedures of counseling services in appropriate school or agency setting. Daily observation and practice. Weekly seminar sessions with college staff. Application to take the course must be made early during the preceding semester. May be repeated with new content. Maximum credit six units applicable on a master's degree.
332. Practicum in Counseling (3) $\mathrm{Cr} / \mathrm{NC}$

Supervised experience in group and individual counseling and career planning. Application to take the course must be made early during the preceding semester. Maximum credit six units applicable on a master's degree.
333. Advanced Seminar and Practicum in Counseling (3-6) $\mathrm{Cr} / \mathrm{NC}$

Supervised experience in group and individual counseling and study of problems, issues, and research. Application to take the course must be made early during the preceding semester.
360. Internship in School Administration and Supervision (3-6) Cr/NC Prerequisites. Tearhing credential and consent of instructor. Prerequisites: Teaching credential administrators in the public schools. Released time, permission of school district, and preregistratio
Administration previous semester required.
371. Directed Internship: Mentally Retarded (4) $\mathrm{Cr} / \mathrm{NC}$

Application to take the course must be made during the preceding semester
Appensive dearen for the teaching of exceptional children in the area of the mentally retarded
374. Directed Internship: Speech Correction (4) $\mathrm{Cr} / \mathrm{NC}$
374. Directed Internship: Speech Correction (4) Cr/NC

Application to take the course must be made of exceptional children in the area of speech correction.
of exceptional children in (2-6) Cr/NC
375. Directed Internship for the Instructional Media specialist Application to take the course media center.

## Engineering

## In the School of Engineering

The undergraduate curriculum in Engineering, with options in aerospace, civil, electrical, and mechanical engineering, is accredited by the Engineers' Council for Professional Development.
Faculty
Emeritus: Stone, H., Walling
Emeritus: Stone, H., Walling Professors: Bauer, Bedore, Capp (Dean), Chan, Chang, Conly, Dharmarajan, Fitz, Professors: Bauer, Bedore, Capp (Dean), Chan, Chang, Conly, Dharmara, Ohnysty, Qolding, Johnson, (Associate Dean), Rao, Shutts, Skarr, Stone, S., Stratton
Quiett (Associate Dean), Rao, Shutts, Skarr, Stone, S., Stratton
Associate Professors: Chou, Craig, Crooker, Eggleston, Hussain, Krishnamoorthy, Mann, Associate Professors: Ch
Mansfield, Narang, Panos
Assistant Professors: Bakhru, Bilterman, Brown, Drake, Harris, Khalifa, Marino, McElmury, Stuart, Treadwell
Offered by the School of Engineering
Master of Science degree in aerospace, civil, electrical and mechanical engineering. Described
Major with the B.S. degree in engineering, with options in aerospace, civil, electrical, and mechanical engineering. (Described in the section of this catalog on the School of Engineering.)
Minor in engineering. (Described in the section of this catalog on the School of Engineering.)

## Lower Division Courses

1. Engineering Drawing (2) I, II

Engineering Drawing
Six hours of laboratory
Six hours of laboratory.
Development of skills and techniques of drawing for engineers. Elementary orthographic and pictorial drawing theory. Introduction to basic theorems of descriptive geometry. Theories of size description.
5. Introduction to the Engineering Profession (2) I, II Cr/NC

An overall view of engineering education and professional practice. An introduction to basic skills useful in acquiring engineering problem-solving capabilities.
10. Control of Man's Environment (3) I, II

Man's interaction with the land, water and air environment; environmental pollution; role of engineering in controlling man's environment.
20. Engineering Graphics (2) I, II

Six hours of laboratory.
or concurrent registration in Mathematics 40 or equivalent, and Prerequisites: Credit or colifation on the Engineering Graphics Placement Examination Graphic communication for engineers. Presentation and interpretation of engineering plans, using both standard projection systems and freehand sketching. Introduction to nomography; graphic presentation and analysis of data.
25. Engineering Materials (3) I, II

Prerequisite: Chemistry 1A
Atomic and molecular structure of materials utilized in engineering. Analysis of the relationships between structure of materials and their mechanical, thermal, electrical corrosion and radiation properties, together with examples of specific application to engineering problems.
30. Engineering Measurement Analysis (2) I, II

Prerequisite: Mathematics 40.
Methods of data presentation. Analysis and treatment of engineering data. Design of engineering experiments. Correlation and regression analysis. Practical applications are stressed.

## 40. Engineering Problem Analysis I (2) I, II

One lecture and three hours of laboratory
Prerequisite: Mathematics 50.
Analysis of engineering problems and solutions using the digital computer. Fundamental of programming and programming language commands.
50A. Engineering Mechanics I (3) I, II
Prerequisites: Credit or concurrent registration in Physics 4 E and Mathematics 51
Static equilibrium of particles and rigid bodies; vector algebra and calculus; friction, virtual work; kinematics of a particle; kinetics of a particle; engineering applications.
50B. Engineering Mechanics II (3) I, II
Prerequisites: Engineering 50A and credit or concurrent registration in Mathematics 52. Kinetics of a particle; central force motion; systems of particles; work and energy; impuls and momentum; moments and products of inertia; Euler's equations of motion; vibration and time response; engineering applications. 60. Electric Circuits (3) I, II

Circuit analysis by reduction methods, source transformations, loop and nodal analyses alternating-current circuits, impedance, power and phasor diagrams.
99. Experimental Topics (2-4)

Refer to the catalog statement on Experimental Topics on page 106. Limit of nine unit applicable to a bachelor's degree in courses under this number of which no more than three units may be applicable to general education requirements

## 100. Electrical Energy Conversion (3) I, II

Prerequisite: Engineering 60
Prerequisite: Engineering 60 .
Magnetic circuits, transformers and polyphase AC networks. Fundamentals of lectromechanical energy conversion; machines. (Formerly numbered and entitled Engineering 100B, Electrical Machinery.)

## 100L. Electrical Energy Conversion Laboratory (1) I, II

Three hours of laboratory
ncurrent registration in Engineering 100
Experimental study of DC, single and polyphase AC circuits, transformers, and machines Formerly offered as an integral part of Engineering 100B.)
101. Fundamentals of Engineering Electronics (3) I, II

Prerequisite: Engineering 60.
Prerequisite: Engineer, transistors, electron tubes, and thyristors, in typical electronic circuits. Analysis and design of rectifiers and filters, and elementary amplifiers. Emphasis on their utilization in engineering equipment and systems
101L. Engineering Electronics Laboratory (1) I, II
Three hours of laboratory
Prerequisite: Credit or concurrent registration in Engineering 101
Experimental study of laboratory instruments, diodes, rectifier circuits, filters, silicon controlled rectifiers, tubes, transistors, and amplifiers.
102. Electric and Magnetic Fields (3) I, II

Prerequisites: Engineering 50B and 60.
Electrostatic and magnetostatic field theory using vector notation; Coulomb's Law, Gauss Law and potential theory. Solutions to Poisson's and Laplace's equations; capacitance and Law and magnetic fields; Maxwell's equations. (Formerly inductance. Engineering 100C.)
03. Electronics, Instrumentation, and Electrical Energy Conversion (3) I, II

Prerequisite: Engineering 60.
Theory and application of electron tubes, diodes, and transistors in typical electronic ircuits. Instrumentation and electronic measuring devices. Fundamentals of circuits. Instrumentation and electronic moting motors and transformers. Not open to electromechanical energy coning option.

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103L. Electrical Engineering Laboratory (1) I, II
Three hours of laboratory. $\qquad$
Three hours of laboratorencuistrent Credit or concurion in Engineering 103 .
A laboratory course to include selected experiments in electric
electrical machinery. (Formerly nums (4) I, II
107. Metallic Materials and Processes (4) I, II
Three lectures and three hours of laboratory.

Prerequisites: Engineering 25 and Physics 4 . .
Physical metallurgy and properties of metals. Influence of processing on the pring 106 and metals.
109A.)
108. Thermodynamics (3) I, II

Prerequisite: Mathematics 52 .
Development of the basic laws of thermodynams systems.
viewpoints and their applatory (1) I, II
108L. Thermal Science Labo
Three hours of laboratory.
Three hours of laboratory.
Prerequisite: Credit or concurrent registration in Engineering (Formerly offered as an integral part of Engineering 108.)
inte9. Notallic Materials (3) I
109. Nonmetalic Material hours of laboratory.

Prerequisite: Engineering 107.
Prerequisite: Engineering 107 .
properties upon selection of a material for use in design.
110. Thermodynamics and Heat Transfer (3) I, II
110. Trerequisite: Mathematics 52 .

First and second laws of thermodynamics; materials, heat conduction, convection, and
First and second laws of thermodynamics; material engineering majors.
111. Network Analysis (3) I, II

Prerequisites: Engineering 60 and Mathematics 52
Prerequisites. Engilys using general network equations; network theorems; frequency
Loop andan
End time response
112. Advanced Network Analysis (3) I, II

Prerequisites: Engineering 111, and 187A or Mathematics 118A.
Transient analysis of circuits containing resistance, inductance, and capacitance with
rious input wa and entitled Engineering 132, Time Domain Analysis of Linear Networks.)
113L. Analog Computation of Electrical Engineering Problems (1)
Three hours of laboratory
Prerequisites: Engineering 101, 187A, and credit or concurrent registration in
Engineering 112.
114. Analysis and Design of Electronic Circuits (3) I, II
114. Analysis and Design of Electronic Circuits (3) I, II

Prerequisites: Engineering 101, 11, and 187A or Mathematics 18 A .
A unified treatment of vacuum-tube and transistor voltage and power amplifiers. (Formerly graphical methods and equivale
114L. Electronic Circuits Lab
4L. Electronic Circuits Laboratory (1) I, II
Three hours of laboratory.
Prerequisite: Credit or concurrent registration in Engineering 114.
Vacuum-tube and transistor dynamic characteristics; single stage and multistage amplifier
circuits including feedback and tuned amplifiers. (Formerly numbered Engineering 135A.)
115. Fluid Mechanics (3) I, II

Prerequisites: Engineering 50B, and credit or concurrent registration in Engineering 187A.
Fluid statics. Laminar and turbulent flow of liquids and gases in pipes, nozzles, and channels. Dimensional analysis and modeling. Drag forces on moving or immersed objects. 115L. Fluid Mechanics Laboratory (1) I, II
Three hours of laboratory.
Prerequisite: Credit or concurrent registration in Engineering 115
Flow measuring devices. Experimental applications of continuity, Bernoulli and
. Experimental applications of continuity, Bernoulli and
momentum equations. Model studies. Pipe and characteristics of wind tunnel and water table.
116. Introduction to Solid Mechanics (3) I, II

Prerequisites: Engineering 25 and 50 B ; and credit or concurrent registration in Mechanics of solid deformable bodies involving analytical methods for determinin strength, stiffness, and stability of load-carrying members.
116L. Solid Mechanics Laboratory (1) I, II
Three hours of laboratory.
Prerequisite: Credit or concurrent registration in Engineering 116.
Laboratory studies in solid mechanics. Experimental stress analysis. Experimental confirmation of theory
118. Transfer and Rate Processes (3)

Prerequisite: Engineering 187A.
Fundamentals of rates of change in enthalpy and composition of matter; heat and mass transfer and chemical reaction rates.
120A. Structural Analysis I (4) I, II
Prerequisite: Engineering 116.
Principles of mechanics applied to analysis of beams, frames, trusses, and three-dimensional frameworks. Graphical methods, influence lines; deflections; introduction to statically indeterminate structures and moment distribution.

## 120B. Structural Analysis II (3) I

Prerequisite: Engineering 120A.
Analysis of statically indeterminate structures by virtual work. Advanced treatment of slope deflection, moment distribution. Arch analysis, secondary stresses in trusses. Advanced treatment of influence lines.
121. Reinforced Concrete (3) II

Prerequisite: Engineering 120A. Introduction to plastic theory and limit design.

## 122. Soil Mechanics (3) I

Two lectures and three hours of laboratory. and credit or concurrent registration in Engineering 115.
Mechanics of soils; physical and mechanical properties; soil classification, compaction, swelling, consolidation, and shear strength. Laboratory tests and related design problems. 123A. Water Resources Engineering I (2)
Prerequisite: Credit or concurrent registration in Engineering 115.
Open channel and pressure conduit flow, pumps and turbines, hydroelectric power, and water law.
123B. Water Resources Engineering II (2) II
Prerequisite: Engineering 123A.
Hydrographs and frequency analysis as applied to flood flow determination; multiple regression in hydrologic applications; design of hydraulic systems.
124. Foundation Engineering (3) II

Prerequisite: Engineering 122.
Soil mechanics theories applied to the design of shallow and deep foundations; lateral Soil mechanics theories applied to the
pressure of soils; design of retaining walls.
125. Sanitary Engineering (3) II

Prerequisite: Engineering 123A. Unit processes used in water treatment and wast
tests used in the analysis of water and
126. Transportation Engineering (3) I
Prerequisite: Upper division standing in engineering or in any other area dealing with Prerequisite: Upper divin
urban problems. arban problems.
Function and design of different modes of transportation for moving people and goods and corresponding terminal facilities
127. Highway Engineering (3) I, II
127. Highway Engineering (3) I, II
Two lectures and three hours of laboratory.

Two lectures and three hours 128A and credit or concurrent registration in Engineering 123 Highway planning, economics, and administration; geometric design; traffic engineering Higrade structure; bituminous and portland-cement concrete pavements.
128A. Surveying for Civil Engineers (3) II
Two lectures and three hours of laboratory.
Prerequisite: Engineering 30
Prerequisite: Elagine surveying. Measurement of horizontal distance, difference in elevation, and angles. Traverse surveys and computations. Horizontal and vertical curves. Principles of stadia. Topographic surveys. Earthwork.

128B. Advanced Surveying and Photogrammetry (3) I
Two lectures and three hours of laboratory
Theory and application of precise control surveys; specialized survey operations. Principles of metrical photogrammetry as applied to engineering. Map compilation from aerial photographs.
129. Highway Materials (3) II

Two lectures and three hours of laboratory
Prerequisite: Credit or concurrent registration in Engineering 127 or Engineering 122 Selection, design, and control of mixes of various materials used in highway construction practice. Emphasis on strength and properties of plain concrete and asphalts.
133. Stochastic Signals (3) II

Prerequisite: Engineering 187A or Mathematics 118A.
Random signals, correlation functions, power spectral densities, the Gaussian process, narrow band processes. Applications to communication systems. (Formerly part of Engineering 196B.)
134. Communication Principles and Circuits (3) I

Prerequisite: Engineering 114.
Signal transmission in linear networks; modulators and detectors; wide-band and narrow-band amplifiers; oscillators; AM, FM, and phase modulation; transient response of amplifiers.
134L. Communication Circuits Laboratory (1)
Three hours of laboratory.
Prerequisite: Engineering 114L
Regulated power supply systems; oscillator, modulator, detector, and switching circuits
 Engineering 135B, Electronic Circuits Laboratory.)
135. Modulation Theory (3) I

Prerequisite: Engineering 112
Theory and performance characteristics of modulation and demodulation; spectra characteristics and noise performance of carrier systems: amplitude, frequency and phase, pulse coded, and compound modulation. (Formerly numbered Engineering 185.
137. Communication Networks (3) I

Prerequisites: Engineering 102, 111, and 187A or Mathematics 118A.
Theory and application of transmission lines, including analysis by matrix notation; use of Smith chart and other transmission line charts; impedance-matching with transmission line tubs and lumped constants; theory and design of constant-k, m-derived, and other types of filter networks.
139. Microwave Communications (3) II

Prerequisites: Engineering 114 and 137
Applications of Maxwell's equations to wave propagation; skin effect, circuit impedance elements; vector potential, and other time-varying electrical phenomena; waveguides and esonators, strip line circuits, electromagnetic radiation
139L. Microwave Measurements Laboratory (1) II
Three hours of laboratory
Prerequisites: Credit or concurrent registration in Engineering 114L and 139
Experimental study of microwave generation including klystrons, Gunn and IMPATT oscillators. TWT and microwave transistor amplifiers. Microwave modulation and dirAT Microwave transmission and antennas
140. Principles of Heat Transfer (3) I, II

Prerequisites: Engineering 108 or 110; and 187A.
Heat transfer by conduction, convection, radiation, and combinations thereof introduction to aerodynamic heating and heat transfer by phase change,
141. Internal Combustion Engines (3) II

Prerequisite: Engineering 148.
Analysis of idealized and real internal combustion engine cycles; combustion problems erformance of reciprocating and rotary types of internal combustion engines. Principles of eaction motors.
142. Elements of Energy Conversion (3) II

Prerequisite: Engineering 108.
Principles of physics and chemistry applied to the analysis of a broad spectrum of energy conversion devices from an engineering point of view
143. Gas Dynamics (3) I

Thermodynamics of
diabatic flow. Applion high velocity compressible fluid flow. Shock regions; adiabatic and diabatic flow. Applications to the propulsive duct and discharge nozzles.
144. Thermal Environmental Engineering (3) II

Prerequisite: Engineering 140 .
Psychrometrics. Mass transfer. Two-phase flow. Heat transfer. Thermoelectric refrigeration. Change of phase
145. Mechanics of Machinery (3) I, II

An extension of the principles of statics and dynamics to mechanisms and to mechanical systems. Analysis of velocity and acceleration and the determination of to mechanical forces. Evaluation of stability of systems.

## 46A. Elements of Machine Design (3) I, II

Prerequisite: Engineering 116.
Application of mechanics, physical properties of materials, and strength of materials to the design of machine elements.
46B. Advanced Machine Design (3) II
Prerequisite: Engineering 146A.
Advanced topics in strength of materials including energy methods, stress concentrations curved beams, and thick-walled cylinders. Applications to design of machine elements.
147A. Introduction to Mechanical Vibrations (3) I
Prerequisite: Engineering 116.
Analysis of mechanical vibration; single- and multi-degree of freedom systems; free and forced vibrations; vibration isolation; vibration absorbers. Theory of vibration measuring instruments
147B. Experimental Vibrations (3) II
Prerequisite: Engineering 147A
Experimental problems utilizing vibration excitation equipment, recording systems, transducers, digital and analog computers.
148. Engineering Thermodynamics (4) I, II

Three lectures and three hours of laboratory.
Frerequisite: Engineer of the
the laws of classical thermodynamics. Applications to energy onversion devices
149. Advanced Thermodynamics (3)

Prerequisite: Engineering 148.
Statistical thermodynamics with engineering applications. Consideration of material properties and chemical equilibrium.
150A. Low Speed Aerodynamics (3) I
Prerequisites: Credit or concurrent registration in Engineering 115 and 115L.
Subsonic flow, airfoil and wing theory, experimental characteristics of wing sections, high lift devices.
150B. High Speed Aerodynamics (3) II
Prerequisites: Engineering 143 or 150 A .
Supersonic flow, two- and three-dimensional compressible flow, wings in compressible flow, two- and three-dimensional method of characteristics, transonic flow. 151A-151B. Aerospace Structural Analysis (3-3) I, II
Prerequisites: Engineering 116 and credit or concurrent registration in Engineering 187B or Mathematics 118B. Engineering 151A is prerequisite to 151B.
Methods of structural analysis including both the static and dynamic aspects of problems encountered in the flight of aerospace vehicles.
152. Aircraft Propulsion Systems (3)

Prerequisite: Engineering 148 or 150 A .
Theory and performance characteristics of aircraft propulsion systems including reciprocating engines, turbojets, ramjets, etc. 153A. Aerospace Flight Mechanics (3) II

Prerequisites: Engineering 50B, and 187A or Mathematics 118A.
Aerodynamics and dynamics of ballistic missiles; guidance systems; orbits and space trajectories; effects of aerodynamics, mass, rotation and shape of the earth on ballistic and solutions will be emphasized. (Formerly numbered Engineering 153. )
153B. Intermediate Aerospace Flight Mechanics (3) I
Prerequisite: Engineering 153A
A continuation and special perturbations, artificial satellites, rocket dynamics and transfer orbits, earth-moon trajectories, and interplanetary trajectories.

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154. Experimental Aerodynamics (2) II

One lecture and three hours of laboratory
Prerequisites: Credit or concurrent registration in Engineering 150A
Operating characteristics of subsonic and supersonic wind tunnels. Aerodynamic pressure distribution measurement. Use of hot-wire anemometer and schlieren equipment
155. Matrix Methods in Aerospace Structures (3)

Prerequisite: Engineering 151B
Static and dynamic analysis of aerospace structures utilizing matrix methods.
156. Intermediate Dynamics (3)

Prerequisites: Engineering 50B, 60, and Engineering 187A or Mathematics 118A. Kinematics and kinetics of systems of particles and rigid bodies. Dynamic analysis procedures for studying mechanical, electrical, and electromechanical systems. Variational methods.
157. Intermediate Fluid Mechanics (3)

Prerequisites: Credit or concurrent registration in Engineering 115, and Engineering 87B or Mathematics 118B
Kinematics of fluid motion. Conservation of mass, momentum, and energy. Ideal and viscous flows and applications. Boundary layer approximations.
158. Aircraft Design and Performance (3)

Prerequisite: Engineering 150B.
Aircraft design and evaluation including choice of airfoil and wing planform, aircraft fuselage design, control surfaces, power plants, and integration of the separate aircraft components.
159. Aircraft Stability and Control (3)

Prerequisites: Engineering 154, and credit or concurrent registration in Engineering 187B.
Static stability and control, general equations of unsteady motion, stability derivatives stability of uncontrolled motion, response of aircraft to actuation of controls. (Formerly numbered and entitled Engineering 190G, Engineering Applications.)
160A-160B. Principles of Chemical Engineering (3-3
(Same course as Chemistry 160A-160B.
registration in Engineering 108 or Chemistry 109A or Industrial stoichi
and heat transfer as applied to unit operations such as Problems, reports, and field trips, filtration, gas-phase mass transfer, drying, and others.
61. Creativity in Design (3) II

Methods to stimulate creativity in design. Investigation of hidden blocks to creative hought. Emphasis on placing students in a design situation requiring an inventive or creative solution.
62. Transistor Circuit Analysis (3) I, II

Prerequisite: Engineering 114.
Analysis and design of transistor voltage and power amplifier circuits by use of duality and matrix methods. Feedback amplifiers, audio amplifiers, video amplifiers, power supplies, and ${ }^{\text {oscillators; }}$ transient analysis and noise considerations. (Formerly numbered Engineering 82.)
164. Solid-State Devices (3) I

Prerequisite: Engineering 114
Conduction theory of solids. Characteristics of tunnel, backward, breakdown, multilaye and varactor diodes; silicon controlled-rectifiers and switches, unijunction transistors, hot electron devices. Lasers and laser applications.
Prerequisite: Engineering Intion (3) I
Prerequisite: Engineering 101 or 103
Instrumentation systems to monitor, control and record physiological functions. (Formerly offered under Engineering 196A, A-T Biomedical Instrumentation.)
66. Honors Course (1-3) I, I
67. Control System Com.

Pr. Control System Components (3) II
Prerequisites: Engineering 100, 101, and 111.
Position transducers, phase-sensitive demodulators, static magnetic and rotating numbered and entitled Engineering 131, Electromponent transfer functions. (Formerly

167L. Control Systems Components Laboratory (1) II
Prerequisite: Credit or concurrent registration in Engineering 167
Experimental determination of transfer functions for control system components (Formerly a part of Engineering 131.)
168. Feedback Control Systems (3) I

Prerequisites: Engineering 112 and 114
Analysis of regulatory systems including servomechanisms by the Laplace transform method. System performance and stability; Nyquist, Bode, and root-locus diagrams (Formerly numbered Engineering 138A) Formerly numbered Engineering 138A.)
169. Advanced Feedback Control Systems (3) II

Prerequisite: Engineering 168
A 168 to include feedback compensation, advanced compensation techniques, signal flow theory, state-variable techniques, introduction to 169L. Feedback Control Systrol systems.
69L. Feedback Control Systems Laboratory (1)
Prerequisites: Engineering 114L, 167, and credit or concurrent registration in Engineering 168 .
Analysis of steady-state and transient response of uncompensated and compensated feedback control systems using transfer functions and frequency response techniques. (Formerly numbered Engineering 138B.)
170. Intermediate Engineering Problem Analysis (3) I, II

Prerequisite: Engineering 40.
Advanced use of Fortran and other computer programming languages for engineering problem analysis.
172. Interactive Computing (2) I, II

One lecture and three hours of laboratory.
Prerequisite: Credit or concurrent registration in Engineering 114
Use of electronic calculators and timesharing terminals for circuit analysis computation and plotting. (Formerly offered under Engineering 196A, Minicomputer-aided Electronics.) 173. Electronic Analog Systems (3)

Prerequisite: Engineering 114. amplifiers, integrators, summing devices and nonlinear elements. (Formerly numbered Engineering 193.)
174. Pulse and Digital Circuits (3) I, II

Prerequisite: Engineering 114
Prerequisite: Engineering integrated circuits in switching systems. Device switching haracteristics. Characterization of commercially available complex-function microcircuits 175. Advanced Pulse and Digital Circuits (3) II

Prerequisite: Engineering 174.
Prerequisite: Engineering linear elements. Microcircuit amplifiers, sweep circuits, JFETs and MOS devices, A/D and D/A converters.
176. Logic Design and Switching Circuits (3) I, II

Prerequisite: Engineering 101
Combinational switching networks. Introduction to sequential circuits.
177. Advanced Logic Design and Switching Circuits (3) I, II

Prerequisite: Engineering 16 . microcircuit technology on practical logic design.
178. Computer Organization (3) I, II

Prerequisites: Engineering 40 or Mathematics 7, and Engineering 176.
Data and information structure, machine and assembly language programming arithmetic and control units microprogramming, memory devices, input-output devices, channels and operating systems concepts.
179L. Switching Circuits Laboratory (1) II
Prerequisites: Engineering 174 and 176.
Switching diodes, bipolar transistors, FETs, and integrated circuits. Combinational and Switching diodes, bipolar transistors, FETs, and integrated circuits.
180. Principles of Engineering Economy (3) I, II

Application of the mathematics of finance to engineering and managerial decision making
181. Hydrodynamics (3)
rerequisites: Engineering 50B, and 187A or Mathematics 118A or 119 or 124 Kinematics, equations of continuity, energy, and momentum of perfect fluids. Introduction to conformal transformations. Three-dimensional and two-dimensional irrotational motion, with applications to physical problems. Vector notation will be used.
183. Simulation of Engineering Systems (3) I, II

Two lectures and three hours of laborato
Prerequisites: Engineering and dine computers. Simulation of dynamic systems. Application to problems in mechanics, heat transfer, thermodynamics, and control systems.
184. Experimental Strain Measurements and Analysis (3)

Two lectures and three hours of laboratory.
Prerequisites: Engineering 60 and 116
Laboratory methods for measuring deformation, strains, and forces. Emphasis on instrumentation.
187A-187B. Methods of Analysis (3-3) I, II
Prerequisite: Mathematics 52. Engineering 187A is prerequisite to 187B.
Solutions of advanced engineering problems in fluids, thermodynamics and electricity utilizing analytical methods, analogs, dimensional analysis and the theory of models.
188. Digital Solutions of Engineering Problems (3) I, II

Prerequisites: Engineering 40 or Mathematics 7, and Engineering 187A.
Digital solution of classes of engineering problems. Application of numerical methods with consideration of limitations imposed by computer and programming language characteristics.
189. Automatic Control Systems (3) II

Prerequisites: Engineering 50B, 100, and 187A.
Not open to students filing an electrical engineering master plan.
Analysis of the input-output characteristics of linear, mechanical, electrical, hydraulic, and pneumatic control systems
190A. Civil Engineering Structural Design (3) II
One lecture and six hours of laboratory.
Structural design in steel; structural connections; tension and compression members; beams; building code requirements applied to design of buildings of various structural materials including steel.
190C-190D. Mechanical Engineering Applications (2-2) I, I
Six hours of laboratory.
Prerequisites for 190C: Engineering 107, 108, and 116.
Prerequisites for 190D: Engineering 145, 146A, 148, and 190C.
Applications of engineering principles to design of machinery and energy conversion systems. Individual student projects.
190G-190H. Aerospace Engineering Applications (2-2) I, II
Six hours of laboratory.
Prerequisites for 190G: Engineering 150B, 151A, and 154.
Prerequisites for 190H: Engineering 190G.
Student projects in aerospace design.

## 191. Microwave Devices (3) II

rerequisite: Credit or concurrent registration in Engineering 139
$V$ aractor diodes and applications, microwave switches, limiters and phase shifters, detector and mixer diodes and circuits, avalanche transit-time devices, bulk-effect devices, microwave ransistors and circuits.
192A. Air Environment (2) I, II
Effects of air pollution, sources of pollution, atmospheric chemistry, measurement and instrumentation, automobile development and emissions.
192B. Land Environment (2) I, II
Man's interaction with the land environment; extraction of natural resources; disposal o wastes; land development; seismic problems related to land usage.
192C. Water Environment (2) I, II
Man's interaction with the water environment; water quality criteria, water pollution and water reuse. Not open to students in civil engineering.
93. Modern Power Systems I (3) I

Prerequisites: Engineering 100, 111, and 187A
stability. (Formerly offered under Engineering 196B, A-T M, fault currents, and system stability. (Formerly offered under Engineering 196B, A-T Modern Power Systems I.)
194. Modern Power Systems II (3) II Prerequisite: Engineering 193.
Transient response of modern power system elements; positive, negative and zero sequence impedance; subharmonic effects.
196A-196B. Advanced Engineering Topics (1-3, 1-3) I, II
Prerequisites: Minimum grade point average of 2.0 in engineering or approval of the Academic and Ethical Standards Committee of the School of Engineering.
Engineering 196A, 196B, and 199 (Forg. Maximum credit six units for any combination of 199. Special Study (1-3) I, II

Prerequisites: Minimum grade point average of 2.0 in engineering or approval of the Academic and Ethical Standards Committee of the School of Engineering. Individual study. Maximum credit six units for any combination of Engineering 196A, 196B, and 199.

AE 200. Seminar (1-3)
Prerequisite: Consent of the graduate adviser and instructor. schedule. Maximum credit six units applicable on a master's degree.
AE 202. Aeroelasticity (3)
Prerequisites: Engineering Mechanics 201 and credit or concurrent registration in Engineering 187B or Mathematics 118B.
Aircraft and missile structures deformed under static and dynamic loads; aeroelastic instability, vibration modes, divergence, loss of control and alteration of lift distribution introduction to flutter analysis.
AE 204. Flight Dynamics-Stability and Control (3)
Prerequisite: Credit or concurrent registration in Engineering Mechanics 201
Dynamic stability and control of aerospace vehicles. Stability derivatives, stability of uncontrolled motion, response to actuation of controls, automatic stability and control. AE 205. Flight Dynamics-Theory of Flight Paths (3)
Prerequisite: Engineering 150B.
Analysis of trajectories of aircraft, missiles, satellites, and spacecraft subjected to uniform or central gravitational forces, aerodynamic forces, and thrust.
AE 211. Aerodynamic Noise (3)
Prerequite Engine Mechanics 243
Jet noise, sonic boom, boundary layer noise, and methods of suppression
AE 222. Aerothermal Structural Analysis (3)
Prerequisite: Engineering Mechanics 221 .
Stress analysis of structures at elevated temperatures.
SE 241. Hydrodynamic Stability (3)
AE 241. Hydrodynamic Stability (3)
Prerequisite: Engineering Mechanics 243 . fluids, fluids with thermal gradients, hydromagnetic flow
AE 212 Theory and Aerodynamics of Transonic Flight (3)
AE 242. Theory and Aerodynamics of Tran.
Application of engineering principles to the analysis of transonic flight
AE 243. Supersonic Flow Theory (3)
Prerequisite: Engineering ic speeds. Linearized theory, three-dimensional wings in steady flight, slender-body theory, methods of characteristics.
AE 244. Hypersonic Flow Theory (3)
Prerequisite: Aerospace Engineering 243.
Two- and three-dimensional hypersonic flows. Hypersonic similarity parameter, hypersonic small-disturbance theory; Newtonian flow, shock-layer, and other methods for blunt bodies.
AE 245. Magnetofluidmechanics (3)
Prerequisite: Engineering Mechanics 243.
Study of the effects of interaction of an electromagnetic field with an electrically conducting fluid. Stability, boundary layers, shock waves, and other applications.
AE 250. Principles of Electromagnetic Propulsion (3)
Prerequisite: Engineering 187B.
Prerequisice: concepts of plasmas and magnetogasdynamics; developing magnetogasdynamic power plants.
AE 253. Seminar on Boundary Layer Topics (3)
Prerequisite: Engineering Mechanics 244 .
Boundary layer control, dissociation in boundary layers, ablation in boundary layers.

AE 296. Advanced Topics in Aerospace Engineering (2 or 3)
Advanced study in the field of aerospace engineering, topic to be announced in the class schedule. Maximum credit six units applicable on a master's degree.
AE 297. Research (1-3) $\mathrm{Cr} / \mathrm{NC}$
Prerequisite: Consent of graduate adviser
Research in engineering. Maximum credit six units applicable on a master's degree.

## Graduate Courses in Civil Engineering

CE 200. Seminar (2 or 3)
Prerequisite: Consent of the graduate adviser and instructor
An intensive study in advanced civil engineering, topic to be announced in the class CE 201. Advanced Theory of Structures (3)

Prerequisites: Engineering
Analysis of statically indeterminate structures based on principles of deflected structures. Approximate analysis of structures under lateral loads for rigid and shear wall structures.
CE 202. Design of Thin Shell Structures (3)
Prerequisite: Engineering 120B.
Analysis and design of typical civil engineering thin shell structures
CE 203. Plastic Design in Steel (3)
Analysis and design of ste framed structures for ultimate load. Connections, secondary design problems, column stability, and repeated loading.
CE 205. Prestressed Concrete Structures (3)
Prerequisite: Engineering 120A.
Fundamental concepts of prestressed concrete theory. Design applications to various types of structures.
CE 206. Matrix Analysis of Structures (3)
Prerequisite: Engineering 120A.
Development of matrix methods for the analysis of structural systems. Force methods, displacement methods. Application of the digital computer to structural analysis.
CE 207. Dynamics of Structures (3)
Prerequisite: Engineering 120A.
Dynamic disturbances, structures with variable degrees of freedom, free vibrations of slender elastic beams; continuous beams, rigid frames, floor systems. Energy methods in structural dynamics.
CE 208. Numerical Methods in Structural Engineering (3)
Prerequisite: Engineering 120B.
beams on elastic deflections in beam systems; elastic and inelastic stability, columns and beams on elastic supports, vibration of structural systems.
CE 209. Computer Analysis of Structures (3)
Prerequisites: Engineering 40 and 120B.
Fundamentals of matrix notation, equilibrium equations, compatibility relations, constitutive equations, joint releases. General algorithms for writing computer programs for space structures, trusses and frames. Use of existing programs such as ICES/STRUDL, CE 210. Finite Element Ang structural problems.
CE 210. Finite Element Analysis of Structures (3)
Prerequisites: Engineering 40 and 120A.
General procedure, various types of finite elements; analysis and design of isotropic and use of digital computers for solutions. Application and walls using finite element technique; CE 220. Traffic Engineering (3)
Ce 220. Traffic Engineering (3)
Prerequisite: Engineering
Traffic characteristics and studies. Control and regulation of street and highway traffic. Parking facilities, mass transportation, traffic engineering administration.
CE 222. Mass Transit Engineering (3)
Prerequisite: Engineering 126 .
Urban transportation and land use, characteristics of urban travel patterns, estimation of
transit usage, planning of transit systems, economic problems of mass transportation. Case
studies of existing and proposed systems.
CE 230. Open Channel Hydraulics (3)
Prerequisite: Engineering 123A.
uniform channel flow theory, analysis, and problems, including studies of critical flow, uniform flow, gradually varied and rapidly varied flow, all as applied to the design of
channels, spillways, energy dissipators, and gravity pipelines

## CE 231. Engineering Hydrology (3) <br> Prerequisite: Engineering 123A.

Measurement and interpretation of precipitation, evapotranspiration, stream flow and groundwater flow; hydrologic methodology and applications.
CE 232. Fluvial Hydraulics (3)
Prerequisite: Engineering 123A.
Characteristics of rivers; mechanics of sediment transport; hydraulics and design of alluvial channels; channel stability; model studies.

## CE 235. Water Quality Engineering (3)

Prerequisite: Engineering 125.
Development of water quality criteria. Survey of current methods of water treatment wastewater treatment and water renovation. Economic considerations of water quality management.
CE 236. Water Quality Processes (3)
Two lectures and three hours of laboratory.
Prerequisite: Engineering 125
Theoretical and laboratory study of the chemical and microbiological processes which govern modern water and wastewater treatment
CE 240. Advanced Soil Mechanics (3)
Prerequisite: Engineering 122
Advanced theories of soil mechanics and their applications to design, including physicochemical behavior of soils, theories of compaction, consolidation, stress distribution, shear strength, settlement analyses, lateral pressures, and bearing capacity of soils.
CE 241. Advanced Foundation Engineering (3)
Prerequisite: Engineering 124 .
Advanced theories of soil bearing capacity and stress distribution in soils. Analysis and design of foundations and retaining walls. Shallow foundations, piles, piers and caissons. Design of foundations for dynamic loads. Dewatering and other field problems.
CE 242. Seepage and Earth Dams (3)
Prerequisite: Engineering 122 . water through soils and their application in the design of earth and rock fill dams. Stability analysis and design of earth dams.
CE 243. Experimental Soil Mechanics (2)
One lecture and three hours of laboratory
Prerequisite: Credit or concurrent registration in Civil Engineering 240.
Techniques of laboratory testing for the determination of the engineering properties of soils. Applications in foundation engineering, earth dams, highways, airports and underwater soil engineering.
CE 244. Soil Structure Interaction (3)
Prerequisite: Credit or concurrent registration in Civil Engineering 240
Analysis of stresses and deformations of structural elements supported by soil. Analysis of pile foundations subject to lateral, vertical and combined loads by numerical and finite element methods. Solutions of slabs and mat foundations.
CE 280. Seminar in Structural Engineering (2 or 3)
Prerequisite: Consent of the graduate adviser and instructor
An intensive study in structural engineering. Maximum credit six units applicable on a master's degree.
CE 281. Seminar in Transportation Engineering (2 or 3)
Prerequisite: Consent of the graduate adviser and instructor
An intensive study in transportation engineering. Maximum credit six units applicable on a master's degree.
CE 282. Seminar in Soil Mechanics and Foundation Engineering (2 or 3)
Prerequisite: Consent of the graduate adviser and instructor
Prerequisite. Cudy in soil mechanics and foundation engineering. Maximum credit six units applicable on a master's degree
CE 285. Seminar in Construction Engineering (2 or 3)
Prerequisite: Consent of the graduate advering. Maximum credit six units applicable on a master's degree.
CE 206. Advanced Topics in Civil Engineering (2 or 3)
Advanced study in the field of civil engineering, topic to be announced in the class schedule. Maximum credit six units applicable on a master's degree.
CE 297. Research (1-3) Cr/NC
Prerequisite: Consent of graduate adviser
Research in engineering. Maximum credit six units applicable on a master's degree.

EE 200. Seminar (1-3)
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An intensive study in advanced electrical engineering, topic to be announced in the class schedule. Maximum credit six units applicable on a master's degree.
EE 201. Seminar in Electromagnetic Systems (1-3)
An intensive study in electromagnetic systems. Maximum credit six units applicable on a master's degree.
EE 202. Seminar in Electronic Design (1-3)
An intensive study in electronic design. Maximum credit six units applicable on a master's degree.
EE 203. Seminar in Digital Systems (1-3)
An intensive study in digital systems. Maximum credit six units applicable on a master's degree.
EE 204. Seminar in Feedback Control Systems (1-3)
An intensive study in feedback control systems. Maximum credit six units applicable on a master's degree.
EE 205. Seminar in Communications Systems (1-3)
An intensive study in communication theory and systems. Maximum credit six units applicable on a master's degree.
EE 206. Seminar in Computer Engineering (1-3)
Intensive study in computer engineering topics. Maximum credit six units applicable on a master's degree.
EE 210. Linear System Analysis (3)
Prerequisites: Engineering 111 and credit or concurrent registration in Engineering 187B or Mathematics 118 B .
Loop and nodal system equations based on topological considerations, four-terminal network theory using matrices. Fourier integral transform theory as applied to linear system analysis. Positive real functions and associated testing methods
EE 211. Synthesis of Active and Passive Networks (3)
Prerequisite: Electrical Engineering 210
Prerequisite: Electrical Engineering 210.
Frequency-domain synthesis of driving point and transfer impedances in passive and active networks. Canonical forms and network equivalents. Time-domain synthesis and considerations of pulsed-data systems.
EE 214. Computer-aided Network Analysis and Design (3)
Prerequisites: Engineering 112 or equivalent computer-aided circuit design, Electrical Approximation theory device momming.
general purpose theory, device modeling, topological analysis of networks, applications of general purpose, computer programs, passive and active filter design, circuit optimization.
EE 216. Noise in Electrical Devices (3)
Prerequisite: Engineering 162.
Major types and origins of electrical noise and the effects of noise on system behavior Emphasis on concepts of noise as a random process, as distinguished from systematic or periodic interference.
EE 220. Feedback Control Systems (3)
Prerequisite: Engineering 168
Analysis and synthesis of feedback control systems using feedback compensation. Multiple-loop control systems; a-c feedback control systems; optimization.
EE 222. Sampled-Data Systems (3)
Prequisite: Engineering 168
Analysis and synthesis of sampled-data and digital control systems; techniques for the design of time optimal sampled-data control systems; $z$-transform calculus and difference equation synthesis techniques for determining stability and system response. (Formerly entitled Non-Linear Systems.)
EE 225. State Space Analysis of Control Systems (3)
Prerequisite: Engineering
Prerequisite: Engineering 168.
solution of the state equation of control systems, state transition flow graphs, methods of solution of the state equation, controllability and observability, and introduction to optimal EE 231. In
EE 231. Integrated Circuits (3)
Fabrication methods
Fabrication methods, logic gates, multivibrators, medium- and large-scale integration
techniques and devices. Linear integrated circuits application of devices through knowledge of and MOS technology. Emphasis on proper manufacturers' specification sheets.

EE 232. Linear Semiconductor Circuit Design (3)
Prerequisite: Engineering 162.
Field effect transistors and circuits; quantitative variable nature of transistor parameters; differential and chopper stabilized dc amplifiers; high efficiency switching mode powe amplifiers, converters and inverters; noise, reliability considerations and high speed witching
EE 234. Semiconductor RF Circuit Design (3)
Prerequisite: Engineering 134
Wide band amplifiers, low level RF amplifiers and mixers, IF amplifiers, AGC, tuning and stability problems, unilateralization and mismatching techniques, harmonic oscillators, VHF power amplifiers including varactor multipliers.

## EE 240. Antennas and Propagation (3)

Prerequisite: Engineering 139
Impedance characteristics and radiation patterns of thin linear antenna elements; field intensity calculations. Tropospheric and ionospheric propagation; propagation anomalies. EE 242. Microwave Networks (3)
Equivalent circuits for waveguide discontinuities developed on the basis of mode theory inearity, reciprocity, and symmetry. Application of general network theory to wave guides, cavity resonators and antennas.

## EE 246. Radar Systems (3)

Prerequisite: Engineering 139.
The radar equation; characteristics of CW, FM, MTI, pulse-doppler and tracking radar system; transmitters, antennas and receivers; detection of signals in noise, extraction of information; propagation effects; system engineering and design

## EE 250. Quantum Electronics (3)

Prerequisite: Engineering 164.
Quantum mechanics for engineers concerned with its application to solid-state devices Basic principles and engineering applications of lasers

## EE 252. Optical Communications (3)

Prerequisite: Electrical Engineering 250
Fundamentals of electro-optical technology from ultraviolet through infrared Characteristics of thermal and laser radiation including generation, transmission, detection data processing and display.

## EE 260. Modern Communication Theory I (3)

Cingeering 133 or Mathematics 134
Probability theory, random variables, random processes, Gaussian process, random signals through linear systems, noise considerations, optimum receiver design, applications to digita and wave-form communication. (Formerly offered under Electrical Engineering 200, Seminar in Modern Communication Theory I.)
EE 261. Modern Communication Theory II (3)
Prerequisite: Electrical Engineering 260.
Estimation of signal parameters in noise. Estimation of spectral densities and correlation functions. Intersymbol interference. Adaptive and feedback systems.

## EE 263. Coding Theory (3)

Prerequisite: Engineering 133.
The theory of coding to combat noise over communication channels. Redundancy added to messages to assure arbitrarily small error rates at a given information rate. Discussion of channels and capacity. Block codes, cyclic codes, BCH codes, convolutional code. (Formerly offered under Electrical Engineering 200.)
EE 264. Digital Processing of Signals (3)
Prerequisite: Engineering 135.
Theory of digital signal processing. Emphasis on digital filters, discrete spectrum analysis nd windows. Fast Fourier transforms. Generalized linear filtering; Cepstral analysis and and windows. Fast Fourier transforms. Generalized linear filtering;
deltic loops. (Formerly offered under Electrical Engineering 200.)
EE 270. Microprogramming (3)
Prerequisite: Engineering 178.
Fundamentals of microprogramming and read only storage technology as related
design of digital computers. (Formerly offered under Elect
EE 271. Computer Input/Output
Prerequisite: Engineerng ind procedures, I/O programming techniques, interfaces Controls, magnetic recording techniques, I/O devices. (Formerly offered under Electrical Channels, magnet.)

EE 272. Minicomputer Design and Applications (3)
Prerequisite: Engineering 178.
Current minicomputer architectures. CPU-oriented and universal bus-oriented machines. (Formerly offered under Electrical Engineering 203, Seminar in Digital Computing Systems (Minicomputers)).
EE 276. Fault Tolerate Computing (3)
Prerequisite: Engineering 178.
Prerequisite: Engineering 178.
Triple modular redundancy, standby sparing, quaded logic, parity and residue checking of computer systems and subsystems. Diagnostic programming and fault testing
EE 277. Topics in Logic Design (3) II
Prerequisite: Engineering 177. Review of current literature in logic design and digital systems. Stress on specialized synthesis techniques and recent theoretical developments.
EE 278. Electronic Digital Systems (3)
Prerequisite: Engineering 178
Design of arithmetic, control and memory units. Detailed comparative analysis of the system organization and operation of several digital computers, with special attention to the interdependence of design decisions and their dependence upon the intended system application. (Formerly numbered Electrical Engineering 236.)
EE 296. Advanced Topics in Electrical Engineering (2 or 3)
Advanced study in the field of electrical engineering, topic to be announced in the class schedule. Maximum credit six units applicable on a master's degree.
EE 297. Research (1-3) $\mathrm{Cr} / \mathrm{NC}$
Prerequisite: Consent of graduate adviser
Research in engineering. Maximum credit six units applicable on a master's degree. Graduate Courses in Engineering Mechanics
EM 200. Seminar ( 2 or 3 )
Advanced study of, or within, one phase of engineering mechanics, such as elasticity, plasticity, rheology, and micromeritics; buckling, vibration, and stability phenomena; hydrodynamics and magnetohydrodynamics; incompressible, compressible, and non-Newtonian flow. May be repeated with new content. Maximum credit six units applicable on a master's degree.
EM 201. Advanced Dynamics (3)
Prerequisites: Engineering 50B and 187A or Mathematics 118A
Kinematics and kinetics of systems of particles and rigid bodies with special reference to engineering problems. Moving reference axes, generalized coordinates, Lagrangian equations, Hamilton's principle and variationa methods.
EM 203. Theory of Vibrations (3)
Prerequisites: Engineering Mechanics 201 and credit or concurrent registration in Linear and 187B or Mathematics 118B.
media with application periodic phenomena as applied to discrete systems and continuous
EM 204. Theory of Nonlinear Vibrations
Prerequisite: Engineering Mechanics 201
Analysis of discrete systems with one or more degrees of freedom. Phase plane, harmonic balance, and other methods. Stability.
EM 205. Theory of Random Vibrations (3)
Prerequisite: Engineering Mechanics 203
Random processes with applications to vibration of discrete and continuous systems.
EM 210. Continuum Mechanics (3)
Prerequisite: Engineering 187B or Mathematics 118B
fluid and solid mechanics.
EM 221. Theory of Elasticity
Prerequisites: Engineering 116 and credit or concurrent registration in Engineering 187 B or Mathematics 118B. Engineering 186 is recommended
Analysis of stress and strain: stress-strain relations; the equations of elasticity; uniqueness theorem; compatibility conditions; flexure and torsion. Vector and tensor notation will be
used.

EM 222. Theory of Anisotropic Elasticity (3)
Prerequisite: Engineering Mechanics 221 .
Generalized Hooke's law, transformation of elastic constants, laminated constitutive combined loading.

EM 223. Energy Methods in Mechanics (3)
Prerequisite: Engineering Mechanics 221
frames; theories of plates and applied to the dynamics of rigid bodies, analysis of elastic frames; theories of plates and shells, buckling, and vibrations.
EM 225. Theory of Plates (3)
Prerequisite: Engineering Mechanics 221.
Bending and buckling theory of plates; application of small deflection and large deflection theories to plates with various boundary conditions; use of approximate methods and exact methods in
EM 226. Theory of Shells (3)
Prerequisite: Engineering Mechanics 221.
Membrane and bending theory of shells of revolution and shells of arbitrary shape; exact
and approximate methods of solution of shells subjected to axisymm and approximate methods of solution of shells subjected to axisymmetric and arbitrary loads. EM 227. Theory of Elastic Stability (3)
Prerequisite: Engineering Mechanics 221.
Stability of elastic systems. Differential equations of stability by summation of forces and movements, and by the variational method. Applications.
EM 233. Theory of Plasticity (3)
Prerequisite: Engineering Mechanics 221.
Itrain-hardening, and visco-elastic. Solutions to engineering problems with ideally-plastic EM 243. Advanced Fluid Mechanics I (3)
Prerequisites: Engineering 115 and credit or concurrent registration in Engineering 187B or Mathematics 118 B .
Fluid kinematics and kinetics. Conservation of mass, energy, and momentum, applied to Newtonian fluids. Navier-Stockes equations. Couette and Poiseuille flow. Potential flow. Introduction to turbulence and boundary layer theory. Vector and tensor notation will be used.
EM 244. Advanced Fluid Mechanics II (3)
Prerequisite: Engineering Mechanics 243
A continuation of Engineering Mechanics 243. Further work in laminar and turbulent flow, and boundary layer theory. Diffusion. Applications to engineering problems. EM 296. Advanced Topics in Engineering Mechanics (2 or 3)
Advanced study in the field of engineering mechanics, topic to be announced in the class schedule. Maximum credit six units applicable on a master's degree.

## EM 297. Research (1-3) Cr/NC

Prerequisite: Consent of graduate adviser
Research in engineering. Maximum credit six units applicable on a master's degree
Graduate Courses in Mechanical Engineering

## ME 200. Seminar (2 or 3)

Prerequisite: Consent of the graduate adviser and instructor.
An intensive study in advanced mechanical engineering, topic to be announced in the class schedule. Maximum credit six units applicable on a master's degree.

## ME 220A-220B. Mechanical Vibrations (3-3)

Prerequisites: Engineering 147B, 183, and 187B.
Topics in vibration relating to mechanical design such as nonlinear vibrations, distributed mass systems, random vibrations, mobility analysis, isolater design.

## ME 221. Stress Analysis (3)

Prerequisites: Engineering 146B and 187B.
Topics in applied elasticity, advanced study of the resistance of materials and experimental stress analysis. Failure theories, energy methods, limit design, theory of plates and shells. Photoelasticity, brittle lacquers, strain gages, and analogs in determining static, dynamic and

ME 222A-222B. Synthesis of Machines (3-3)
Prerequisites: Engineering 183 and Problems in mechanical design involving synthesis of mechanisms wherein displacement, velocity, acceleration and jerk are paramount considerations.
ME 224. Fluid Power and Control Systems (3)
ME 224. Fluid Power and Contro
Analysis of dynamic performance of physical systems such as pneumatic, hydraulic and hot-gas. Transient forces and valve instability. Servo characteristics.

## 208 / Engineering

ME 231. Advanced Science of Materials (3) Prerequisite: Engineering 107.
Structure and physical properties of solids. Imperfections in materials and their effect on various properties. Elasticity, plasticity, and fracture of metals related to atomic and crystal structure.
ME 232. Physical Metallurgy for Engineers (3)
Prerequisites: Engineering 107 and 108
Fundamentals of crystallography, imperfections, alloying and deformation. Composition, temperature, prior thermal and mechanical treatment on structure of metal; relationship of structure to mechanical properties.
ME 233. Mechanical Metallurgy for Engineers (3)
Prerequisites: Engineering 107 and 108.
Fundamentals of plastic deformation of crystalline solids; elementary theory of statics and dynamics of dislocations, deformation, fracture and metallurgical variables on mechanical properties; environment-failure interactions.
ME 234. High Temperature Materials (3)
Prerequisite: Engineering 107
Behavior of metals, cermets, and nonmetallic materials at high temperatures. Effect of environment and service conditions on composition, structure, and physical properties.
ME 246. Advanced Topics in Automatic Controls (3)
Prerequisites: Engineering 187A and 189.
Synthesis of linear control systems. Analysis of nonlinear systems by describing function and phase plane methods. Sampled data systems analysis; statistical design techniques and adaptive control.
ME 250. Analytical Thermodynamics (3)
Prerequisite: Engineering 187A.
Advanced concepts of macroscopic thermodynamics. Application of thermodynamics to special systems
ME 260. Conduction Heat Transfer (3)
Prerequisites: Engineering 140 and 187B.
Conduction heat transfer, multidimensional conduction processes, transient analysis
ME 262. Convection Heat Transfer (3)
Prerequisite: Mechanical Engineering 274.
Convection heat transfer. Advanced theories of forced and free convection.
ME 264. Radiation Heat Transfer (3)
Prerequisites: Engineering 140 and 187B.
RE 267 .
ME 267. Cryogenic Engineering (3)
Prerequisite: Engineering 148.
and other materials used in producinges and equipment. Physical properties of structural and other materials used in producing, maintaining, and using low temperatures.
ME 270. Gas Dynamics (3)
Prerequisites: Engineering 143 and 187B.
flow and real gases. ME and real gases

Prerequisites: Engineering 140 Internal Flows (3)
Prerequisites: Engineering 140 and 187B
of the boundary laws applied to boundary layers in viscous, heat conducting fluids; analysis of the boundary layer equations; applications to internal flows.
ME 276. Bearing Design and Lubrication (3)
Prerequisite: Engineering 187B
Friction and
Friction and wear of materials. Boundary and thick film lubrication. Design of ME 280. Aircraft compressible fluid bearings; rolling-element bearings.
ME 280. Aircraft and Missile Propulsion (3)
Prerequisites: Engineering 142, 143, and 187B
Thermodynamic analysis and perfor. Principles of regeneration, reheat and intercooling. Thermodynamic analysis and performance of turbojet engines, ramjet engines and rocket motors. Rocket jet propellant systems. Dynamics of rocket propulsion free of gravity and air resistance
ME 281. Propulsion Systems for Spacecraft (3)
Prerequisites: Engineering 148 and 187 B
nonair-breathing

ME 284. Theory of Turbomachines (3)
Prerequisites: Fngineering 143 or 150 A
Application of the fundamental laws of fluid mechanics to the problems of energy transfer between fluid and rotor. Performance characteristics or turbomachines. Study of loss mechanisms.
ME 285. Direct Energy Conversion (3)
Prerequisites: Engineering 149 or ME 250; and Engineering 187A.
Prerequisites: Engineering 149 or ME 250; and Engineering 187A.
Application of physical and chemical laws to the analysis, design, and evaluation of various direct energy conversion systems.
ME 296. Advanced Topics in Mechanical Engineering (2 or 3)
Advanced study in the field of mechanical engineering, topic to be announced in the class schedule. Maximum credit six units applicable on a master's degree.
ME 297. Research (1-3) Cr/NC
Prerequisite: Consent of graduate adviser.
Research in engineering. Maximum credit six units applicable on a master's degree. Graduate Courses in Engineering
E 290. Problem Analysis (3)
Prerequisite: Consent of graduate adviser. preparation of project or thesis.
E 295. Seminar in Environmental Engineering (3)
Prerequisite: Engineering 192A, 192B, or 192C.
Environmental problems including an intensive investigation of selected topics.
E 298. Special Study (1-3) Cr/NC
Prerequisite: Consent of staff; to be arranged with department chairman and instructor. Individual study. Three units maximum credit.
E 299. Thesis or Project (3) Cr/NC
Prerequisites: An officially appointed thesis committee and advancement to candidacy. Preparation of a project or thesis for the master's degree.

## English

## In the College of Arts and Letters

## Faculty

Facury
Emeritus: Adams, J., Burnett, Gulick, Haskell, Johnson, Kennedy, Marchand, Phillips,
Shouse, Theobald
Professors: Baker, Benson, Dickinson, Gellens, Henig, Ingham, Keller, Monteverde, Perkins, Sanderlin, Sandstrom, Santangelo, Tozer (Director), Vanderbilt, Wanlass, Widmer Associate Professors: Brashers, Chater, Davis, Hinkle, Kehler, H., Kohler, McLeod, Moramarco, Nelson, Nichols, Patterson, Redding, M., Redding, R., Rother, J., Savvas, Stiehl, Taylor
Assistant Professors: Adams, E., Aninger, Barry, Boe, Borkat, Brown, Bumpus, Butler, DeMarinis, Farber, Forrey, Gervais, Karnath, Kehler, D., Malmsheimer, O'Reilly, Rogers, DeMarinis, Farber, Forrey, Gervais, Khojai, Sullivan, Thrane, Tunberg, Wall, Wheeler Lecturers: Davidson, Kanaseki, Metcalf, Rother, C.
Offered by the Department
Master of Arts degree in English.
Major in English with the A.B. degree in liberal arts and sciences
Minor in English.
Teaching major in English for single subject teaching credential.
Courses in comparative literature. (Refer to this section of the catalog under Comparative Literature.)

## English Major

With the A.B. Degree in Liberal Arts and Sciences
All candidates for a degree in liberal arts and sciences must complete the graduation requirements listed on page 60 of this catalog. No more than 48 units in English and comparative literature courses can apply to the degree. To satisfy the requirement in foreign comparative literature course use courses in conversation.
A minor is not required with this major.

Preparation for the major．English 6，51A－51B；six units selected from English 53A－53B， or Comparative Literature 52A－52B；and three units of electives in English excluding 1X，1Y， or 1Z．（ 18 units．）
Major．A minimum of 24 upper division units in English，selected with the approval of the adviser，to include（a）English 101，（b）at least nine units in one of the areas of study listed below，and（c）at least three units in British Literature before 1800，three units in British Literature after 1800，and three units in American i．No more than six units of courses in comparative literature may be included as part of the major in English．

## Areas of Study：

British Literature before 1800：English 102，103，104，111，112，113A，113B，121A，122A，122B， and Comparative Literature 120.
British Literature after 1800：English 114A，114B，115，116，117，118，and 121B．
American Literature：English 130，131，133，134，135，and 136
Literary Types，Theory，and Criticism：English 140，142，144，150，153，and Comparative
Literature $124,125,126,150,152$ ，and $153 \mathrm{~A}-153 \mathrm{~B}$ ．
Creative Writing：English 140，142A－142B，144，149，170，171，172，and 179.
NOTE：In addition to the courses listed above，appropriate sections of English 129，138， 139 ， 149，190，and 199 may be used to satisfy the requirements for the major if approved by the departmental adviser．

Selection of Courses
Prospective majors of sophomore standing may，with the consent of the course instructor and subject to general university regulations（see＂Credit for Upper Division Courses＂in the section of this catalog on General Regulations），substitute six units of upper division elective for six units of lower division work．These courses must be in the same field as those which they replace，and must be approved by the departmental adviser．
Students of junior or senior standing may substitute for any deficiencies in lower division requirements in English（except English 6）an equivalent number of units of upper division courses selected with the approval of the departmental adviser．

## English Minor

The minor in English consists of a minimum of 15 units in English，nine units of which must be in upper division courses．The English minor is not available to students majoring in

## English Major

erature

## For the Single Subject Teaching Credential

All candidates for a teaching credential must complete all requirements for the applicable specialization as outlined in the section of this catalog on the School of Education．
This major may be used by students in Teacher Education as an undergraduate major for The requirements for the Find sciences．
eing revised．For further inforgish major for the single subject teaching credential are Course Sequences
All year courses in English may be taken in either semester，and either semester may be taken singly for credit．

## Student Initiated Courses

Students may petition for a course which falls within the competency of the English Department but which is not among the regular course offerings for the present or following semester．Petition forms may be obtained from the Department Secretary．

Undergraduate Proseminars
Each semester，if adequate staffing permits，the Department may offer several of its courses as special，limited－enrollment proseminars．These proseminars are designed to give and seniors to engage in who has the consent of the instructor）the opportunity as juniors
,

English for Foreign Students
Foreign students will be assigned to English 1X，1Y，1Z or to English 5 or 6 on the basis of their performance on the English examination for foreign students and an oral interview $1 \mathrm{X}, 1 \mathrm{Y}$ ，and 1 Z do not satisfy the university general education requirements，but unit credit
is granted for these courses．
105. The Bible as Literature (3) I, II
(Same course as Comparative Literature 105.)
Prose and poetry of the King James version. (Formerly numbered English 115.)
150. The History of Literary Criticism (3) I

Principles and practices of literary criticism from Greek times to the nineteenth century. (Formerly numbered English 195A.)
153. Modern Criticism (3) II

The theory and practice of selected nineteenth and twentieth century critics, with emphasis on the distinctive features of their approaches to literature. (Formerly numbered and entitled English 195B, Theory and Practice of Modern Criticism.)

## 166. Honors Course (1-3) I, II

175. Advanced Composition (3) I, II

The theory and practice of expository writing, including the contributions of semantics, rhetoric, and logic. (Formerly numbered English 191.)
190. Selected Topics in English (2-3) I, II

Specialized study of a selected topic in literature. May be repeated with new content. Maximum credit six units.
194. Individual Reading (1) I, II

Selected works by a major author. May be repeated with new content. Maximum credit two units. (Formerly numbered English 110.)
199. Special Study (1-3) I, II

Individual study. Maximum credit six units.
Prerequisite: Consent of instructor.
130. Early American Literature (3) I

American Literature from its beginning to 1830 .
131. The American Renaissance (3) I, II

Major American writers and their works in the period 1830-1865
133. American Realism and Naturalism (3) I, II

American fiction from the Civil War to 1920.
134. Modern American Fiction (3) I, II

American fiction from 1920 to the present.
135. Modern American Poetry (3) I, II

American poetry from 1865 to the present.
136. American Drama (3) I, II

Dramatic literature by American writers from its beginnings to the present.
138. Topics in American Studies (3) I, II

Literature, and the like The Literature of Social Protest, The Intellectual History of American their advisers, applicable on a master's degree in American Studies majors. Maximum credit six units
139. Topics in Americ

Emerson and Therican Literature (3) I, II
The Frontier and American Literaturs in America, The Literature of the American South, Maximum credit six units.
101. Shakespeare (3) I, II

## British Literature

An introduction (3) I,
02. Study of Shakespeare (Formerly numbered English 117A-117B.) Prerequisite: English 101. ${ }^{(3)}$
Advanced study of Shak
eare's achievement as a poet and playwright
Chaucer's works, II
(Formerly numbered English 151.) on The Canterbury Tales and Troilus and Criseyde
104. Milton (3) II

Milton's writings, with emphasis on Paradise Lost. (Formerly numbered and entitled
English 120A, The Seventeenth Century: Milton.)
111. Renaissance Literature (3) I, II

English poetry and prose from 1485 to 1603. (Formerly numbered and entitled English
112. Seventeenth Century Literature (3) II
112. Seventeenth Century Literature (3) II . (Formerly numbered and entitled English English poetry and prose from: 1603 to 1660 . (Formerly numbered
120B, The Seventeenth Century: Metaphysical and Cavalier Poets.)
113A-113B. Restoration and Eighteenth Century Literature (3-3) I, II
113A-113B. Restoration and Eighteenth Century Literature (3-3) I, II
English literature in the neoclassical era. Semester I: Dryden, Swift, Pope, and their English literature in the neoclassical era. Semester I: Dryden, Swift, Pope, and their contemporaries. Semester II: Writers of the middle and late eighteenth century. (Formerly
numbered English 118A-118B.) 114A-114B Nineter Cent
114A-114B. Nineteenth Century British Poetry (3-3) I, II
Semester I: The Romantic movement. Semester II: The Victorian period. (Formerly numbered and entitled English 119A, English Romantic Poetry, and English 119B, Victorian Poetry.)
115. Nineteenth Century British Prose (3) I, II

Nonfictional prose of the Romantic and Victorian periods. (Formerly numbered and entitled English 126A, Romantic and Victorian Prose, and English 126B, Late Nineteenth Century British Prose.)
116. Modern British Poetry (3) I, II

British poetry since 1900 .
117. Modern British Fiction (3) I, II

British fiction since 1900 .
118. Modern British Drama (3) I, II

British drama since 1890 .
121A-121B. English Fiction (3-3) I, II
The development of English fiction from its beginnings to the end of the nineteenth
The development of English fiction from its beginnings to the end of the nineteenth
century. Semester I: The eighteenth century. Semester II: The nineteenth century. (Formerly numbered and entitled English 143A-143B, The English Novel.)
122A-122B. English Drama (3-3) I, II
English dramatic literature from its beginnings to the nineteenth century. Semester I: The period from the beginning to 1642 . Semester II: The period following reopening of the theatres in 1660 .
129. Topics in English Literature (3) I, II

The Works of Spenser, The Metaphysical School of Poetry, The English Satirists, Major Movements in Contemporary English Fiction, and the like. May be repeated with new content. Maximum credit six units.

## Comparative Literature <br> (See page 165) <br> Creative Writing

140. Techniques of Poetry (3) I, II

A study of the critical and theoretical literature of poetry, from the creative writer's viewpoint together with reading and discussion of appropriate examples. (Formerly numbered English 149.)
42A-142B. Techniques of Fiction (3-3) I, II
A study of the critical and theoretical literature of fiction, from the creative writer's viewpoint, together with reading and discussion of appropriate examples. Semester I: Short Fiction. Semester II: The Novel. (Formerly numbered English 142.)
144. Techniques of Drama (3) I

A4 study of the critical and theoretical literature of drama, from the creative writer's viewpoint, together with reading and discussion of appropriate examples.
149. Topics in Techniques of Writing (3) I, II
149. Ttudy of the critical and theoretical literature of literary technique or topic such as satire, science fiction, myth and fantasy, children's literature, the long poem, the literary anatomy, etc. May be repeated with new content. Maximum credit six units.
170. The Writing of Poetry (3) I, II

Prerequisite: English 70.
A writing workshop in poetry. May be repeated with new content. Maximum credit six units.
171. The Writing of Fiction (3) I, II

Prerequisite: English 70
A writing workshop in fiction. May be repeated with new content. Maximum credit six units.
172. The Writing of Nonfiction (3) I

Prerequisite: English 70.
A writing workshop in nonfictional prose. May be repeated with new content. Maximum credit six units.
179. Senior Workshop in Creative Writing (3) I, II

An advanced workshop intended only for students who have an extensive background in creative writing. Different sections of the course may treat advanced poetry writing, advanced fiction writing, or other special topics.

## Graduate Courses

233. American Literature (3)

Prerequisite: Twelve upper division units in English, with courses in American literature strongly recommended.
Selected works of an author, period, or subject in American literature. Maximum credit six units applicable on a master s degree.
234. Literature of the Middle Ages (3)

Prerequisite: Twelve upper division units in English.
Selected works in the literature of the Middle Ages with emphasis on Middle English prose and poetry exclusive of Chaucer
235. Renaissance Literature (3)

Prerequisite: Twelve upper division units in English.
Selected works in the literature of the Renaissance.
236. Restoration and Eighteenth Century Literature (3)

Prerequisite: Twelve upper division units in English.
Selected works in the literature of the late seventeenth and the eighteenth centuries.
237. Earlier Nineteenth Century Literature (3)

Prerequisite: Twelve upper division units in English.
Selected works in the literature of the early nineteenth century.
238. Later Nineteenth Century Literature (3)

Prerequisite: Twelve upper division units in English.
Selected works in the literature of the later nineteenth century.
239. Twentieth Century Literature (3)

Prerequisite: Twelve upper division units in English.
Selected works in the literature of the twentieth century.
243. Poetry (3)

Prerequisite: Twelve upper division units in English.
Poetry as a literary form.
244. Fiction (3)

Prerequisite: Twelve upper division units in English.
Fiction as a literary form.
245. Drama (3)

Prerequisite: Twelve upper division units in English.
The drama as a literary
The drama as a literary form.
260. Workshop in Creative Writing (3)

Prerequisite: Consent of instructor and departmental adviser
Criticism and coaching in the larger forms. Maximum credit six units applicable on a
279. Tutorial in Creative Writing (3)

Prerequisites: Twelve upper division units in English, including at least six units in creative writing

Individual guidance for advanced writers who wish to work on special projects in creative
riting. writing.
290. Bibliography and Methods of Literary Research (3)

Prerequisite: Twelve upper division units in English.
Basic reference works, scholarly and critical journals; introduction to bibliographical techniques; exercises and problems in methods and exposition of research, including editorial procedures. Recommended for the first semester of graduate work. Prerequisite to graduate seminars.
291. Seminar: A Major Author (3)

Prerequisite: An appropriate upper division or graduate level background course, and
English 290 . English 290.
The critical study of a major author, such as Shakespeare, Dickens, Mark Twain. May be repeated with new content. Maximum credit six units applicable on a master's degree.
292. Seminar: A Cultural Period (3)

Prerequisite: An appropriate upper division or graduate level background course, and
English 290 .
Advanced study, through its literature, of a cultural period such as the Renaissance, the credit six units applicable on a master's degree.
293. Seminar: A Literary Problem (3)

Prerequisite: English 290
Advanced study of a literary problem, such as Regionalism in America, or European influences on American literature. May be repeated with new content. Maximum credit six 294. Seplicable on a master's degree.
294. Seminar: A Literary Type (3)

Prerequisite: English 290
Advanced study of a literary type, such as the Personal Essay, Epic, Tragedy. May be repeated with new content. Maximum credit six units applicable on a master's degree. 298. Special Study (1-3) Cr/NC

Prerequisite: Consent of staff; to be arranged with department chairman and instructor. Individual study. Maximum credit six units.
299. Thesis (3) $\mathrm{Cr} / \mathrm{NC}$

Prerequisites: An officially appointed thesis committee and advancement to candidacy Preparation of a project or thesis for the master's degree.

# Family Studies and Consumer Sciences In the College of Professional Studies 

A member of the American Home Economics Association

Faculty
Emeritus: Comin, Talboy
Professors: Cannon, Dorris, Fulcomer (Director), Somerville, Thomas, Warmer Associate Professors: Anderson, Gunning, Price
Assistant Professors: Boggs, Breeden, Dickerson, Hambleton, Kwallek, Martin, K.J., Martin, M., Milne, Perenich, Schupp, Wertz
Lecturers: Kripke, Ross

## Offered by Family Studies and Consumer Sciences

Master of Science degree in home economics.
Major in home economics with the A.B. degree in applied arts and sciences.
Major in child development with the B.S. degree in applied arts and sciences. (Refer to the section of this catalog on Interdisciplinary Programs.)

Minor in home economics.
Teaching major in home economics for the single subject teaching credential.

## Home Economics Major

With the A.B. Degree in Applied Arts and Sciences
All candidates for a degree in applied arts and sciences must complete the graduation requirements listed on page 60 of this catalog.

The major in home economics is available in two areas of emphasis: (1) General Home Economics, and (2) Foods and Nutrition.

Emphasis in General Home Economics
Preparation for the major. Family Studies and Consumer Sciences (Home Economics) 2, 3, 15, 40 and 45; Family Studies and Consumer Sciences (Family Studies and Child Development) 35 and 70; Anthropology 2; Art 2A; Biology 1; Chemistry 2A-2B; Economics 1A; Physics 5; and Sociology 1. (44 units.)
Major. A minimum of 24 upper division units to include Family Studies and Consumer Sciences (Foods and Nutrition) 100; Family Studies and Consumer Sciences (Home Child Development) 135, 171; and three units selected from Feiences (Family Studies and Consumer Sciences.

## Emphasis in Foods and Nutrition

This program is planned for students interested in qualifying professionally in the field of dietetics, institutional food management or commercial home economics. A student who successfully completes this program and receives departmental recommendation is eligible to apply for a year of internship under auspices or the American Dietetic Association. Ophs completion of an administrative food clinic, or dietetic internship, or a $12-24$ mons for apprenticeship under a qualified dietitian in a recognd recognition as a qualified dietitian. membership in the American Dietetic Associa extension service, teaching, business, health
Additional foods and nutrition careers include agencies, and research.
Preparation for the major. Family Studies and Consumer Sciences (Home Economics) Preparation for the major. Family Studies ansiences (Foods and Nutrition) 3, 4; Family ${ }_{\text {2 }}^{2,15,40 \text { and }} 45$; Family Studies and Consumer Sciences (Family Studies and Child Development) 70; Art 2A; three Studies and Consumer Sciences (Family
units of biology; Business Administration 1A; Chemistry 2A-2B, 3 ; Economics 1A; Physics 5; Sociology 1 ; and Microbiology 10. ( 50 units.)
Major. A minimum of 36 upper division units to include Family Studies and Consumer Sciences (Foods and Nutrition) 100, 102, 103, 104, 105, 106 and 180; Family Studies and Consumer Sciences (General Home Economics) 151, 152, and 182; and six units selected with consent of the adviser from Business Administration.

## Home Economics Minor

The minor in home economics consists of a minimum of 18 units in family studies and consumer sciences, six units of which must be in upper division courses.

## Home Economics Major

For the Single Subject Teaching Credential
All candidates for a teaching credential must complete all requirements for the applicable Al candiates as outlined in the section of this catalog on the School of Education,
The major may be used by students in Teacher Education as an undergraduate major for he A.B. degree.
The requirements for the home economics major for the single subject teaching credential are being revised. For further information consult the department.

## Lower Division Courses

2. Orientation to Home Economics as a Profession (1) I

Introduction to the opportunities and requirements in various professional fields for home economists.
99. Experimental Topics (2-4) I

Refer to the catalog statement on Experimental Topics on page 106. Limit of nine units applicable to a bachelor's degree in courses under this number of which no more than three units may be applicable to general education requirements.

## Foods and Nutrition

3. Food Selection and Preparation (3) I, II

One lecture and six hours of laboratory
The production, selection, composition, preservation, nutritive value and preparation of foods.
4. Fundamentals of Nutrition (3) I, II

Nutrition as applied to the stages of the normal life cycle.
14-S. Workshop for School Lunch Personnel (1) S
Open to school lunch personnel only
The following areas are included:
A. Nutrition for School Lunches
B. Beginning Meal Planning.
C. Food Purchasing.
D. Wanitation and Safety.
E. Work Simplification and Personnel Management
F. Advanced Menu Planning.
G. Record Keeping and Cost Analysis.

Maximum may be repeated for credit, but credit may be earned in two areas concurrently, or homemaking education.

## 15. Clothing and Textiles (3) I, II

One lecture and six hours of laboratory
Commercial patterns and their adaptation; fitting and construction; selection and care of textiles.
19. Textiles (3) I, II

Fibers, yarn, fabric construction, and finishes as related to selection, use, and care
40. Family Income Management (3) I, II

Financial problems involved in the effective management of the family resources
45. Fundamentals of Housing and Design (3) I, II

One lecture and six hours of laboratory.
Prerequisite: Art 2A.
Historical and contemporary interiors. Architectural, constructural and artistic factors of housing as related to family needs.

## Family Studies and Child Development

## 35. Marriage and Family (3) I, II

Love, maturity, dating, compatibility, conflict as they relate to preparation for successful marriage and family living. Not open to students with credit in Social Welfare 30, or Sociology 35.
. Principles in Child Development (3) I, I
Study of the child from conception through adolescence, with emphasis on principles of growth and development. Directed observations of children. Not open to students with credit in Psychology 106, or Education 111.

## Upper Division Courses <br> Foods and Nutrition

100. Advanced Foods (3) I, II

One lecture and six hours of laboratory.
Prerequisites: Family Studies and Consumer Sciences 3 and Chemistry 2B.
Fundamentals and practices of scientific food preparation. Development of standards in food preparation, meal planning, and service.
101. Family Food Management (3) I

One lecture and six hours of laboratory.
Not open to home economics majors and minors.
Planning, organizing, preparing and serving attractive well-balanced meals for different income levels, for various occasions.
102. Advanced Nutrition (3) I, II

One lecture and six hours of laboratory
Prerequisites: Family Studies and Consumer Sciences 4 and Chemistry 2B Fundamental principles of human nutrition; planning, calculating and evaluating dietaries mal feeding experiments. 103. Quantity Cookery (3) I

Prerequisites: Family Studies and Consumer Sciences 100 and Business Administration 1A Application of basic principles to quantity foods, including experiences in planning, purchasing, storage, preparation, serving and cost accounting for institutional food service. Laboratory experience is provided in the campus cafeteria and in hospitals.
104. Institutional Food Organization and Management (3) II

One lecture and six hours of laboratory
Prerequisite: Family Studies and Consumer Sciences 103.
Problems involved in the organization of food service units, problems of administration cost of food service, specifications, operation and care of equipment for institutions, and routing of work. Special projects and field trips.
105. Experimental Foods (3) II

One lecture and six hours of laboratory
Prerequisite: Family Studies and Consumer Sciences 100
Physical and chemical tests applied to problems in processing and preparation of food Studies relate to protein foods; batters, doughs and sugar cookery; emulsions, fats and oils and developments in food preservation.
106. Diet Therapy (3) I

One lecture and six hours of laboratory
Prerequisite: Family Studies and Consumer Sciences 102
Planning and preparation of special diets and food requirements in pathological conditions.
108. Advanced Institution and Restaurant Management (3) Irregular

One lecture and six hours of laboratory
Prerequisite: Family Studies and Consumer Sciences 104 . based on the needs of various Purchasing food and selecting and maintain
types of food service and institutional layout.
109. Meal Management and Service (3) I, II

One lecture and six hours of laboratory
Prerequisites. Faming, preparing, and serving meals with consideration of nutritional needs and the time, energy, and money resources available.
180. Food Demonstration Techniques (3) I, II

One lecture and six hours of laborator
Prerequisite: Nine units in Family Studies and Consumer Sciences. Organizing materials and developing techniques for demonstrations; observation, participation in professional demonstrations for photography, the classroom and mass media.

## General Home Economics

115. Advanced Clothing (3) I, II

II
rerequisite: Family Studies and Consumer Sciences 15
Fitting and construction processes applied to wool, silk, and synthetics, emphasizing fundamental principles of handling.

## 116. Tailoring (3) I

One lecture and six hours of laboratory.
Prerequisite: Family Studies and Consumer Sciences 115.
Principles of tailoring; planning and construction of coats and suits.
117. Fashion Analysis and Clothing Selection (3) I, II

Analysis of fashion as it relates to clothing selection. Emphasis on fashion trends, wardrobe planning, buying practices, and standards of quality.
118. Clothing Design: Flat Pattern (3) I, II

One lecture and six hours of laboratory,
Prerequisite: Family Studies and Consumer Sciences 115
Problems involving principles and techniques of flat pattern construction. Development of basic sloper for purpose of interpreting new designs. Investigation of sources of inspiration and their relationship to significant trends in design
119. Textile Analysis and Testing (3) II

One lecture and six hours of laboratory.
Prerequisites: Family Studies and Consumer Sciences 15 and Chemistry 2B
Analysis based on physical and chemical tests for quality differences due to variation in fibers, content, structure, and finishes and their suitability for specified uses.
120. Clothing and Human Behavior (3) II

Prerequisite: Consent of instructor.
Socioeconomic influences on consumer clothing behavior patterns
121. Clothing Design: Draping (3) I, II

One lecture and six hours of laboratory
Prerequisite: Family Studies and Consumer Sciences 15.
Experience in creative designing through fabric manipulation. Designer problems related
122. Clothing Design: Historical Influences (3) I

One lecture and six hours of laboratory
Prerequisite: Family Studies and Consumer Sciences 115
Chronological analysis of men's and women's fashions providing inspiration for original
design
40. Family Financial Problems and Practices (3) I

Frerequisite: Family Studies and Consumer Sciences 40
and services; consumer practices of families; decision making with respect to market goods and services; consumer protection programs.
143. Household Equipment and Processes (3) I, II

One lecture and six hours of laboratory.
Study and laboratory experience to acquaint students with current research findings in relation to equipment and household supplies. Emphasis placed upon characteristics and composition of household materials, use and care
145. Family Housing (3) II

One lecture and six hours of laboratory
Prerequisite: Family Studies and Consumer Sciences 45
Advanced housing problems at various stages of the family life cycle and the different

## socono ic

150. Principles of Home Management (3) I, II

Efficient management of the home, family cooperation, establishment of goals, and productive use of money, time, and energy. Not open to home economics majors, or to students with credit in Family Studies and Consumer Sciences 151.
151. Home Management Theory and Analysis (3) I, II

Prerequisite: Family Studies and Consumer Sciences 40.
Management process and its relationship to the use of resources based upon the decisions, values, goals, and standards of the family. Adaptation of work simplification techniques for use in studies of activities in homes and home economics classes.
152. Home Management Laboratory (3) I, II
Five weeks' residence in a family-size unit

Five weeks residence in a family-size unit.
Prerequisites: Family Studies and Consumer Sciences 100, 151, and written request made o department chairman one year prior to enrollment
Application of theories and prin of all disciplines of home economics.
153. Supervised Field Work in Home Management (3) I, II

One lecture and six hours of laboratory
Family Studies and Consumer Sciences 3, 135, 151, 171, and consent of
Management and social problems as they relate to the home and family. Supervised field work with various community agencies and selected families.
160. Merchandise Analysis (3) Irregular

Contemporary problems of production and distribution of textiles and clothing.
181. Materials and Techniques for Teaching Home Economics (2) II

Development and use of audiovisual and other instructional materials.
182. Educational Practices and Instructional Resources (3) I

Prerequisite: Fifteen units in Family Studies and Consumer Sciences.
Principles of learning as they relate to teaching home economics to adults. Organization of material; selection, use and evaluation of teaching techniques.
135. Family Interaction (3) I, II

Prerequisite: Family Studies and Consumer Sciences 35 .
136. Family Study (3) I, II

Prerequisites: Family Studies and Consumer Sciences 35 and Sociology 1 .
Dynamics of family living; attitudes, practices, social and psychological interaction, and family life patterns in different cultures, social classes and ethnic groups. (Formerly Home Economics 135.)
170. Human Development: Infancy (3) I, II

Prerequisite: Family Studies and Consumer Sciences 70.
Physiological, psychological, social and cultural development and behavior of the human organism through age two
171. Human Development: Early Childhood (3) I, II

Two lectures and three hours of laboratory
rerequisite: Family Studies and Consumer Sciences 70 or Psychology 106
Physical, social, emotional, and intellectual development of the young child with applications for guidance. Observing, recording individual and group behavior of children. 175. The Nursery School Program (3) I, II

Two lectures and three hours of participation. Sciences 171; concurrent registration in
Prerequisites: Family Studies and Consumer Sciences 171; concurrent registration in Family Studies and Consumer Sciences 175L.
Methods, materials, program development, and evaluation of current trends in working with young children.

175L. Laboratory Experiences in Nursery School (1) I, II Three hours of laboratory.
Prerequisites: Family Studies and Consumer Sciences 171; concurrent registration in Family tuding semester
the preceding semester. preschool situations.
176. Creativity in the Young Child (3) II

Prerequisite: Family Studies and Consumer Sciences 175.
An examination of creativity; philosophical approach to experiences which would be appropriate for use with young children.
177. Administration and Supervision in Nursery Schools (3) Irregular

Prerequisite: Family Studies and Consumer Sciences 176 or teaching experience in a nursery school.
nursery school.
Problems of organization in conducting schools for young children; interrelationships of staff; personnel practices; communication with teaching staff, parents, and community; records and reports.
178. Working with Parents (3) I, II

Prerequisite: Family Studies and Consumer Sciences 70 or Psychology 106 or Education 111.

An investigation of philosophy, issues, and current trends in parenting.
179. Advanced Child Study (3) I, II

Prerequisite: Nine units in child development courses.
Physical, social, and psychological factors which determine the direction of child behavior Readings and interpretations of scientific literature which contribute to an understanding of theories of human development.
166. Honors Course (1-3) I, II

## Refer to the honors program.

190. Advanced Studies in Family Studies and Consumer Sciences (2-6) Irregular

Prerequisite: Twelve upper division units in Family Studies and Consumer Sciences.
Advanced study of selected topics. Maximum credit nine units. No more than six units may
be applied toward either the bachelor's or master's degree.
199. Special Study (1-3) I, II
nividual study. Maximum credit six units.
Prerequisite: Consent of instructor.
Graduate Courses

## Foods and Nutrition

200. Seminar: Foods and Nutrition (3)

Prerequisites: Family Studies and Consumer Sciences 100 and 102
An intensive study of research in technological advances in the fields of foods and nutrition, with emphasis on professional organizations and ethical procedures
203. Advanced Readings in Food Technology (3)

Prealis of Consumer
Reading and analysis of selected research in food technology.
204. Advanced Readings in Nutrition (3)

Prerequisite: Family Studies and Consumer Sciences 102
leading and analysis of selected research in nutrition.
205. Assay for Nutrients in Foodstuffs and Tissues (3)
Two lectures and three

Prerequisites: Family Studies of laboratory.
rerequisites: Family Studies and Consumer Sciences 100 and 102
Determination of energy values, organic nutrients, and minerals in foodstuffs and tissues
206. Physiological Bases of Diet Therapy (3)

Prerequisite: Family Studies and Consumer Sciences 106. Chemistry 115B or 116B is
The biochemical and/or physiological lesions in pathological states and the modifications of diet which should accompany medical treatment to prevent or alleviate patient symptoms.
207. Child Nutrition (3)

Two lectures and three hours of laboratory,
Prerequisite: Family Studies and Consumer Sciences 102
Nutrition, health, and biochemical growth in children. Conditions leading to malnutrition,

## General Home Economics

215. Seminar: Clothing (3)

Prerequisite: Nine units in the area of clothing
281. Seminar: Home in the field of clothing.
281. Seminar: Home Economics Education (3)

Prerequisites: Eighteen units in Family Studies and Consumer Sciences and consent of
instructor. The stud
The study and evaluation of home economics research and philosophical principles which 282. Current Der

Prerequisites: Education 121C or Economics Education (3)
Consumer Sciences. Current issues and
for secondary and post-high developments in home economics education with implications Family Studi
231. Family Life Education (3)

Prerequisite: Three units in family relations
Methods and materials in family life education for schools, colleges, churches, and social
agencies.

## agencies.

234. Seminar: Marriage Adjustment (3)

Prerequisite: Family Studies and Consumer Sciences 135
Individual study, seminar reports, and group discussion of selected topics in marriage adjustment
240. Seminar in Family Economics (3)

Prerequisite: Upper division course in family finance.
Personal financial practices under changing conditions. Review of literature in family financial management
270. Seminar: Child Development and Guidance (3)

Prerequisite: Consent of instructor
Emphasis on personality theories and on research and clinical findings relevant to systematic study of human development and the guidance of children
271. Advanced Readings in Human Development (3)

Prerequisites: Family Studies and Consumer Sciences 70 and 179
Analysis of selected research in human development.

## 290. Bibliography and Methods of Research (3)

Prerequisite: Twelve, upper division or graduate units in Family Studies and Consumer Rences.
Reference materials, bibliography, investigation of current research in home economics, processes of thesis topic selection, and techniques of scholarly writing
298. Special Study (1-3) Cr/NC

Prerequisite: Consent of staff; to be arranged with the director and instructor
Individual study. Maximum credit six units.
99. Thesis (3) $\mathrm{Cr} / \mathrm{NC}$

Prerequisites: An officially appointed thesis committee and advancement to candidacy Preparation of a project or thesis for the master's degree.

## French

In the College of Arts and Letters
Faculty
Emeritus: Brown
Professors: Max, Messier, Nelson, Piffard
Associate Professor: Hanchett
Assistant Professors: Branan, Ghilbert, Palmer, Woodle
Offered by the Department of French and Italian Languages and Literatures
Master of Arts degree in French.
Major in French with the A.B. degree in liberal arts and sciences.
Minor in French
Teaching major in foreign languages in the area of French for the single subject teaching credential.

## French Major

With the A.B. Degree in Liberal Arts and Sciences
All candidates for a degree in liberal arts and sciences must complete the graduation requirements listed on page 60 of this catalog.
minor in another field to be approved by in French.
Preparation for the major. French 1, 2, 3, 4, 10, and 11. (20 units.) Recommended: History 4A-4B.
Major. A minimum of 24 upper division units in French to include French 101A-101B, $102 \mathrm{~A}-102 \mathrm{~B}$, and 12 units in the period literature of the language.

## French Minor

The minor in French consists of a minimum of 15 units in French, six units of which must be in upper division courses.

## French

For the Single Subject Teaching Credential in Foreign Languages
All candidates for a teaching credential must complete all requirements for the applicable specialization as outlined in the section of this catalog on the School of Education.
This major may be used by students in Teacher Education an an undergraduate major for the A.B. degree in liberal arts and sciences.

The requirements for the foreign languages major in the area of French for the single subject teaching credential are being revised. For further information consult the department.

## High School Equivalents

High school foreign language courses may be used for purposes of placement in college courses and may be counted toward meeting the foreign language requirement in various majors. These high school courses will not count as college credit toward graduation. The first two years of high school French may be counted as the equivalent of French 1;
three years the equivalent of French 2; and four years the equivalent of French 3. The last year-course taken by a student in the high school language sequence may be repeated in college for graduation credit, not to exceed four units of repeated foreign language work. Lower Division Courses
Native speakers of French will not receive credit for taking lower division courses except with advance approval from the department.
All upper division courses in French are taught in French unless otherwise noted.

1. Elementary (4) I, II

Four lectures and one hour of laboratory
Pronunciation, oral practice, readings on French culture and civilization, essentials of grammar. Not open to students who have completed three years of high school French.
2. Elementary (4) I, II

Four lectures and one hour of laboratory
Prerequisite: French 1 or two years of high school French.
continuation of French 1. Not open to students who have completed four years of high school French.
3. Intermediate (4) I, II

Prerequisite: French 2 or three years of high school French
A practical application of the fundamental principles of grammar. Reading in French of inden practice.
4. Intermediate (4) I, II

Prerequisite: French 3 or four years of high school French.
Continuation of French 3; outside reading with oral and written reports.
10. Conversation (2) I, II

Prerequisite: French 2 or three years of high school French
Practice in the spoken language; practical vocabulary, conversation on assigned topics; simple dialogues and plays.
11. Conversation (2) I, II

Prerequisite: French 10 or French 3, or four years of high school French
99. Experimental Topics (2-4)

Refer to the catalog statement on Experimental Topics on page 106. Limit of nine units units may be applicable to general education rer thirements. units may be applicable to general education re fuirements.

101A-101B. Advanced Grammar and Composition (3-3)
Prerequisites: French 4 and 11 .
Advanced grammar and stylistics; intensive writing practice; reports based on outside
reading. reading
102A-102B. Survey of French Literature (3-3)
Prerequisites: French 4 and Prerequisites: French 4 and 11.
the present.
the present.
105. Nineteenth Century French Theatre (3)

Prerequisites: French 4 and 11.
Intensive study of nineteenth century plays.
107A-107B. Eighteenth Century French Literature (3-3)
Prerequisites: French 4 and 11
Prerequisites: French 4 and 11 .
and novel of the period. Outside reate, Rousseau, the Encyclopedistes, as well as the theatre 110A-110B. Nine period. Outside reading and report
110A-110B. Nineteenth Century French Novel (3-3) Prerequisites: French 4 and 11.
111A-111B. Seventeenth .
111A-111B. Seventeenth Century French Literature (3-3) Prerequisites: French 4 and II.
Semester i: Major seventeenth century dramatists with emphasis on Corneille, Molière and Racine. Semester II: Major works of seventeenth century poets and prose writers.
112A-112B. French Poetry (3-3)
The French poetic tradition and its development from the Middle Ages to the present
114. Twentieth Century French Novel (3)

Prerequisites: French 4 and 11.
Major novelists of twentieth century France.
115. Twentieth Century French Theatre (3)

Prerequisites: French 4 and 11
Major dramatists of twentieth century France.
117. Renaissance and Baroque Literature (3)

Prerequisites: French 4 and 11
Readings from the major writers of the Renaissance and Baroque periods
120. Explication de Textes (3)

Arerequisites: French 4 and 11 .introduction approach to the detailed study of literature Demonstrations by instructor and students.
140. French Civilization (3)

Prerequisites: French 4 and 11
French culture from the earliest times to the Enlightenment, with emphasis on the people their social and political institutions, their arts and letters. Not open to students with credit in Humanities 42 or 142.
141. French Civilization (3)

Prerequisites: French 4 and 11
French culture from the Enlightenment to the present. Continuation of French 140. Not open to students with credit in Humanities 43 or 143.
French literary masterpieces from the Song of Roland to the present. Taught in English. (Formerly numbered Comparative Literature 140A-140B.)
148. Introduction to French Philology (3)

Prerequisites: French 101A-101B.
The elements of French phonology, morphology, and semantics, illustrated with textual extracts.
150. Advanced Phonetics and Diction (3) Irregular

Prerequisites: French 4 and 11.
For students and teachers of French wishing to perfect their pronunciation and diction. Correct formation of French sounds in isolation and combination. Class exercises, individual drill, and use of special discs and tape recording.
166. Honors Course (1-3) I, II

Refer to Honors Program.
184. Topics in French Literature (3) Prerequisites: French 4 and 11
Study of movement, genre, theme, myth or individual author. May be repeated with new content. Maximum credit six units applicable on a major in French. Conducted in French or English. See class schedule.
199. Special Study (1-3) I, II

Individual study. Maximum credit six units. This course is intended only for students who are currently enrolled in or who already have credit for all upper division courses in French available in any given semester.

Prerequisite: Consent of staff.

## Graduate Courses

201. History of the French Language (3)

Prequisite. Eighteen upper division units in French.
The history of the French language from the beginnings through the sixteenth century. 202. Medieval French Literature (3)

Prerequisites: Eighteen upper division units in French and French 201.
Readings in the principal movements, trends and genres of medieval French literature from the beginnings through François Villon.
203. Literature of the French Renaissance (3)

Prerequisites: Eighteen upper division units in French and French 201.
Literature and thought of the 16th century as represented in the works of Rabelais, Montaigne, Ronsard, Du Bellay, etc.
230. Methods of Literary Criticism (3)

Prerequisite: Eighteen upper division units in French.
Theory and practice of various traditional and modern critical approaches to specific literary texts.
250. Seminar in Seventeenth Century French Literature (3)

Prerequisite: Eighteen upper division units in French
Directed research in the works of a representative author, genre or movement. Maximum credit six units applicable on a master's degree.
260. Seminar in Eighteenth Century French Literature (3)

Prerequisite: Eighteen upper division units in French.
Directed research in the works of a representative author, genre or movement. Maximum credit six units applicable on a master's degree.
270. Seminar in Nineteenth Century French Literature (3)

Prerequisite: Eighteen upper division units in French
Directed research in the works of a representative author, genre or movement. Maximum credit six units applicable on a master's degree.
280. Seminar in Twentieth Century French Literature (3)

Prerequisite: Eighteen units of upper division French.
Prerequisite: Eighteen units of upper division French. credit six units applicable on a master's degree.
284. Topics in French Literature (3)

Prerequisite: Eighteen upper division units in French
Study of movement, genre, theme, myth or individual author. May be repeated with new content. Maximum credit six units applicable on a master's degree
290. Research and Bibliography (3)
rerequisite: Eighteen upper division units in French
Purposes and methods of research in the fields of the language and literature, the ollection and collation of bibliographic material, and the proper presentation of the result of such investigation.
298. Special Study (1-3) Cr/NC

Prerequisites: Eighteen upper division units in French and consent of staff; to be arranged with department chairman and instructor
Individual study. Maximum credit three units applicable on a master's degree
299. Thesis (3) Cr/NC

Prerequisites: An officially appointed thesis committee and advancement to candidacy. Preparation of a project or thesis for the master's degree.


## General College

Students interested in enrolling in General College 99 or 199 should contact the faculty adviser of the on-campus association sponsoring the activity. These courses may not be used to satisfy course requirements for the major or minor. No combination of General College 99 and 199 in excess of six units may be counted for credit on a bachelor's degree program. 99. Selected Activities ( $1-3$ ) $\mathrm{Cr} / \mathrm{NC}$

Supervised experience in college or community activities. Prerequisites: Twelve units of ollege credit and a minimum grade point average of 2.0 . No combination of General College 99 and General College 199 in excess of six units may be counted for credit in a bachelor's degree program.
199. Selected Activities (1-3) $\mathrm{Cr} / \mathrm{NC}$

Supervised experience in college and/or community activities. Prerequisite: A minimum grade point average of 2.0 . No combination of General College 99 and General College 199 in excess of six units may be counted for credit in a bachelor's degree program.

## Geography <br> In the College of Arts and Letters

Faculty
Emeritus: Molitor, Post, Richardson, Storm
Professors: Eidemiller, Finch, Greenwood, Keen, Kiewiet de Jonge, O'Brien, Taylor, Wright, Yahr
Associate Professors: Blick (Chairman), Heiges, Johnson, Pryde, Quastler, Stutz Assistant Professors: Colombo, Ford, Fredrich, Griffin, McArthur

## Offered by the Department

Master of Arts degree in geography.
Major in geography with the A.B. degree in liberal arts and sciences
Minor in geography
Single subject teaching credential in social sciences in the area of geography.

## Geography Major

With the A.B. Degree in Liberal Arts and Sciences
All candidates for a degree in liberal arts and sciences must complete graduation requirements listed on page 60 of this catalog.
Students majoring in geography must complete a minor in another field to be approved by the major adviser.
Preparation for the major. Geography 1 and 2. ( 6 units.) Four to six units selected from Geography 3, 4, 5, 7 and 54 are strongly recommended.
Major. A minimum of 24 upper division units in geography to include three units from courses numbered $100-109$; three units from courses numbered either $100-111,150-159$, or 170-179; three additional units from either of the above groups; three units from courses numbered 119-139; three units from 180, 182, 185, 187; three units from 181A or 183; three units from 198 taken from three different instructors; and three units of electives.

## Geography Minor

The minor in geography consists of a minimum of 15 units in geography, nine units of which must be in upper division courses.

## Geography

For the Single Subject Teaching Credential in Social Sciences
All candidates for a teaching credential must complete all requirements for the applicable All candidates for a teaching credential must complete on the School of Education.
specialization as outlined in may be used by students in Teacher Education as an undergraduate major for This iogree in liberal arts and sciences
the A.B. degree ints for the single subject teaching credential in social sciences which The requirements for the shap are being revised. For further information consult the includes department.

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Lower Division Courses

1. Introduction to Physical Geography (3) I, II

The nature of maps, weather and climates of the world; natural vegetation; land forms and their associated soils, with reference to their climatic relationships; the seas and their coasts Related field observations.
2. Introduction to Cultural Geography (3) I, II

Introduction to cultural geography, covering the elements of culture, such as technology, race, language, religion, political organization, methods of livelihood, settlement patterns and populat and the regional distribution of these elements over the earth. A maximum of six units will be allowed for Geography 2 and 112A or 112B
3. Introduction to Meteorology (3) I, II

The composition, structure, and circulation of the atmosphere, including elementary theory of storms and other weather disturbances. May be followed by, or taken with Geography 4.
4. Introduction to Meteorology Laboratory (1) I, II

Three hours of laboratory
Prerequisite: Credit or concurrent registration in Geography 3.
Theory of meteorological instruments and observations. Practical exercise in surface and upper air observations, weather codes, and elementary weather map analysis
5. Physical Geography Laboratory (1) I, II

Three hours of laboratory.
Prerequisite: Credit or concurrent registration in Geography 1.
Practical exercise and observation in map analysis, weather elements, climatic regions, and the earth's landform features. Designed to supplement Geography 1.
7. Man and the Environmental Problem (3) I, II

Man's impact upon and interaction with the natural environment, including suggested alternatives to existing abuses.
18. Basic Map and Aerial Photograph Reading (3)

Two lectures and three hours of laboratory
The nature and use of maps and aerial photographs in geography.
54. Urban Geography (3) I, II

Prerequisite: Geography 1 or 2
The principles and concepts of urban geography, the origin and development of cities, urbanization, and urban problems. Not open to students with credit in Geography 154.
99. Experimental Topics (2-4)

Refer to the catalog statement on Experimental Topics on page 106. Limit of nine units pplicable to a bachelor's degree in courses under this number of which no more than three units may be applicable to general education requirements.

Upper Division Courses

## 100A. Physical Climatology (3) I

rerequisite: Geography 3.
Effects of latitude, altitude, mountains, ocean currents, wind systems, and various surfaces on the distribution of solar radiation, temperature, precipitation, and other climatic elements. Statistical reduction and interpretation of climatic data.
100B. Regional Climatology (3) II
Prerequisite: Geography 3
The causes of climatic types as they occur throughout the world. Principles of several limatic classifications.
101. Climatic Physiography (3)

Prerequisites: Geography 1; and Geology 4, or Geology 2 and 3, or Geology 2 and
Geography 5. The origin.
The origin and morphology of landforms with emphasis on the external forces.
102. Structural Physiography (3)

Prerequisites: Geography 1; and Geology 4, or Geology 2 and 3, or Geology 2 and
Geography 5. Origin 5.
Origin and morphology of landforms with emphasis on internal forces
103. Fluvial and Eolian Physiography (3)

Prerequisites: Geography 1; and Geology 4, or Geology 2 and 3, or Geology 2 and
Geography 5. eography 5.
Flowing wat
Flowing water and the wind as agents in shaping the land. Transportation of material by water and air, drainage basin characteristics, river channel shape and dimension, sand dunes,
and loess.
104. Coastal and Submarine Physiography (3)

Prerequisites: Geography 1; and Geology 4, or Geology 2 and 3, or Geology 2 and
Geography 5. Geography 5.
Marine physiographic processes and their effects on developing the landforms of coasts, continental shelves, and ocean floors.
105. Geography of Soils (3) II

Prerequisite: Geography 1
The nature, properties and distribution of soils and their relationships to the influence of climates, landforms, and human activity.

## 106. Geography of Soils Laboratory (1)

Three hours of laboratory.
Prerequisite: Credit or concurrent registration in Geography 105
Theories of soil genesis, edaphology and structure related to empirical phenomena through laboratory experimentation and observation. Best suited to concurrent enrollment in
107. Geography of Natural Vegetation (3) I, II

Prerequisite: Geography 1
The natural vegration associations of the world, their distribution, classification and development, including relationship to human activities
110. Historical Geography (3) I, II

Transformation of the natural and cultural landscape with emphasis on the utilization and significance of resources. Exploration, migration, and settlement in relation to geographic phenomena.
111. Principles of Geographical Analysis (3)

Prerequisites: Geography 1 and 2 .
Prerequisites: Geography 1 and 2 .
Major concepts and techniques of the field of geography
112A-112B. Culture Worlds (3-3)
The evolution, distinguishing cultural characteristics, and physical features of the major cultural regions of the world, with emphasis on the role man has played in the alteration of the natural landscape. Maximum credit of six units will be allowed for Geography 2 and 112A or 112B.
119. Geography of San Diego County (3)

Saturday field trips to be arranged
Prerequisites: Geography 1 and 2.
Analysis of the physical and cultural geographic aspects of San Diego County. Completion of Geography 100, 101, and 105 will be helpful to students enrolling in this course. (Formerly numbered Geography 184.)
120. California (3) I, II

Prerequisite: Geography 1 or 2.
Systematic and regional analysis of the topography, climate, natural vegetation, and their relationships with the past and present activities of man and his use of the land; field trip. Offered in summer with a 10 -day tour.
121. United States (3) I, II

Prerequisite: Geography 1 or 2.
The natural regions of the United States, their formation and economic and historical development.
122. Canada and Alaska (3) II

Prerequisite: Geography 1 or 2
The physical and historical bases of Canadian and Alaskan regionalism; the economic and strategic importance of these two areas
123. Middle America (3) I, II

The land and peoples of Mexico, Central America, and the islands of the Caribbean; a survey of the resources, economies, and trade of the region.
124. South America (3) I, II
24. South America (3) 1, II
Prerequisite: Geography 1 or 2.

The physical regions and human geography of South America, including the history of colonization and the exploitation of resources.
125. North Africa and the Near Fast (3) I, II

Prerequisite: Geography 1 or 2
The geographic bases for the political heritage, economies, and peoples of North Africa, ncluding the Sahara and the Near East.

## 26. Europe (3) I, II

Prerequisite: Geography 1 or 2
Systematic analysis of the geographic bases of modern European life. Regiona investigation of countries of Europe except the Soviet Union.
127. Soviet Union (3) I, II

Prerequisite: Geography 1 or 2
Natural resources, agricultural production, industrial growth, and transportation.
129. Oceania (3)

Prerequisite: Geography 1 or 2
The physical geography, peoples, economies, and trade of Oceania, Australia, and New Zealand.
130. Central and Southern Africa (3)

Prerequisite: Geography 1 or 2.
A regional geography of Africa south of the Sahara; the physical geographic base for the peoples and their economic activities.
131. Eastern Asia (3) I

Prerequisite: Geography 1 or 2
The geographic bases for the political heritage, economies, and peoples of Eastern Asia 133. Southeastern Asia (3)

Prerequisite: Geography 1 or 2
The geographic bases for the political heritage, economies, and peoples of Southeastern Asia
134. Southern Asia (3)

Prerequisite: Geography 1 or 2
The geographic bases for the political heritage, economies, and peoples of Southern Asia 150. Political Geography (3) I, II

Geography as it relates to the strength of nations and international relations.
151. Economic Geography: Primary Production (3) I

Prerequisite: Geography 1 or 2.
The geography of agricultural production and the extractive industries in relation to world commerce.
152. Industrial Geography (3) II

Prerequisite: Geography 1 or 2
Principles of industrial location, with emphasis on the distribution of the world's major manufacturing regions.
153. Location Analysis and Geographic Theory (3)

Prerequisite: Geography 111.
Spatial arrangement and interrelationships of resources, production, exchange and consumption of goods and services, and a study of location theory in economic geography. 154. Geography of Cities (3) I, II

Prerequisite: Geography 2.
Survey of the location, function and spread of cities; the spatial and functional arrangement of activities in cities, leading to an analysis of current urban problems: sprawl, city decline, metropolitan transportation. Not open to students with credit in Geography 54
155. Urban Location and Settlement Geography (3)

Prerequisite: Geography 54 or 154.
Analysis of urban and other agglomerated settlements in terms of their spatial arrangement, principal functions, economic base, and supporting areas.
Prerequisite. Gpatial Structure of Cities (3)
Prerequisite: Geography 54 or 154.
Geographic principles and characteristics concerning the internal structure and Field reconnaissance in the local urban "lincussions of internal problems of our cities today.
157. Quantitative Metheds local urban laboratory

Prerequisite: Geography of Urban Analysis (3)
Spatial models of urban activities and and 185.
computer applications in urban analysis, use, population distribution and allocation, and graphing.
158. Transportation Geography (3)

Prerequisite: Geography 1 or 2 .
The spatial distribution of transportation networks and commodity movement and their relationship to the distribution of economic activity.
159. Urban Transportation Geography (3)

Prerequisite: Geography 54, 154, or 158.
Urban transportation networks and their effects, past, present and future, on the economy and physical structure of the urban region.
160. Advanced Transportation Geography (3)

Prerequisite: Geography 158 or 159 .
process, models in spatial analysis. process, models in spatial analysi
166. Honors Course (1-3) I, II
170. Conservation of Environm
170. Conservation of Environmental Quality (3) I, II

Prerequisite: Geography 1 or 2.
Quality of man's habitat in a changing human and natural environment; water, air and soil pollution, urban crowding, disappearance of open space, and decreasing opportunities for 171. Conservation
171. Conservation of Natural Resources (3) I, II

Prerequisite: Geography 1 or 2
Nature and extent of mineral, soil, water, forest, and wildlife resources and their of world resources. Conservertionasis on the United States against a general background 173.
173. Geography as Human Ecology (3)

Human ecology related to resource geography.
174. Water Resources (3) II

Prerequisites: Geography 1 or 2 ; and 7,170 or 171
Occurrence and utilization of water resources and the problems of water resource development.
175. Geography of Recreational Land Use (3)

Prerequisite: Geography 7, 170 or 171.
Importance of location and environment in the use, management, and quality of recreation areas.
176. Geography of Marine Resources (3)

Prerequisite: Geography 1 or 2.
Economic geography of use of marine biotic and mineral resources
180. Field Geography (3)

Prerequisites: Senior or graduate standing and the completion of at least 12 units in geography, including Geography 1 and 2, and consent of instructor.
Directed fieldwork in physical and cultural geography.
181A. Maps and Graphic Methods (3) I, II
Two lectures and three hours of laboratory.
Prerequisite: Geography 1 or 2.
The art and science of creating graphs and maps as media for describing and analyzing geographic phenomena. Laboratory instruction and practice in cartographic techniques with emphasis on presenting quantitative data.
181B. Advanced Cartography (3)
Two lectures and three hours of laboratory.
Advanced laboratory instruction
Advanced laboratory instruction and practice in cartographic techniques.
181C. Automated Cartography (3)
of laboratory.
Computerized methods in presenting for comprehension spatially variable information of quantitative nature; examination of existing automated mapping systems.
182. Use and Interpretation of Aerial Photographs (3) II
182. Use and Interpretation of Aerial Photogry
Two lectures and three hours of laboratory

Prerequisites: Geography 1 and consent of instructor.
Stereoscopic interpretation and cartographic representation of landforms, vegetation, and and use. Emphasis on practical exercises.
183. Map Investigation (3) I

Two lectures and three hours of laboratory.
Prerequisite: Geography 1 or 2.
Use of the map as an analytical tool in geography. History of developments in cartography

## 230 / Geography

184. Field Geography of the Arid Southwestern United States (3)

Prerequisites: Geography 1 and 2 .
An orientation to the Southwestern United States; emphasis on field observation and interpretation of the cultural and physical landscape. A minimum of fifteen days will be spent in the field.
185. Quantitative Methods in Geographic Research (3) I, II

Prerequisites: Two geography courses including one in upper division; Mathematics 18 or a higher numbered course, and Mathematics 19.
Use of quantitative methods in geographic research.
187. Remote Sensing of the Environment (3)

Two lectures and three hours of laboratory.
Prerequisites: Geography 2, 182, and consent of instructor. Emphasis on multispectral
Multiband spectral reconnaissance of the environment. Empher photography, infrared, microwave scanning systems and multifrequency radar systems, and their uses in the study of cultural and biophysical phenomena.
188. Advanced Remote Sensing of the Environment (3)

Prerequisites: Geography 187 and consent of instructor.
Current research in geographic remote sensing and related fields. Applications of remote sensing in the study of man's cultural and biophysical environment. Practice in planning, design, execution and interpretation of remote sensing studies.
190. Selected Studies in Geography (3)

Prerequisite: Six units in geography.
Critical analysis of problems within a specific field of the discipline. May be repeated with new content. Maximum credit six units.
196. Geographic Internship (3) I, II

Students will be assigned to various government agencies and industry and will work under the joint supervision of agency heads and the course instructor. Maximum credit six units. Three units may be applied to major in geography.
197. Investigation and Report (3) I, II

Prerequisites: Senior standing as a geography major or as a social science major with a oncentration in geography, and departmental consent.
Analysis of special topics in geography; independent study and investigation; guidance in the collection, organization, and presentation of geographic data.
198. Directed Readings in Geographic Literature (1) I, II

Prerequisites: Credit or concurrent registration in the subject matter area in which the readings are to be undertaken, and consent of the instructor.
Individually directed readings in geographic literature. May be repeated for a maximum fine units, taken each time from a diferent instructor
199. Special Study (1-3) I, II
ndividual study. Maximum credit six units.
Prerequisites: At least 15 units of A or B work in geography and consent of instructor.

## Graduate Courses

200A. Seminar in Advanced Physical Climatology (3)
Prerequisites: Geography 100A and approval of departmental graduate advisory
Characteristics of climatic elements for a selected area of climatic type, and a statistical analysis of the elements studied. Maximum credit six units applicable on a master's degree.
200B. Seminar in Advanced Regional Climatology (3)
Prerequisites: Geography 100B and approval of departmental graduate advisory
Selected regions. An interpretation of regional variations of world climatic patterns. Maximum credit six units applicable on a master's degree.
205. Geographic Research and Techniques of Presentation (3)

Prerequisite: Approval of departmental graduate advisory committee.
Seminar in the use of research materials in the different aspects of geography and the effective presentation of research findings in written and oral form. (Formerly numbered
210. History of Geography (3)

Prerequisite: Approval of graduate adviser
The evolution of concepts concerning the nature, scope, and methodology of geography. 220. Seminar in Regional Geography (3)

Prerequisite: Approval of departmental graduate advisory committee.
Intensive study of a major world region, such as South America, Southeast Asia, or Northern Europe. Maximum credit six units applicable on a master's degree.
298. Special Study (1-3) Cr/NC

Prerequisite: Consent of staff; to be arranged with department chairman and instructor. Individual study. Maximum credit six units.
299. Thesis (3) $\mathrm{Cr} / \mathrm{NC}$

Prerequisites: An officially appointed thesis committee and advancement to candidacy. Preparation of a project or thesis for the master's degree.

## Geology

In the College of Sciences
Faculty
Emeritus: Brooks Grofessors: Berry, Gastil, Krummenacher, McEuen, Peterson (Chairman), Roberts, Professors: Ber
Thomas, Threet
Associate Professors: Frederiksen, Kern, Ptacek Assistant Professors: Abbott, Bertine, Ganus, Walawender
Offered by the Department
Master of Science degree in geology
Major in geology with the B.S. degree in applied arts and sciences. Minor in geology.

## Geology Major

With the B.S. Degree in Applied Arts and Sciences
All candidates for a degree in applied arts and sciences must complete the graduation requirements listed on page 60 of this catalog.
The major consists of basic requirements in the lower and upper division for all students plus the requirements in one of the following options: (a) General Geology, (b)

## Basic Requirements for all Students

Preparation for the major. Geology 2 and 3, or 4;5,21,24; Chemistry 1A-1B; and Biology 1 and 2. (29 units.) Recommended: a foreign language and a course in mechanical drawing if not completed in high school.

Major. A minimum of 36 upper division units in approved courses to include Geology 100, 108A-108B, 198A-198B. (14 units.) Other courses may be substituted for 108B and 198A-198B in the Geophysics option and for 198A-198B in the Engineering Geology option with the approval of the department.

## Options

In addition to the basic requirements, the student must complete the requirements in one of the following options:

## (a) General Geology

Additional preparation for the major. Geology 30 (or Geology 130 may be taken in the major); Mathematics 19 and 50 ; Physics $2 \mathrm{~A}-2 \mathrm{~B}$ and $3 \mathrm{~A}-3 \mathrm{~B}$, or Physics $4 \mathrm{~A}-4 \mathrm{~B}-4 \mathrm{C}$ Recommended: Physics 4A-4B-4C; Mathematics 7,51,52; Chemistry 109A-109B or 110A-110B Major (continued). Geology 106, 107, 124, 125, 130 (if Geology 30 not taken under preparation for the major), and at least one of the following: Geology 102, 104, 105, 120, 121 $126,140,150,151$, or 160 . Electives approved by the departmental adviser to complete 36 upper division units.

## (b) Paleontology

Additional preparation for the major. Biology 15; Mathematics 50, or 21 and 22 alternative of 21 and 22 should not be selected by students planning academic work beyond Major (continued). Geology 106, 107, 116 or 173, 126, and three courses from the Major (continued). Geology 106, 107, 116 or 173, 126,
following: Biology 110, 113; Botany 172; Zoology 106, 112, 160 .

## (c) Geophysics

Additional preparation for the major. Mathematics 7, 50, 51, 52; Physics 4A-4B-4C, 73. ( 30 units.) Recommended: Engineering 30

Major (continued). Geology 110, 112, 120, 121, 130; Mathematics 119; Physics 100B, 116;
either Mathematics 170 and Physics 156, or Physics 100A and 114. Recommended: either Mathematic
Engineering 128A.

## (d) Geochemistry

Additional preparation for the major. Chemistry 5 , and 11 or 12 ; Physics $4 \mathrm{~A}-4 \mathrm{~B}-4 \mathrm{C}$; Mathematics 50,51,52. (33 units.) Recommended: Mathematics 7.
Major (continued). Geology 130; Chemistry 110A-110B; either Geology 106 and 126, or Geology 124 and 125; six units of electives approved by the departmental adviser. Recommended: Geology 131.

## (e) Engineering Geology

Additional preparation for the major. Geology 30; Engineering 1 or 20, 30, 50A; Mathematics $50,51,52$; Physics $4 \mathrm{~A}-4 \mathrm{~B}-4 \mathrm{C}$ or 4 C and 4 E . ( 35 units.)
Major (continued). Geology 110 or 112, 126, 150; Engineering 116, 122, 123A, 128A; either Engineering 123B or Geology 151.
Because of the preparation in mathematics, physics, and geology called for in this emphasis, the School of Engineering will not require of majors in this option the prerequisites specified for Engineering 116, 122, and 123A.

Marine Geology
An option in marine geology is not offered. Interested persons should study marine geophysics, marine geochemistry, paleontology, engineering geology, or general geology.

## Geology Minor

The minor in geology consists of a minimum of 15 units in geology, six of which must be in upper division courses.
All minors should include Geology 2 and 3 , or 4 ; and 5. ( 8 units.) Preparation for teaching or naturalist work should include at least two of the following: Geology 21, 24, 104; and at least two from Geology 100, 102, 106, 108A, 126, 140. Those interested in environmental studies should take at least two of the following: Geology 21, 24, 30, 104; and at least two from Geology 100, 105, 130, 140, 150. Those interested in oceanography should take at of the following: Geology 21, 24, 30, 104; and at least two
2. General Geology (3) I, II

Earth materials and processes, the development of landforms, and a brief consideration of the history of the earth. Open to all students except those with previous credit in geology. 3. General Geology Laboratory (1) I, II

Three hours of laboratory.
Prerequisite: Credit or concurrent registration in Geology 2
Recognition of common earth features and materials with experience in both field and mand augment Geology 2. Not open to students with previous laboratory credit in geology.
4. Physical Geology (4) I, II

Three lectur Prerequisite. High school chemistry or physics, or credit or concurrent registration in college chemistry or physics. The composition, origin, and distribuses. Not open to students with credit for Geology 2. (Formerly numbered Geology 1A.)
5. Historical Geology (4) I, II
5. Three lectures and three hours of laboratory. Arrangement for field study during the semester.
semester.
Prerequisite: Geology 2 and 3, or 4.
Theories of earth origin, and the evolutionary history of the earth as traced through rock and fossil records. Consideration of the Paleontologic Sequence. (Formerly numbered Geology 1B.)
21. Mineralogy (4) I, II

Two lectures and six hours of laboratory
Prerequisites: Credit or Prequisites: Credit or con credit or concurrent registration in college chemistry and trigonometry
Practice in the determination of the common minerals; their geologic environment, utilization and economic significance.
24. Petrology (3) I, II

Two lectures and three hours of laboratory
Prerequisites: Geology 2 and 3 , or 4 ; and credit or concurrent registration in Geology 21.
The origin, occurrence, identification, and classification of rocks in hand specimen.
30. Introduction to Geophysies (3) II

Prerequisites: Geology 2 and 3, or 4; elementary algebra and plane geometry.
Physics of the earth and its application to mineral exploration. Emphasis on case histories. Not open to students with credit in Geology 110 or 112
53. General Geology for Engineers (1) I, II

One three-hour laboratory or field project per week.
Earth materials, geologic processes, and methods of geologic interpretation of particular concern to the engineer. Open only to students majoring in engineering. Not open to
students with credit in Geology 3 . students with credit in Geology 3 .
99. Experimental Topics (2-4)

Refer to the catalog statement on Experimental Topics on page 106. Limit of nine units applicable to a bachelor's degree in courses under this number of which no more than three
units may be applicable to general education requirements.

## Upper Division Courses

100. Structural Geology (3) I, II

Two lectures and three hours of laboratory per week with occasional field trips. Prerequisites: Geology 5 and trigonometry
Structural features of the earth, both deformational and primary. Mechanical principles, causes of folding and faulting, graphic solutions and analyses
102. Geology of North America (3) I

Prerequisite: Geology 5.
A regional analysis of North American geology, its structural, stratigraphic, and tectonic patterns and hypotheses concerning their origin and evolution.
104. Geomorphology (3) I

Prerequisite: Geology 5 .
(Formerly numbered Geology 14)
105. Photogeology (3) II

Two lectures and three hours of laboratory.
Prerequisites: Geology 100 and 104
Geologic interpretation of aerial photographs, elementary stereoscopy and stereometry applied to structural and stratigraphic problems, and compilation of geologic maps from

## 106. Pal

106. Paleontology (4) I, II

Two lectures and six hours of laboratory.
Prerequisites: Geology 5 and Biology 1 and 2
nd geologic significhocs, exemplified by a study of the morphology, classification, habit, Vertebrate Palontance or
Vertebrate Paleontology, see Zoology 160.
107. Stratigraphy (3) II

Two lectures and three hours of laboratory.
Prerequisites: Geology 5 and
Prerequisites: Geology 5 and 24.
Stratigraphic principles and practices. Consideration of the North American stratigraphic
record. recor
108A. Field Geology (4) I, II
One lecture and three hours of laboratory, and twelve Saturday field sessions in the local area.

Prerequisites: Geology 100 and credit or concurrent registration in Geology 24.
108B. Field Geology (4)
Prerequisite: Geology $108 A$
Geologic investigation of an assigned area with preparation of an individual report and a
geologic map.
110. Petroleum Geophysies (3) I

Two lectures and three hours of laboratory. Occasional field trips
Prerequisites: Geology 100 , Mathematics 52 , Physics $4 \mathrm{~A}-4 \mathrm{~B}-4 \mathrm{C}$.
Airborne
exploration.
Aurface, and bore-hole geophysical techniques as presently used in
112. Mining Geophysics (3) II

Two lectures, and three hours of laboratory or occasional field trips
Airborne surface, and bore-hole gematics 52, Physics 4A-4B-4C.
116. Micropaleontology (3) II

One lecture and six hours of laboratory.
Prerequisite: Geology 106.
The morphology, classification and geologic significance of the various microfossils.
118-S. Summer Field Problems (4-6)
Field techniques in the investigation of selected geological problems. This course cannot be substituted for Geology 108B.
119-S. Summer Field Tour (2)
Prerequisite: Consent of instructor
A two-week study of some of the classic geologic localities in the western United States. A camping trip with travel by chartered bus. Localities visited may vary from year to year. May be repeated. Maximum credit four units.
120. Ore Deposits (3) I
rerequisites: Credit or concurrent registration in Geology 24 and 100
Geologic relations, origin, distribution, and economics of metallic and nonmetallic mineral deposits.
121. Petroleum Geology (3) II
requisites: Credit or concurrent registration in Geology 24 and 100
Geologic occurren of petroleum and the application of geologic principles in exploration and production.
124. Optical Mineralogy (3) I

Two lectures and three hours of laboratory
Prerequisite: Geology 21.
Theory and use of the polarizing microscope for determining optical properties of minerals as an aid to their identification
125. Petrography (4) II

Two lectures and six hours of laboratory.
Prerequisite: Geology 124.
A study of rocks with the polarizing microscope; identification of mineral constituents; interpretation of textures; classification of rocks; problems of genesis.
126. Sedimentology (3) I

Two lectures and three hours of laboratory.
Prerequisites: Geology 5 and 24
Origin, description, and classification of sedimentary rocks and structures
130. Geochemistry (3) I, II

Two lectures and three hours of laboratory.
Two lectures and three hours of astry 1B; Mathematics or 50.22 or 50
Prerequisites: Geology 24; Chemistry in; Masic chemical principles to geologic phenomena and environments, including applications to geologic exploration problems.
131. Advanced Geochemistry (3) II

Two lectures and three hours of laboratory
Prerequisite: Geology 130.
Application of physical-chemical methods and principles to the solution of geologic problems. Emphasis on genesis of ore deposits and pollution geochemistry.
140. Marine Geology (3) I

Two lectures and three hours of discussion, demonstration, and field work
Prerequisites: Geology 5, and either Geology 24, 102, 104, or 106
The morth beneath the sea.
150. Engineering Geology (3) I

Two lectures and severa
Prerequisite: Geology 108A. Case histories ence engineering projects.
151. Groundwater Geology (3) II
151. Groundwater Geology hours of laboratory.

Two lectures and
Prerequisite: Geology 24 .
160. X-Ray Diffraction (2) II

One lecture and three hours of laboratory
Prerequisites: Chemistry $1 \mathrm{~A}-1 \mathrm{~B}$; Mathematics 50 ; Physics $2 \mathrm{~A}-2 \mathrm{~B}$ and $3 \mathrm{~A}-3 \mathrm{~B}$, or $4 \mathrm{~A}-4 \mathrm{~B}-4 \mathrm{C}$ and credit or concurrent registration in either Chemistry 109A or 110A, Engineering 25, Geology 21, or Physics 102A.
Theory and application of x-ray diffraction to the study of materials.
166. Honors Course (1-3) I, II

Refer to Honors Program.
173. Advanced Palynology (3) II

One lecture and six hours of laboratory.
Prerequisite: Botany 172.
Investigating problems in anthropology, botany and geology using spores, pollen grains and microplankton. (Formerly numbered Geology 221.)
196. Advanced Topics in Geology (1-3) I, II

Prerequisite: Consent of instructor.
Selected topics in geology and related earth sciences. May be repeated with new content. Maximum credit six units.
198A. Senior Thesis (1) I, II
Prerequisite: Credit or concurrent registration in Geology 108A.
Selection and preliminary investigation of an individual research project which will lead to a written thesis in Geology 198B.
198B. Senior Thesis (2) I, II
Prerequisites: Geology 198A and credit or concurrent registration in Geology 108B
Individual research project and written thesis.
199. Special Study (1-3) I, II

Prerequisites: Accer in field, library, laboratory, or museum work. Maximum credit four units Prerequisites: Acceptable grade average in at least 12 upper division units within the major and consent of staff.

## Graduate Courses

200. Seminar (1-3)

Prerequisite: Consent of instructor
An intensive study in advanced geology, topic to be announced in the class schedule Maximum credit six units applicable on a master's degree
208. Graduate Field Geology (3)

One lecture and nine Saturday field sessions.
Prerequisite: Geology 108B.
specialized aspects of field mapping
209. Igneous Petrology (3)

Two lectures and three hours of laboratory
Prerequisite: Geology 125.
experimental methods. 211. Metamorphic

Two lectures and three hours of laboratory
Prerequisite: Geology 125.
Investigation of problems in metamorphic petrology using petrography, geochemistry, and experimental methods.
212. Petrology of Carbonates (3)

Two lectures and three hours of laboratory
Prerequisites: Geology 124 and 126
Thin-section and hand-specimen description and classification of carbonate rocks and other cheme sediments. Additional emphasis on recent depositional processes, diagenesis, and geochemistry
220. Biostratigraphy (3)

Two lectures and three hours of laboratory.
Prerequisite: Geology 107.
critically reviewed in concepts and practices in stratigraphic and geochronologic synthesis 225. Paleoecology (3)
225. Paleoecology (3)

Two lectures and three hours of laboratory
Prerequisites: Geology 106 and Biology 110 .
environment: interpretation the study of relationships between fossil organisms and their among fossil organisms.
229. Seminar: Advanced Studies in Stratigraphy (3)

Two lectures and three hours of laboratory.
Two lectures and three ho
Prerequisite: Geology 107.
Regional stratigraphic patterns in North America and their historical implications.
235. Petrology of Terrigenous Rocks (3)

Two lectures and three hours of laboratory.
Prerequisites: Geology 124 and 126 . description and classification of sandstones and
Thin-section and hand-specimen don mud-rocks. Additional emphasis on mineralogy, modern depositional processes, environmental interpretation, and paleogeographic reconstruction.
240. Geotectonics (3)

Prerequisite: Geology 100.
A consideration of topics on continental genesis and evolution, orogeny, geosynclinal theory, and a survey of classic geologic provinces.
245. Advanced Structural Geology (3)

Prerequisite: Geology 100.
Topics in advanced structural geology in the light of petrographic, geophysical, and experimental data, combined with classic field observation
250. Seminar: Physical Properties of Earth Materials (3)

Prerequisite: Geology 110 or 112.
Theoretical principles and instrumental techniques used to remotely determine the physical properties of earth materials.
260. Isotope Geology (3)

Two lectures and three hours of laboratory
A survey of isotopic and geochronologic topics with individual projects in isotopic analysis. 270. Pleistocene Geology (3)

Three lectures and field trips. Placiato . Plene lakes and drainage, relation of geology to early man, including field investigations.
geology to early man, including fie

## 280. Sedimentary Geochemistry (3)

Two lectures and three hour
Prerequisite: Geology 130 .
Problems in low temperature
285. Genesis of Ore Deposits (3)

Two lectures and three hours of laboratory
120, 125; and Geology 130 or four units of physical chemistry.
解 of ore deposits.
297. Research (1-3) $\mathrm{Cr} / \mathrm{NC}$

Prerequisite: Consent of the department. Maximum credit six units applicable on a master's degree.
299. Thesis (3) $\mathrm{Cr} / \mathrm{NC}$

Prerequisites: An officially appointed thesis committee and advancement to candidacy Preparation of a thesis for the master's degree.

## German

In the College of Arts and Letters

## Faculty

Emeritus: Walker
Professors: Kozlik (Chairman), Lawson, Paulin, Schaber, Tanaka, Westervelt, Wolf, Wulbern
Associate Professors: Boney, Dunkle
Assistant Professor: Cross
Lecturer: Wolter
Offered by the Department of Germanic and Slavic Languages and Literatures
Master of Arts degree in German.
Major in German with the A.B. degree in liberal arts and sciences
Minor in German.
Minor in German. Teaching

## German Major

With the A.B. Degree in Liberal Arts and Sciences
All candidates for a degree in liberal arts and sciences must complete the graduation requirements listed on page 60 of this catalog.
Students majoring in German must complete a minor in another field to be approved by the departmental adviser in German.
Preparation for the major. German 1, 2, 3, 4, 10, and 11. (20 units.)
Major. A minimum of 24 upper division units in German to include German 101A-101B 102A-102B, and 12 units in the period literature of the language excluding German 144 and 145.

## German Minor

The minor in German consists of a minimum of 15 units in German, six units of which must be in upper division courses.

## German

For the Single Subject Teaching Credential in Foreign Languages
All candidates for a teaching credential must complete all requirements for the applicable specialization as outlined in the section of this catalog on the School of Education.
This major may be used by students in Teacher Education as an undergraduate major for the A.B. degree in liberal arts and sciences
The requirements for the foreign languages major in the area of German for the single subject teaching credential are being revised. For further information consult the department.
Proficiency Examination: Before taking a student teaching assignment in German, the candidate for the credential may be required to pass an oral and written proficiency xamination in the language, administered by the Department of Germanic and Slavi anguages and Literatures. The candidate should consult the chairman of the Department.

## High School Equivalents

High school foreign language courses may be used for purposes of placement in college courses and may be counted toward meeting the foreign language requirement in various majors. These high school courses will not count as college credit toward graduation.
1; three years the equivalent school German may be counted as the equivalent of German last year-course taken by a student in the in college for graduation credit, not to exceed four units of repeated foreign language work Lower Division Courses
Native speakers of German will not receive credit for taking lower division courses in Nerman except with advance approval from the department

1. Elementary (4) I, II

Four lectures and one hour of laboratory
Pronunciation, oral practice, readings on German culture and civilization minimum essentials of grammar. Not open to students who have completed three years of high schoo German.
2. Elementary (4) I, II

Four lectures and one hour of laboratory
Prerequisite: German 1 or two years of high school German
Continuation of German 1. Not open to students who have completed four years of high school German.
3. Intermediate (4) I, II

Prerequisite: German 2 or three years of high school German
cultural Intermateria, short stories, novels or plays; oral practice
4. Intermediate (4) I, II

Prerequisite: German 3 or four years of high school German
Continuation of German 3
7A-7B. Intensive Reading Course in German (2-2
rerequisite: German 2 or three years of high school German
purpose of developing material from the humanities and social sciences selected for the purpose of developing reading skills in German
8A-8B. Scientific Reading (2-2)
Readings taken
Readings taken from the fields of chemistry, physics, medicine, zoology, biology, etc.
10. Conversation (2) I, II

Prerequisite: German 2 or three years of high school German
Practice in the spoken language; practical vocabulary; conversation on assigned topics; imple dialogues and plays.
11. Conversation (2) I, II
rerequisite: German 10 or German 3, or four years of high school German
Continuation of German 10 .
Refer to the catalog statement on Experimental Topics on page 106. Limit of nine units applicable to a bachelor's degree in courses under this number of which no more than three units may be applicable to general education requirements.

Upper Division Courses
101A-101B. Grammar and Composition (3-3)
Prerequisites: German 4 and 11
Prerequisites: German 4 and 1.
102A-102B. Survey of German Literature (3-3)
Prerequisite: German 4
Important movements, authors, and works in German literature from the Middle Ages to he present.
103A-103B. German Literature of the Eighteenth Century (3-3)
Prerequisites: German 4 and 11.
The literature of the German Enlightenment, the "Storm and Stress," the Classical Age. Outside readings and reports.
105A-105B. German Literature of the Nineteenth Century (3-3)
Prerequisites: German 4 and 11.
The literature of German Romanticism, Young Germany, Realism, and Naturalism. Outside readings and reports.
107. German Literature from its Beginning to the Reformation (3)

Prerequisites: German 4 and 11.
Poetry, drama, and prose of the Old High German, Middle High German, and early New High German periods, the early texts to be read in modern German adaptations.
110A-110B. Contemporary German Literature (3-3)
Prerequisites: German 4 and 11.
The main developments in German literature from Neo-Romanticism to the present Outside readings and reports.
111. Contemporary German Drama (3)

Prerequisites: German 4 and 11.
German drama from Hauptmann to the present.
115. Goethe's Faust (3)

Prerequisites: German 4 and 11.
Goethe's Faust, Parts 1 and 2: its philosophical content and its position in German and Goethe s Faust, Parts liturd 2: its philosophican, reports.
125A-125B. Advanced Oral and Written Composition (2-2)
Prerequisite: German 101A-101B.
ritten German.
144. Golden Age of German Literature (3)

The Classic and Romantic movements in Germany, with emphasis on the late eighteenth entury: Goethe, Schiller and their contemporaries. Taught in English. (Formerly numbered Comparative Literature 142.)
145. Modern German Literature (3)

Outstanding modern German writers, including Nietzsche, Rilke, Hesse, Kafka, Mann Brecht, and others. Taught in English. (Formerly numbered Comparative Literature 143.)
148. Applied German Linguistics (3)

Prerequisite: German iodern German; integration of modern linguistic theory with the Linguistic study of language classroom.
150. German Phonology (3)

Prerequisites: German 4 and 11
Sounds, intonation, and elocution of German
152. Middle High German (3)

Prerequisite: Twelve upper
The grammatical structure of Middle High German with readings from the period.
166. Honors Course (1-3) I, II
166. Honors Course (1-3) I, I
Refer to Honors Program.
185. Topics in German Literature (3)
185. Topics in German Literature ( 3 )
Topics in German literature to be selected by instructor. May emphasize an author, period, Topics in German literature to be selected by instructor. May emphasize an author, period,
movement or genre. Intended primarily for the nonspecialist. Does not fulfill language requirement. May be repeated with new content. Maximum credit six units.
199. Special Study (1-3) I, II

Individual study. Maximum credit six units. This course is intended only for students who are currently enrolled in or who already have credit for all upper division courses in German available in any given semester.

## Graduate Courses

201. History of the German Language (3)

Prerequisite: Twelve upper division units in German.
The historical development of the German language, with source readings from the Gothic Bible to Luther's translation of the Bible.
202. Middle High German Literature (3)

Prerequisite: German 152
Reading and analysis of Middle High German literature
203. The German Novelle (3)

Prerequisite: Twelve upper division units in German.
The development of the Novelle as a literary form from Goethe to the present.
204. The German Novel in the Twentieth Century (3)

Prerequisite: Twelve upper division units in German
205. Century.
205. German Lyric Poetry from Holderlin to Rilke (3)

Prerequisite: Twelve upper division units in German.
The major German lyric poets from the beginnings of Romanticism to Rilke
206. The German Drama of the Nineteenth Century (3)
rerequisite: Twelve upper division units in German.
207. Renaissance and Baroque Literature (3)
Prerequisite: Twelve upper division units in German.

Prerequisite: Twelve upper division units in German.
German literature of the sixteenth and seventeenth centuries.
208. Goethe (3)

Prerequisite: Twelve upper division units in German.
Prerequisite: Twelve upper division units in German.
Goethe's lyric, epic, and dramatic poetry excluding Faust.
210. Schiller (3)

Prerequisite: Twelve upper division units in German
Prerequisite: Twelve upper division units in German.
Schiller as poet, dramatist, critic and philosopher, with emphasis on his classical period.
251. Seminar in Eighteenth Century Literature (3)

Prerequisite: Eighteenth Century Literature (3)
Prerequisite: Eighteen upper division units in German.
Directed research in the works of an important author or in a problem, type, or movement of German literature of the eighteenth century. Maximum credit six units applicable on a master's degree.
255. Seminar in Nineteenth Century Literature (3)

Prerequisite: Eighteen upper division units in German.
Directed research in the works of an important author or in a problem, type, or movement of German literature of the nineteenth century. Maximum credit six units applicable on a master's degree.
260. Seminar in Twentieth Century Literature (3)

Prerequisite: Eighteen upper division units in German.
of German literature of works of an important author or in a problem, type, or movement of German literature of the twentieth century. Maximum credit six units applicable on a master's degree.
265. Seminar in Germanic Linguistics (3)

Prerequisite: Eighteen upper division or graduate units in German
credit six units applicable on a mared area of Germanic linguistics or philology. Maximum credit six units applicable on a master's degree.
290. Research and Criticism (3)
Prerequisite: Twelve upper

Prerequisite: Twelve upper division units in German
practice of literary criticism research in the language and in the literature; theories and practice of literary criticism. Recommended for the first semester of graduate study.
297. Research (3) $\mathrm{Cr} / \mathrm{NC}$

Prerequisite: Advancement to candidacy
Individual research in a specialized subject in German literature or linguistics. 298. Special Study (1-3) $\mathrm{Cr} / \mathrm{NC}$

Individual study. Maximum credit six units
Prerequisites: Eighteen upper division units in German and consent of staff; to be arranged with department chairman and instructor
299. Thesis (3) $\mathrm{Cr} / \mathrm{NC}$

Prerequisites: An officially appointed thesis committee and advancement to candidacy Preparation of a project or thesis for the master's degree.

## Greek

In the College of Arts and Letters

## Faculty

Professors: Schaber, Warren
Associate Professor: Genovese
Assistant Professor: Eisner

## Offered by the Department of Classical and Oriental Languages and Literatures

Courses in Greek.
Major and minor work in Greek is offered under classics. (Refer to this section of the catalog under Classics.)

## Lower Division Courses

## (See also courses in classics.)

1. Elementary (5) I Int Greek, emphasizing grammatical foundations of New Testamen and Attic prose. Aimed toward rapid comprehension.
2. Elementary (5) II

Prerequisite: Greek
Prentinuation of Greek grammar with selections illustrating syntax and style.
99. Experimental Topics (2-4)

Refer to the catalog statement on Experimental Topics on page 106. Limit of nine unit applicable to a bachelor's degree in courses under this number of which no more than three units may be applicable to general education requirements.

Upper Division Courses

## 103. Readings in Greek Prose (3) I

103. Readings in Greek
Prerequisite: Greek 2.

Prerequisite: Greek 2. Readings selected from Greek masterpieces in history, philosophy, oratory, and New Testament. Authors may include Xenophon, Plutarch, Plato, Lysias, the Evangelists. Emphasis on rapid reading.
104. Readings in Greek Poetry (3) II

Prerequisite: Greek 103
Prerequisite: Greek fom Greek masterpieces in epic, elegy, tragedy. Authors include
Readings selected from Homer, Sophocles, Euripides.
106. New Testament Greek (3

Prerequisite: Greek 2.
Study of Koine and Byzantine Greek characteristics with selected readings from New Testament and ecclesiastical sources.
155. Advanced Reading in Greek (3-4)

## Prerequisite: Greek 104

Extended, intensive reading in a major author of more difficult or peculiai style or content such as Aeschylus, Thucydides, Herodotus, Aristotle, Sappho, Aristophanes, Lucian Emphasis on style, content, interpretation. May be repeated with new content. Maximum credit nine units.
199. Special Study (1-3) I, II

Moximum credit six units.
Prerequisite: Consent of instructor.

## Health Science and Safety <br> In the College of Professional Studies

Faculty
Emeritus: Kitzinger
Professors: Burgess (Chairman), Grawunder, Harper, McTaggart Associate Professors: Barnes, Bender, Boskin, Fellers, Noto, Sorochan Assistant Professors: Beasley, Kessler, Lake
Offered by the Department
Master of Arts degree in health science.
Major in health science with the B.S. degree in applied arts and sciences. Minor in health science.

## Health Science Major

With the B.S. Degree in Applied Arts and Sciences
All candidates for a degree in applied arts and sciences must complete the graduation A minor is not required 60 of this catalog.

A minor is not required with this major.
Emphasis in Community Health
Preparation for the major. Health Science and Safety 21, 29, 65; Family Studies and Consumer Sciences 4; Zoology 8; Psychology 1; and Sociology 1. (19 units.)
Major. A minimum of 36 upper division units to include Health Science and Safety 100, $101,145,146,160,165,169,175,176,177,197$; and Biology 140.

Emphasis in Industrial Safety Education
Preparation for the major. Health Science and Safety 21, 29, 65; Family Studies and
Consumer Sciences 4; Zoology 8; Psychor Consumer Sciences 4; Zoology 8; Psychology 1; and Sociology 1. (19 units.)
Major. A minimum of 36 upper division units to include Health Science and Safety 100, $131,132,140,145,146,180,181 ;$ Sociology 120 ; and nine units selected from health science and safety or closely related fields with approval of the departmental adviser.

## Emphasis in Traffic Safety

Preparation for the major. Health Science and Safety 21, 29, 65; Family Studies and Consumer Sciences 4; Psychology 1; Sociology 1; and Zoology 8. (19 units.)
Major. A minimum of 36 upper division units to include Biology 140; Health Science and Safety $100,140,145,146,147,148,149,177$; Psychology 124 ; the remaining units to be selected from health science or closely related fields with approval of the departmental adviser.

## Health Science Minor

The minor in health science consists of a minimum of 15 units in health science and safety, nine units of which must be in upper division courses approved by the departmental adviser in health science and safety; courses to include Health Science and Safety 100, and 65 or 160 . Lower Division Courses
21. Principles of Healthful Living (2) I, II, S

An application of modern knowledge to the development of understandings, attitudes, and practices essential to healthful living. Fulfills statutory requirement in public safety.
29. Physiology of Reproduction (1) I, II

A series of lectures and discussions dealing with normal and abnormal physiology and anatomy of reproduction; facts and frauds in sex hygiene, and related topics
46. Standard First Aid and Personal Safety (2) I, II

First-aid care in time of accident and sudden illness. Case studies, first-aid skills, and personal safety practices. Standard first-aid concepts and certification,
65. Community Health (3) I, II

Community health problems; the role of the citizen, of the public, and of community health agencies in promoting and protecting the health of the community
99. Experimental Topics (2-4)

Refer to the catalog statement on Experimental Topics on page 106. Limit of nine units applicable to a bachelor's degree in courses under this number of which no more than three units may be applicable to general education requirements.

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155. Sex Education (3) I, II, S

Prerequisite: Health Science and Safety 21 or 122
Philosophy, current procedures, and materials needed for development of healthy attitudes and scientific knowledge appropriate for the understanding of human sexuality. 160. Introduction to Public Health (3) I, II

Prerequisite: Health Science
philosophy, development, organization, administration, and legal aspects of public health in the United States. Disease prevention and control, health education, and the other and others departments, voluntary agencies, private physician profssional health work.
Communicable and Noncommunicable Diseases (3) I, II
Causes, prevention and control of communicable, degenerative and chronic health disorders.
166. Honors Course (1-3) I, II

Refer to Honors Program.
169. World Health (3) I, II

Prerequisite: Health Science and Safety 65
Health status of selected populations; international approaches to the attainment of world health. Special emphasis on the work of the World Health Organization.
171-S. Institute on Current Health Issues (1) S
A critical appraisal and analysis of selected contemporary health issues. May be repeated with new content. Maximum credit three units applicable on a bachelor's degree.
172. Habit-Forming Substances (3) I, II, S

Prerequisite: Health Science and Safety 21 or 122
Tobacco, alcohol, and other drugs; their use, misuse and abuse.
175. Health in Later Maturity (3) I, II

An approach to the conservation of human resources, with emphasis on understandings attitudes, and practices related to health in later maturity. Designed for those with a personal or professional interest in the field.
176. Health and Medical Care (3) I, II

Prerequisite: Senior or graduate standing with a major or minor in health education or a osely related area.
Health values, concepts, and attitudes; health products and facilities; hospital care and hospitalization plans; governmental health controls; economic and cultural influences on health and medical care; professional contributions, relationships, and careers; national and international health programs. Not open to students with credit in Sociology 126.
177. Environmental Health Education (3) I, II

Environmental hazards of living and working in this modern technological world, including air, noise, land, food, and water pollution.
180. Industrial Hygiene (3) II

Occupational environment and its effect on the safety, health and performance of employees.
181. Safety Administration (3) I

Designed to acquaint the student with the basic administrative elements of a modern safety program.
196. Measurement and Evaluation in Health Science and Safety (3)

General and specific approaches to measurement in health science and safety: data gathering techniques; organization; presentation and interpretation of data; basic principles of evaluation of student achievement. (Formerly numbered and entitled Health Science and Safety 202, Measurement and Evaluation in Health Edncation.)
197. Supervised Field Experience (1-3) I, II

Prerequisite: Consent of the department chairman.
Supervised practical experience in local health agencies and/or schools.
199. Special Study (1-3) I, II
99. Special Study (1-3) I, II

Prerequisite: Consent of special six units
200. Seminar (3)

## Graduate Courses

Prerequisite: Fifteen units in Health Science and Safety.
An intensive study of advanced problems in health education. Maximum credit six units applicable on a master's degree.
201. Interdisciplinary Factors in Health Education (3)

Prerequisite: Fifteen units in Health Science and Safety.
Synthesis of basic scientific and cultural principles which contribute to an understanding 203. Evaluation Instruments (3)
203. Evaluation Instruments (3)
Prerequisite: Health Science and Safety 196

Construction, selection and analysis of evaluation instruments in health science and safety.
204. Program Planning and Evaluation in Community Health Education (3)
204. Program Planning and Evaluation in Com
Prerequisite: Health Science and Safety 160.

Program planning and evaluation theories, systems and techniques in community health education.
240. Administration of Traffic Safety (3)

Prerequisites: Health Science and Safety 145 and 147.
Research and trends in traffic safety with emphasis on the problems of administration.
245. School Safety Programs and Procedures (3)

Prerequisite: Health Science and Safety 145.
Advanced consideration of school safety programs including legal bases and requirements, personnel responsibilities, liability, instruction, maintenance, and school transportation.
252. Health Science Curriculum Development (3)

Prerequisite: Health Science and Safety 150 or 151.
Structuring educational experiences in the health sciences; developing curriculum Structuring educationas experds and ways of incorporating health education in open materials, performants.
270. Problems in Disease Control (3)
270. Problems in Disease Contrond Safety 165.

New concepts in the community management of disease. Individual investigation and discussion.
271. Drug Abuse Education (3)

Prerequisite: Health Science and Safety 172.
Drug abuse education in the school and community.
291. Health Science and Safety Research (3)
291. Healthises: Health Science and Safety 196 and advancement to candidacy.

Prerequisites. Healniques of research appropriate to health science, the process by which potential problems in health science are analyzed, and the standards for the writing of research papers and theses.
292. Analysis of Professional Literature (3) II

Prerequisite: Health Science and Safety 196.
Prerequisite: Health Science and Safety 196. fields which have an important bearing on Investigation and study of literature in the fields which have an important comunity. (Formerly numbered Health Science and Safety 192.)
297. Research (3) $\mathrm{Cr} / \mathrm{NC}$

Prerequisites: Health Science and Safety 291, 292, and advancement to candidacy.
Prerequisited research in an area of health science and safety. Limited to students following Plan B for the Master of Arts degree in Health Science.
298. Special Study (1-3) Cr/NC

Prerequisite: Consent of staff; to be arranged with department special study adviser and instructor.
Individual study. Maximum credit six units.
299. Thesis (3) $\mathrm{Cr} / \mathrm{NC}$

Prerequisites: An officially appointed thesis committee and advancement to candidacy, Preparation of a project or thesis for the master's degree.

## Hebrew

## In the College of Arts and Letters

Faculty
Assistant Professor: Gefte
Offered by the Department of Classical and Oriental Languages and Literatures Courses in Hebrew.
Major or minor work in Hebrew is not offered.
Lower Division Courses

1. Elementary (4) I

Four lectures and one hour of laboratory.
Beginning reading, writing, and conversational skills. Essentials of grammar. Not open to students who have completed three years of high school Hebrew.
2. Elementary (4) II

Four lectures and one hour of laboratory.
rerequisite: Hebrew 1
Continuation of Hebrew 1. Not open to students who have completed four years of high
3. Intermediate

Intermediate (4) I
Four lectures and one hour of laboratory.
Prerequisite: Hebrew 2
Continuation of Hebrew 2. Applications of grammar and reading skills. Additional practice
4. Intermediate (4) II

Four lectures and one hour of laboratory.
Prerequisite: Hebrew 3.
Continuation of Hebrew 3. Completion of conversational and grammar sequences. Composition and reading for comprehension.
99. Experimental Topics (2-4)

Refer to the catalog statement on Experimental Topics on page 106. Limit of nine units applicable to a bachelor's degree in courses under this number of which no more than three units may be applicable to general education requirements.

Upper Division Courses

## 185. Topics in Hebraic Studies (1-4)

Topics in Hebraic language, literature, culture, and linguistics. May be repeated with new ontent. Maximum credit eight units.
199. Special Study (1-3) I, II

Individual study. Maximum credit six units.
Prerequisite: Consent of instructor.

## History

In the College of Arts and Letters

## Faculty

Professors: Appleby, J., Berge (Chairman), Coox, Hanchett, Merrill, Munter, Nasatir, Norman, Pincetl, Rader, Ridout, Ruetten, Schatz, Smith, R., Strong, Weber
Associate Professors; Cheek, Chu, Cox, Cunniff, Davies, Detweiler, DuFault, Dunn Flemion, J., Hoidal, O'Brien, Smith, C., Starr, Steele, Stites, Sutherland, Vanderwood Assistant Professors: Appleby, A., Bartholomew, Filner, Flemion, P. Handerwood Phillips, Vartanian

## Offered by the Department

Master of Arts degree in history; and a Master of Arts degree for teaching service with a concentration in history.
Major in history with the A.B. degree in liberal arts and sciences.
Minor in history.
Teaching major in history for the single subject teaching credential.

## History Major

With the A.B. Degree in Liberal Arts and Sciences
All candidates for a degree in liberal arts and sciences must complete the graduation requirements listed on page 60 of this catalog.

A minor is not required with this major.
Preparation for the major. History 4A-4B, or 8A-8B, or 9A-9B, or 17A-17B. (6 units.)
Major. A minimum of 24 upper division units in history to include History 198 (to be taken in the junior year unless a temporary waiver is granted by the department chairman) and a minimum of six units in each of three of the following fields: (a) Ancient and Medieval; (b) Modern Europe; (c) United States; (d) Latin America; (e) South, Southeast, and East Asia; ( f ) Africa and the Middle East; ( g ) Topical Subjects. It is the student's obilgation, in requirements.

## History Minor

The minor in history consists of a minimum of 15 units in history to include six sequence units in the lower division. Nine units must be in upper division courses, including a year course.

## History Major

For the Single Subject Teaching Credential
All candidates for a teaching credential must complete all requirements for the applicable specialization outlined in the section of this catalog on the School of Education.
This major may be used by students in Teacher Education as an undergraduate major for the A.B. degree in liberal arts and sciences.
The requirements for the History major for the single subject teaching credential are being revised. For further information consult the department.

Lower Division Courses
4A-4B. Western Civilization (3-3)
European institutions, culture, and thought from ancient times to the present. Primarily for lower division students.
8A-8B. The Americas (3-3)
The history of the western hemisphere from its discovery to the present time. This year course meets the graduation requirements in American history, institutions and ideals; 8 A also meets the requirements in U.S. Constitution; 8 B meets the requirement in California State and local government.
9A-9B. Asian Civilizations (3-3) Asian institutions, cultution. Semester II: Asia since the impact of the West.
Traditional Asian civilizationtion (3-3)
17A-17B. American Civilization (3-3)
Prerequisite: History 17A is prerequis of the United States, with emphasis on the rise of The ponticavilization and ideals. This course is primarily for lower division students. American Civilization and ideals. This codit for Political Science 2, 71A, or 71B. History Ordinarily not open the by such students with the consent of the chairman of the History Department.
99. Experimental Topics (2-4)
99. Experimental Topics (2-4) Refer to the catalog statement oxperimental Topics on page 106. Limit of nine units Refer to the catalog statement on Experimender this number of which no more than three units may be applicable to general education requirements.

## Upper Division Courses

101A-101B. The Contemporary World in Historical Perspective (3-3)
101A-101B. The Contempor
Prerequisite: History 4B. the problems of our age
102. Great Historians and Historical Literature (3) I, II
102. Great Lectures and readings in the history of history and the works of major historians. Open to all upper division students; especially recommended for history and social science majors.

## 248 / History

104A-104B. The Sources of Civilization in the West (3-3)
Prerequisite: Open only to upper division students.
A survey of the most important ideas and attitudes which have shaped Wester ivilization since ancient times. Emphasis on cultural themes rather than a political continuum. Not open to students with credit in History 4A-4B. The course satisfies the equirement in Western Civilization but cannot be used to satisfy requirement for the major 105A-105B. War and Civilization (3-3)
The political and social implications of warfare, of the development of military echnologies, and of changing concepts of military organization. Semester I: Through the 18th century. Semester II: French Revolution and Napoleonic Wars to the present.
106A-106B. The Quest for Peace (3-3)
An historical analysis of man's efforts to achieve peace from the Greeks to the present 107A-107B. Science in Western Civilization (3-3)
The development of scientific thought and accomplishment as they relate to other aspects
f Western culture. Semester I: Preclassical antiquity through the time of Sir Isaac Newton. Semester II: From 1700 to the present.
108. History Through Film (3)

Critical analysis of selected historical problems, eras and events, using film as the principal historical document. Maximum credit six units.
111A-111B. Ancient History (3-3)
Semester I: Greece to the Roman Conquest.
Semester II: Rome to the 5th century A.D.
121A-121B. Europe in the Middle Ages (3-3)
Prerequisite: History 121A is prerequisite to 121B. Renaissance.

## 22. The Holy Roman Empire to the Great Interregnum (3)

rerequisite: History 4A or 121A-121B
The multinational Holy Roman Empire and its intellectual and social ramifications. Church-state relationships and the development of constitutionalism.
23. The Byzantine Empire (3)

The social, political, cultural, and economic development of the Eastern Roman Empire from the crisis of the third century to the fall of Constantinople in 1453. (Formerly numbered and entitled History 156, The Byzantine Empire and Its Successors.)
131. The Renaissance (3)

The intellectual, artistic, and social transformation of Europe from the 14th through the early 16 th century. (Formerly numbered History 131A.
132A-132B. Early Modern Europe (3-3)
Continental Europe in the 16th and 17th centuries: the religious revolt and religious wars, rise of monarchy, baroque culture, the revolutions in commerce and science. Semester I: The century after Luther. Semester II: The 17th century.
133A-133B. Europe in the 18th Century (3-3)
The "Old Regime" and the influence of the Enlightenment and the Enlightened Despots are emphasized. Semester I: The 18th century to 1763. Semester II: Intellectual and social changes in the quarter century before the French Revolution.
135A-135B. Europe in the 19th Century (3-3)
Prerequisite: History 135A is prerequisite to 135 B
Social, political, and economic developments of 19 th century Europe.
136A-136B. Intellectual History of Modern Europe (3-3)
Selected problems in European intellectual history beginning with the 17 th century, with special attention to social and political thought.
137A-137B. Europe in the 20th Century (3-3)
Prerequisite: History 137 A is prerequisite to 137 B
Political and social developments from 1870 to the present. (Formerly numbered History 144A-144B.)
138A-138B. Diplomatic History of Modern Europe (3-3)
Prerequisite: History 4A-4B
Diplomatic relations of the various European states with European and non-European powers. Semester I: From the Concert of Europe (1815) to the Era of Realpolitik in the late i9th century. Semester II: The diplomatic backgrounds and results of two wars. (Formerly numbered History $145 \mathrm{~A}-145 \mathrm{~B}$.)

141A-141B. History of Scandinavia (3-3)
The major political, economic, and social developments from the Stone Age to the present. Semester I: Stone Age to 1814. Semester II: 1814 to present.
142A. The French Revolution and Napoleonic Era (3) I
Prerequisite: History 4A-4B
Prerequisite: History $4 \mathrm{~A}-4 \mathrm{~B}$.
France on the eve of the Revolution; the Great Revolution, 1789-1799, the Napoleonic Era. 142B. Modern France (3) II
The development of France since 1815
143A-143B. The Iberian Peninsula (3-3)
A cultural and political survey of Portugal and Spain as well as their empires. Semester I解 the present. (Formerly numbered and entitled History 149A, Modern Spain.)
145A-145B. Central and Eastern Europe (3-3)
Prerequisite: History 4A-4B.
Semester I: Political, social, and intellectual study of the various nationalities inhabiting he area from the Baltic to the Aegean Sea. Semester II: Developments since the late 18th century.
146A-146B. Germany and Central Europe (3-3)
Prerequisite: History 4A-4B
Prerequisite: fistory Europe from Tacitus to the present.
147A-147B. Russia and the Soviet Union (3-3)
Semester I: Political, social, and economic development of Russia in Europe and Asia from Semester I: Political, social, and economic II: Emphasis on the 20th century.
149. Modern Italy ( 3

The development of Italy from 1815 to the present. (Formerly numbered History 149B.) 151A-151B. England (3-3)
Prerequisite: History $151 A$ is prerequisite to earliest times to the present day, stressing Political and social history of and for majors in English he origins of American inst
52A-152B. Constitutional History of the development of parliamentary institutions
Evolution of the common law (3-3)
153A-153B. Tudor and Stuart England (3-3)
Semester I: The Age of the Tudors. Semester II: England during the Stuart Dynasty
$603-1714$. 54A-154B. Modern Britain (3-3)
Semester I: The development of constitutional and social patterns from the Gloriou Revolution to the French Revolution, emphasizing the immediate background to the American Reve Victorian age and the political thought from the Utilitarians to the Fabians 56A 156B. Histry of the Near East from the 7th Century to World War I (3-3)
156A-156B. History of the Ne
Prerequisite. Medieval Islam from the 7th century A.D. to the rise of the Ottoman Turks Semester I: Medieval Ottoman Empire to 1914. (Formerly numbered and entitled History 57A-157B, History of the Near East from the 7th Century to Modern Times.
57. The Near Fast in the Twentieth Century, 1914 to Present (3)
157. The Near East in the
Prerequisite: History $4 \mathrm{~A}-4 \mathrm{~B}$.

Prequissis of sociopolitical and intellectual developments in the Near East during and An analysis of I.
158A-158B. Africa (3-3)
58A-158B. Africa (3-3) Semester I: Civilization Semester II: Colonial and postcolonial Africa.
160A-160B. Latin America (3-3)
160A-160B. Latin America (3-3) to approximately 1825. Semester II: Republican Latin Semester I: Colonial Period with credit in History 8A-8B.
161A-161B. Mexico (3-3)
161A-161B. Prerequisite: History 8A-8B or 160A-160B.
Prerequisite: History 8A-8B or
Colonial and modern Mexico. Semester II: Emphasis on the 20th century.
162A-162B. History of Brazil (3-3)
162A-162B. Prerequite: History 8A-8B or 160A-160B.
Prerequisite. The Portuguese heritage with Indo-American and Negro elements to form
The fusion of the Portuguese herion in the trops. Semester I. Colony and Empire to 1889 he unique culture of the major nation in

163A-163B. The Caribbean Area (3-3)
Prerequisite: History $8 \mathrm{~A}-8 \mathrm{~B}$ or 160A-160B
Development of the Caribbean area with emphasis on the 20th century.
164. The Pacific Coast Nations of South America (3)

Prerequisite: History $8 \mathrm{~A}-8 \mathrm{~B}$ or $160 \mathrm{~A}-160 \mathrm{~B}$.
The fusion of the native cultures and institutions with those of Spain to form the modern nations of the Pacific Coast of South America.
165A-165B. Economic, Social, and Intellectual Development of Latin America (3-3) Prerequisite: History $8 \mathrm{~A}-8 \mathrm{~B}$ or $160 \mathrm{~A}-160 \mathrm{~B}$.
Designed for students in the Latin American Studies program, foreign trade, and foreign ervice.
166. Honors Course (1-3) I, II

Refer to Honors Program.
167A-167B. Diplomatic History of Latin America (3-3)
Prerequisites: History $8 \mathrm{~A}-8 \mathrm{~B}$ or six upper division units in history.
Origins of Inter-Americanism; relations among the Latin American nations; the origins and development of the American States; Latin America in World Affairs
171A-171B. Rise of the American Nation (3-3)
Prerequisite: History 171A is prerequisite to 171 B
The settlement and development of the British colonies in North America and the American Revolution. Stresses the creation of the American nation through modification of 172A-172B Devion
172A-172B. Development of the Federal Union (3-3)
Prerequisite: History 172A is prerequisite to 172B
Prerequisite: History 172A is prerequisite to 172 B .
Political, cultural, social and intellectual aspects of the Confederation and early national period; the Convention of 1787 and establishment of the Constitution; the administrations of Washington through John Quincy Adams. This year course meets the graduation requirements in American history, institutions and ideals; 172A meets the requirement in U.S. Constitution; and 172B includes materials which meet the requirements in California state and local government.
173A-173B. The U.S. from Jackson to Grant, 1828-1877 (3-3)
Semester 1: The political and economic history of Jacksonian America; the problems posed by slavery and expansion in the context of social, intellectual and religious ferment. Semester II: The Civil War and Reconstruction, including the sectional controversy, the war, its aftermath, the role of Abraham Lincoln.
174. The Rise of Modern America, 1868-1900 (3)

Economic, social, political, and intellectual developments from the end of the Civil War to the close of the 19th century.
175A-175B. The United States, 1901-1945 (3-3)
The age of reform and the United States as leader of the free world.
175C. The United States in the Nuclear Age (3)
The United States since World War II.
176A-176B. American Foreign Policy (3-3)
Semester I: The development of American foreign policy since 1776. Semester II: Developments since 1916. This year course meets the graduation requirements in American history, institutions and ideals.
177A-177B. Constitutional History of the United States (3-3)
American constitutional history since the establishment of the federal government. This year course meets the graduation requirement in U.S. Constitution and in American history, ns and ideals.
178A-178B. The Development of American Capitalism (3-3)
The changes in agriculture, industry, labor, banking, transportation and commerce in a capitalist society with emphasis on the prominent personalities who made the changes
possible.
179A-179B. Intellectual History of the American People (3-3)
The ebb and flow of ideas in the United States since the founding of the English colonies, with attention devoted to social and political thought. This year course meets the graduation requirement in American history, institutions and ideals.
180. Selected Studies in History (3)
urbanization minority groups, of history, such as biography, war, science, technology, urbanization, minority groups, immigration and capitalism. Maximum credit six units.

Graduate Courses
All graduate courses in the Department of History have a prerequisite of 12 units of upper division courses in history，or consent of the instructor
201．Seminar in Historical Method（3）
General historical bibliography．The use of libraries and archives．Methods of critical historical investigation．The interpretations of history．
240．Directed Reading in Selected Topics（3）
Prerequisite：Permission of the instructor．historical literature of various fields of history such as war，science，technology，urbanization，minority groups，immigration，capitalism， conservation，and imperialism．Maximum credit six units applicable on a master＇s degree． 241．Directed Reading in United States History（3）

Prerequisite：Six upper division units in United States history． United States history．Maximum credit six units applicable on a master＇s degree．
242．Directed Reading in European History（3）
Prerequisite：Six upper division units in European history．
European history．Maximum eredit sials and historical literature in a designated area of European history．Maximum credit six units applicable on a master＇s degree．

## 243．Directed Reading in Asian History（3）

Prerequisite：Six upper division units in Asian history
Selected readings in source materials and historical literature in a designated area of Asian history．Maximum credit six units applicable on a master＇s degree．
244．Directed Reading in Latin American History（3）
Prerequisite：Six upper division units in Latin American history
Selected readings in source materials and historical literature in a designated area of Latin American history．Maximum credit six units applicable on a master＇s degree
245．Directed Reading in African and Middle Eastern History（3）
Prerequisite：Six upper division units in African or Middle Eastern history
Sele ored area of African or Middle Eastern history．Maximum credit six units applicable on a master＇s degree （Formerly titled Directed Reading in African History．）
246．Directed Reading in Ancient and Medieval History（3）
Prerequisite：Six upper division units in Ancient or Medieval history
Selected readings in source materials and historical literature in a designated area Ancient or Medieval history．Maximum credit six units applicable on a master＇s degree 250．Seminar in the Philosophy of History（3）

The major philosophies of history and directed research on topics selected from various philosophers of history such as Bury，Collingwood，Croce，Freud，Hegel，Marx，Pareto， Sorokin，Spengler and Toynbee．
251．Seminar in United States History（3）
Prerequisite：Six upper division units in United States history
Directed research on topics selected from a designated area of United States history Maximum credit six units applicable on a master＇s degree．
252．Seminar in European History（3）
rerequisite：Six upper division units in European history．
Directed research on topics selected from a designated area of European history Maximum credit six units applicable on a master＇s degree．
253．Seminar in Asian History（3）
Prerequisite：Six upper division units in Asian history．
Directed research on topics selected from a designated area of Asian history．Maximum credit six units applicable on a master＇s degree
254．Seminar in Latin American History（3）
Prerequisite：Six upper division units in Latin American history
Directed research on topics selected from a designated area of Latin American history Maximum credit six units applicable on a master＇s degree．
255．Seminar in African and Middle Eastern History（3）
Prerequisite：Six upper division units in African or Middle Eastern history
history．Maximum credit six units applicable a designated area of African or Middle Eastern history．Maximum credit six units applicable on a master＇s degree．（Formerly titled Semina in African History．
256．Seminar in Ancient and Medieval History（3）
Prerequisite：Six upper division units in Ancient or Medieval history
Directed research on topics selected from a designated area of Ancient or Medieval
history．Maximum credit six units applicable on a master＇s degree．

296．Area Studies in History（1－3）Cr／NC
Prerequisite：Advancement to candidacy
Preparation for the comprehensive examinations in the major and minor fields of history for those students taking the M．A．under Plan B．Maximum credit six units applicable on a master＇s degree．
Prerequisite：Advancement to candidacy and written approval of the History Department graduate coordinator．
Independent research in a specialized subject in history．

## 298．Special Study（1－3）Cr／NC

Prerequisite：Consent of staff；to be arranged with department chairman and instructor 299．Thesis（3） $\mathrm{Cr} / \mathrm{NC}$
Prerequisites：An officially appointed thesis committee and advancement to candidacy． Preparation of a project or thesis for the master＇s degree．

## Humanities

## Administered by the Dean of the College of Arts and Letters

## Offered by the College of Arts and Letters

Curriculum in humanities．（Refer to the section of this catalog on Interdisciplinary Programs．）
All classes are conducted in English．
Lower Division Courses
30．The Jewish Heritage I（3）I
Major Hebraic concepts of the Biblical and post－Biblical periods；their impact on Western civilization and their contemporary relevance．
31．The Jewish Heritage II（3）I，II
Major Jewish concepts from medieval through modern times；their impact on Western civilization and their contemporary relevance．

## 40．Mythology（3）

Major myths of the world in ancient and modern versions
42．French Civilization（3）I
French culture from the earliest times to the Enlightenment，with emphasis on the people their social and political institutions，their arts and letters．Not open to students with credit in French 140 or Humanities 142.
43．French Civilization（3）I
French culture from the Enlightenment to the present．Continuation of Humanities 42 Not open to students with credit in French 141 or Humanities 143.
44．German Civilization（3）I
The major currents and characteristics of German culture of the Middle Ages and the Renaissance as expressed in literature，art and philosophy．Not open to students with credit in Humanities 144.
45．German Civilization（3）II
The major currents and characteristics of German culture as expressed in literature，ar and philosophy since the Renaissance．Not open to students with credit in Humanities 145 48－S．European Civilization（3）S
The civilization of Europe through a conducted travel tour．
52．Russian Civilization（3）I
The major currents and characteristics of Russian culture，as expressed through the centuries in literature，art，philosophy and music from the beginnings to early 19th century Not open to students with credit in Hunanities 152.
53．Russian Civilization（3）II
53．Russian Civilization
Modern Russia＇s cultural development from early 19th century（The Golden Age）to the present．Not open to students with credit in Humanities 153.
54．Italian Civilization（3）I
The major aspects of Italian civilization with emphasis on literature，art，philosophy，music and history from the earliest times to the Renaissance．Not open to students with credit in Humanities 154.
55. Italian Civilization (3) II

Continuation of Humanities 54 from the Renaissance to the present. Not open to students with credit in Humanities 155.
57. Islamic Culture and Civilization (3) I

Interdisciplinary survey of Islamic culture and civilization, emphasizing religious beliefs, their developments, and their role in creating or being integrated with sociopolitical systems from the time of Muhammad to the present
58. African Culture and Civilization (3) II

An interdisciplinary survey.
59A-59B. The Asian Heritage (3-3)
An interdisciplinary year course on the cultures of Southern, Southeastern, and Eastern Asia, with emphasis on the interaction of ideas, peoples and their environment.
66A-66B. Honors Colloquium (3-3)
Prerequisite: Sophomore standing and admission to the special advising program.
Interdisciplinary conference, with readings, discussion, reports
99. Experimental Topics (2-4)

Refer to the catalog statement on Experimental Topics on page 106. Limit of nine units applicable to a bachelor's degree in courses under this number of which no more than three units may be applicable to general education requirements.

## Upper Division Courses

140. Spanish Civilization (3)

The principal aspects of Spanish civilization with emphasis on literature, philosophy, and the arts. Not open to students with credit in Spanish 140.
141. Latin American Civilization (3)

The principal aspects of the Latin American cultures with emphasis on literature, philosophy and the arts. Not open to students with credit in Spanish 141.
142. French Civilization (3) I

French culture from the earliest times to the Enlightenment, with emphasis on the people, their social and political institutions, their arts and letters. Not open to students with credit in French 140 or Humanities 42
143. French Civilization (3) II

French culture from the Enlightenment to the present. Continuation of Humanities 142. Not open to students with credit in French 141 or Humanities 43.
144. German Civilization (3) I

Investigation of the forces shaping German civilization in the Middle Ages and the Renaissance. Emphasis on history of ideas with reference to their manifestations in the arts and social institutions. Not open to students with credit in Humanities 44. (Formerly numbered German 140.)
145. German Civilization (3) II

Investigation of the forces shaping German civilization since the Renaissance. Emphasis on history of ideas with reference to their manifestations in the arts and social institutions Not open to students with credit in Humanities 45. (Formerly numbered German 141.)
146. Mexican Civilization (3)

The principal aspects of Mexican civilization with emphasis on literature, philosophy and the arts. Not open to students with credit in Spanish 142.
148-S. European Civilization (3) S
The civilization of Europe through a conducted travel tour.
150A-150B. The Cultural Heritage of Europe I (3-3) I
European history, literature, philosophy, art and music from the Middle Ages to the French Revolution, stressing major cultural movements: Romanesque, Gothic, Renaissance Baroque, Rococo, and Classicism.
151A-151B. The Cultural Heritage of Europe II (3-3) II
European history, literature, philosophy, art and music during the 19th and 20th centuries, stressing major cultural movements: Romanticism, Realism, Naturalism, Symbolism, Expressionism, Existentialism, and Structuralism
152. Russian Civilization (3) I

The major currents and characteristics of Russian culture, as expressed through the centuries in literature, art, philosophy and music from the beginnings to early 19th century Not open to students with credit in Humanities 52
153. Russian Civilization (3) II

Modern Russia's cultural development from early 19th century (The Golden Age) to the
present. Not open to students with credit in Humanities 53.
154. Italian Civilization (3) I

The major aspects of Italian civilization with emphasis on literature, art, philosophy, music and history from the earliest times to the Renaissance. Not open to students with credit in Humanities 54.
155. Italian Civilization (3) II

Continuation of Humanities 154 from the Renaissance to the present. Not open to students with credit in Humanities 55.
166. Honors Course (1-3) I, I

Refer to Honors Program.
170. The Humanities and Modern Man (1) Irregular

Lectures open to the public. Maximum credit three units
Weekly lectures on literature, language, philosophy and cultural history. Reading and reports required of students enrolled for credit.
180. Study of American Culture (3) I, II, S

American Studies as a discipline, the critical methods of the field, the variety of materials for interdisciplinary study.
199. Special Study (1-3) I, II

Individual study. Maximum credit six units.
Prerequisite: Consent of the instructor.

## Industrial Arts <br> In the College of Professional Studies

Faculty
Emeritus: Ford, Luce
Professors: Anderson, Bailey (Chairman), Hammer, Irgang, McLoney, McMullen, Thiel Associate Professors: Dirksen, Marsters, McEowen
Assistant Professors: Blackmun, Ferree, Guentzler, Lybarger, Rasmussen, Sorenson Lecturers: Foster, Moon
Offered by the Department of Industrial Studies
Master of Arts degree in industrial arts.
Major in industrial arts with the A.B. degree in applied arts and sciences.
Minor in industrial arts.
Teaching major in industrial arts for the single subject teaching credential.

## Industrial Arts Major

With the A.B. Degree in Applied Arts and Sciences
All candidates for a degree in applied arts and sciences must complete the graduation requirements listed on page 60 of this catalog.
A minor is not required with this major.
Preparation for the major. Industrial Arts 11 and 21 to be taken at the beginning of the major; four courses selected from Industrial Arts 10, 15, 31, 40,51,61, 71, and 81. (17 units.)
Major. A minimum of 24 upper division units to include nine units in each of two of the ollowing fields: industrial drawing, general metalworking, plastics, general woodworking lectricity-electronics, transportation, graphic arts, industrial crafts, and photography; and ix additional units in industrial arts excluding Industrial Arts 198 and 199.

## Industrial Arts Minor

The minor consists of 20 units in industrial arts to include Industrial Arts 11, 21, and one lower division and one upper division course in each of two of the following fields: general crafts, industrial drawing, photography, plastics, and graphic arts. Choose electives in consultation with the adviser.

## Industrial Arts Major

For the Single Subject Teaching Credential
All candidates for a teaching credential must complete all requirements for the applicable pecialization as outlined in the section of this catalog on the School of Education.
The requirements for the Industrial Arts major for the single subject teaching credential are the same as the requirements for the A.B. degree in applied arts and sciences. In addition, industrial Arts 192 must be taken.
6. Survey of Electronics (3)

Lower Division Courses
One lecture and six hours of laboratory
A nonmathematical survey of electronics, practical utilization of tools and equipment of today's industry
10. General Crafts (3)

One lecture and six hours of laboratory.
The practical utilization of tools, materials and methods employed in industrial craft areas, The fundamentals of good design.
11. Orientation to Industrial Arts (2) I, II

Required of all industrial arts majors during their first semester
The history and philosophy of industrial arts with emphasis on the current status and development of the secondary school curriculum. Discussion of professional requirements, bligations, and development
15. General Plastics (3) I, II

One lecture and six hours of laboratory.
Production methods, mechanical and physical properties, composition of plastics. The basic processes: molding, casting, thermoforming, reinforcing and foaming.
21. Industrial Drawing (3) I, II

One lecture and six hours of laboratory
Fundamental theories, procedures and techniques of modern industrial drafting; study and practice intended to develop skill and judgment in application to drafting as the universal language of industry
31. General Metalworking (3) I, II

One lecture and six hours of laboratory
Exploration of basic materials and methods employed by industry to produce metal products. The attainment of knowledge and skills involved in the primary fabrication techniques of sheet metal, bench metal, art metal, foundry, forging, machining, and welding.
40. Introduction to Photography (3) I, II

One lecture and six hours of laboratory.
A consideration of photographic optics and chemistry; nature of light and image formation; photographic emulsions, exposure and development. Composition and lighting. Not open to students with credit in Journalism 50
51. General Woodworking (3) I, II

One lecture and six hours of laboratory
Theories, practices and basic problems of working in wood; safety practices. The use of hand tools, the science of working with wood, and the techniques of student personnel gement.
61. Basic Electronics (3) I, II

One lecture and six hours of laboratory
Planning, designing, constructing, and experimenting to develop skills and acquire knowledge in the electronics field. Basic principles, their application to modern electronic equipment, and correct use of common hand tools and simple test equipment
71. Power Mechanics (3)

One lecture and six hours of laboratory.
Introduction to the various forms of power transmission with emphasis on small gas engines and automotive preventive maintenance.
81. General Graphic Arts (3) I, II

One lecture and six hours of laboratory
The theory and practice in planning, designing and processing in the various graphic production activities involving type, stencils, paper, and other allied materials
99. Experimental Topics (2-4)

Rerer to the catalog statement on Experimental Topics on page 106. Limit of nine units applicable to a bachelor's degree in courses under this number of which no more than three units may be applicable to general education requirements

Upper Division Courses
101. Industrial Arts Crafts (3) I, II

One lecture and six hours of laboratory.
Prerequisite: Previous industrial arts experience
Emphasis on skills in the industrial arts crafts by laboratory experiences in such areas as plastics, jewelry, lapidary, leather and mosaics. Stress on creativity in design and in utilization
of materials.
132. Welding Processes and Procedures (3) I, II

One lecture and six hours of laboratory.
Prerequisite: Industrial Arts 31
Arerequisite: industrial Arts processes with emphasis on physical principles and properties, inspection methods and equipment operations.
133. Applied Metal Forming Operations (3) I, II

One lecture and six hours of laboratory.
Prerequisite: Industrial Arts 31 .
Theory of conventional and high energy industrial forming processes augmented with laboratory forming experiences.
140. Photography for Teachers (3)

One lecture and six hours of laboratory.
Designed for more mature students to learn photographic skills useful in teaching. Not
open to students with credit in Industrial Arts 40.
141. Intermediate Photography (3) I, II

Two lectures and three hours of laboratory.
Prerequisite: Industrial Arts 40 or 140.
Exposure theory, sensitometry, contrast control, specialized development, distortion and exppective control, and advanced studies of photographic lenses and equipment.
142. Advanced Photography (3) I, II

One lecture and six hours of laboratory
Prerequisite: Industrial Arts 40 or 140
A consideration of advanced negative control, projection printing techniques, composition
and editorial content, architectural and illustrative photography, and flood photoflash
techniques
143. Advanced Problems in Photography (3)

One lecture and six hours of laboratory.
Prerequisite: Industrial Arts 141
Technical problems and techniques in photography
144. Color Photography (3)

Two lectures and three hours of laboratory.
Prerequisite: Industrial Arts 141.
Exposure and processing techniques as applied to current color films and papers in relation to the theory of color photography.
151. Machine Woodworking (3) I, II

One lecture and six hours of laboratory.
Prerequisite: Industrial Arts 51.
Experience in the use of selected woodworking machines which offer opportunities for the
development of construction activities in wood. Emphasis on creative design, sound safety practices, and techniques of personnel management.
152. Industrial Woodworking (3) I, II

One lecture and six hours of laboratory
Prerequisite: Industrial Arts 151.
Designed to increase professional skills, craftsmanship, advanced technical skills, and quipment maintenance procedures
153. Woodworking for Teachers (3) I, II

One lecture and six hours of laboratory
Prerequisite: Industrial Arts 151
Industrial arts woodworking resources and materials; experience in industrial arts
planning, laboratory and equipment organization, and personnel management.
161. Intermediate Electronics (3) I, II

One lecture and six hours of laboratory
Prerequisite: Industrial Arts 61
Development of skills through planning, designing, constructing and experimenting Emphasis on the application of advanced principles of electronics to the uses of power, transmission, communication, radio and television,
162. Advanced Electronics (3)

One lecture and six hours of laboratory.
Prerequisite: Industrial Arts 161
Development of advanced skills with application to industrial electronics. Techniques in the use of electronics test equipment and analysis of electronic devices.
163. Industrial Electronics (3)

One lecture and six hours of laboratory.
Prerequisite: Industrial Arts 161
Advanced problems in industrial electronics circuit development, analysis, theory and
application.
164. Basic Digital Computers (3)

One lecture and six hours of laboratory
Prerequisite: Industrial Arts 161.
Functions of circuitry as applied to switching, timing and pulse circuits. Basics of computer digital logic.
165. Analog Computer Fundamentals (3)

One lecture and six hours of laboratory
Prerequisite: Industrial Arts 161.
Introduction to electronic analog circuits, with emphasis on instrumentation and measurement techniques
166. Honors Course (1-3) I, II
Refer to Honors Program
171. Engines and Drive Trains (3) I, II

One lecture and six hours of laboratory.
Prerequisite: Industrial Arts 71.
Advanced study of the operational theory of engines, transmissions and differentials. Emphasis on precision individual systems overhaul.
172. Power System Diagnosis and Evaluation (3) I, II

One lecture and six hours of laboratory.
Prerequisite: Industrial Arts 171.
Theory and application of various types of diagnostic testing equipment, with emphasis on trouble shooting and power system analysis.
173. Accessory Power Systems (3) I, II

One lecture and six hours of laboratory
Prerequisite: Industrial Arts 171.
Study of accessory power systems and technological innovations in the power industries,
181. Intermediate Graphic Arts (3) I, II

One lecture and six hours of laboratory
Prerequisite: Industrial 81
Activities in the various graphic arts with emphasis on new technology in the industry.
182. Advanced Graphic Arts (3)

One lecture and
Prerequisite: Industrial Arts 181.
Planning of activities and perfecting of skills in printing and publication; efficient peration of machines and equipment.
83. Industrial Arts Graphic Arts (3)

One lecture and six hours of laboratory.
rerequisite: Industrial Arts 181.
Advanced techniques in developing skills involved in graphic arts facilities.
190. Experimental Industrial Arts (1 or 2)

Individual laboratory work on complex projects on an experimental basis. Maximum credit ix units.
192. Teaching Methods in Industrial Education (3) I, II

Prerequisite: Admission to Secondary Education Program.
Study of methodology needed to teach industrial subjects. It is recommended that this course be taken prior to student teaching.
193. Industrial Arts Organization and Management (2)

The organization of industrial arts in secondary schools, review of project requirements and methods of developing student participation in personnel management.
194. Recent Trends in Industrial Arts Education (2)

Current trends and practices in the field of industrial arts in secondary education. There will be opportunity for individual work on related problems of interest to members of the class.
195. Occupational Orientation (3)

I5. Octifying a wide range of occupations in construction, manufacturing, transportation Identifying a wide range of occupations in constr of ocupations, training requirements, entry and communication. Students student, salaries, job security, and other related information. 198. Senior Project (3) I, II

One lecture and six hours of laboratory.
Prerequisite: Consent of instructor.
Prerequisite: Consent ork a project in a selected industrial arts activity area. Oral progress Each student will work on a final written report is required.
199. Special Study (1-3) I, II
Individual study. Maximum credit six units.

Prerequisite: Consent of instructor.

## Graduate Courses

200. Seminar (3)

An intensive study in industrial arts; topic to be announced in the class schedule.
201. Advanced Teaching Problems (3)

Prerequisites: Teaching experience in area selected and consent of instructor
Materials and advanced techniques of teaching specific activity areas, such as (a) industrial drawing; (b) general metalworking; (c) general woodworking; (d) electricity-radio; (e) ransportation; (f) graphic arts; (g) photography; (h) comprehensive industrial arts. Stres on project design and visual materials. Maximum credit six units applicable on a master degree.
202. Industrial Arts Problems in Graphics and Design (3)

One lecture and six hours of laboratory.
Prerequisite: Industrial Arts 123.
The theories and procedures of industrial drafting, including nomographs, descriptive geometry, and graphic solutions. Emphasis on special applications to industrial arts.
203. Industrial Arts Problems in Metalworking (3)

One lecture and six hours of laboratory.
Prerequisite: Industrial Arts 133.
Problems involved in industrial arts metalworking. Individual research project dealing with instructional materials or processes.
204. Problems in Photography (3)

One lecture and six hours of laboratory.
Prerequisite: Industrial Arts 142, 143 or 144.
Advanced problems in photography in industry and photography in education. Individual research project dealing with instructional materials or industrial processes.
205. Industrial Arts Problems in Woodworking (3)

One lecture and six hours of laboratory.
rerequivite. Ind in selected 153.
intensive study in selected areas of the woodworking industry as it relates to materials, production and construction. Presentation of research findings.
206. Problems in Electronics (3)

One lecture and six hours of laboratory.
Prerequisite: Industrial Arts 163.
Recent developments in the electronics areas. Special research projects and resource materials.
207. Research in Vehicular Power Systems for Industrial Arts (3)

One lecture and six hours of laboratory.
Prerequisite: Industrial Arts 173.
Research in selected areas of the vehicular power systems and effective presentation of findings in oral and written form.
208. Industrial Arts Problems in Graphic Arts (3)

One lecture and six hours of laboratory.
Prerequisite: Industrial Arts 183.
Selected areas of the graphic arts industry related to materials, production methods, and allied pursuits. Techniques of presentation of findings in effective written and oral form. 210. Problems in Industrial Crafts (3)

One lecture and six hours of laboratory
Prerequisite: Industrial Arts 103.
echniques. Specifically designed for teachers with emphasis on instructional materials and echniques. Specifically designed for teachers, recreation workers and therapists.
215. Problems in Plastics (3)

One lecture and six hours of laboratory.
Prerequisite: Industrial Arts 117.
Research with selected plastics processes and materials. Development of projects, aids,
esource material, oral and written presentations resource material, oral and written presentations.
A study of the philosophical foundastrial Education (3)
ontinuing role in American foundations and development of industrial education and its consideration.
221. Curriculum Construction in Industrial Arts Education (3)

Selection of teaching content for school situations in compliance with the best known procedures regarding analysis, objectives, methods and learning, and development of nstructional devices related directly to course content.
222. Instructional Resources for Industrial Arts Education (3)

Survey, selection, and compilation of materials used in the development of resource units or instruction in industrial education, involving publications, organized taiks, field trips visual materials, technical literature and related materials. Organization and evaluation of such materials.
223. Evaluation in Industrial Arts Education (3)

Principles, methods, and criteria of evaluation including the special problems of measuring growth, achievement, and performance in various phases of industrial education
224. Organization, Administration and Supervision of Industrial Education Programs (3) The principles, objectives, methods and techniques employed in the supervision of levels in industry and education. levels in industry and education.
267. Field Work in Industrial Arts (3)

Prerequisites: Teaching experience in industrial arts and consent of instructor.
Application of the principles of laboratory organization, management and planning in reference to the objectives of industrial arts in development of school programs.
290. Research Procedures in Industrial Arts (3)

Location, selection, and analysis of scientific and professional literature, research data and specialized bibliographies.
295. Selected degree.
Study in selected topics of Industrial Arts culminating in a research paper.
298. Special Study (1-3) Cr/NC

Prerequisite: Consent of staff; to be arranged with department chairman and instructor. Individual study. Maximum credit six units. Prerequisites: An officially appointed thesis committee and advancement
Preparation of a project or thesis in industrial arts for the master's degree.

## Industrial Technology <br> In the Department of Industrial Studies

Faculty
Faculty assigned to teach courses in industrial technology are drawn from Industrial Studies.
Offered by the Department of Industrial Studies.
Major in industrial technology with the B.S. degree in applied arts and sciences.

## Industrial Technology Major

With the B.S. Degree in Applied Arts and Sciences
All candidates for a degree in applied arts and sciences must complete the graduation
requirements listed on page 60 of this catalog. technology, industrial sales, or manufacturing technology.
A minor is not required with this major.

## Emphasis in Electronics Technology

Preparation for the major. Economics 1A, 1B; Mathematics 3, 7, 19, 21, 22, 23, 37; Chemistry 2A-2B; Physics 2A-2B, 3A-3B; Industrial Arts 15, 21, 31, 40, 61, 71. ( 59 units.) Major. A minimum of 42 upper division units to include Industrial Technology 121, 161, 174, 191, 194, and 195; Industrial Arts 161, 162, 163, 164, 165, 198; and six units of electives selected with the approval of the adviser.

## Emphasis in Industrial Sales

Preparation for the major．Economics 1A，1B；Mathematics 3，7，19，20；Physics 2A－2B， Preparation for the major．Economin 3 ；Industrial Arts 21；and 15 units selected from Industrial Arts $15,31,40,51,61,71$ and 81 ．（ 46 units．）
Major．A minimum of 42 upper division units to include Business Administration 150 and three units selected from Business Administration 162，163，164；Industrial Technology 191， 192，193，194，195；a minimum of 18 upper division units in applicable industrial arts and／or industrial technology courses in three technical areas（six units in each area），and three units of electives selected in consultation with the adviser．

## Emphasis in Manufacturing Technology

Preparation for the major．Economics 1A，1B；Mathematics 3，19，21，22，23；Physics 2A－2B； 3A－3B；Business Administration 30A；Industrial Arts 21，61，and 12 units selected from Industrial Arts $15,31,40,51,71$ and 81 ．（ 50 units．）

Major．A minimum of 51 upper division units to include Business Administration 135 and six units selected from 132，136，137，138，140，145；Industrial Technology 121，161，174， 191 192，193，194，195；a minimum of 18 units in applicable industrial arts and／or industrial technology courses in two technical areas（nine units in each area）selected in consultation with the adviser．

121．Industrial Design Problems（3）
One lecture and six hours of laboratory
Prerequisite：Industrial Arts 21.
A study of blueprint reading，the design of jigs，fixtures and dies，and the application and solution of power transmission problems in the industrial environment
122．Architectural Drafting（3）
One lecture and six hours of laboratory
Prerequisite：Industrial Arts 122
Layout of light and medium commercial building using concrete，steel and wood construction．
123．Technical Illustration（3）
One lecture and six hours of laboratory．
Prerequisite：Industrial Arts 21.
Theory and techniques of axonometric projections with emphasis on isometric drawing and their application to technical illustration
124．Technical Illustration（3）
One lecture and six hours of laboratory．
Prerequisite：Industrial Arts 21 ．
Theory and application of single－and multiple－point perspectives．Shading and rendering techniques as applied to presentation－type drawings will also be emphasized．
134．Technology of Ferrous and Nonferrous Metals（3）
One lecture and six hours of laboratory．
Prerequisite：Industrial Arts 31
Applied metallurgy dealing with physical properties，heat treatments，testing and industrial applications．
135．Quality Assurance（3）
One lecture and six hours of laboratory．
Prerequisite：Industrial Arts 31 ．
A study of quality control systems in manufacturing；dimensional，nondestructive and statistical systems are emphasized．
154．Wood Processes and By－Products（3）
One lecture and six hours of laboratory．
Prerequisite：Industrial Arts 152.
Study of wood by－products manufactured from mascerated wood fibres，laminates， dielectric glue equipment and other processes
155．Wood Inspection and Testing（3）
One lecture and six hours of laboratory．
Prerequisit．Industrial Arts 152.
Macro and micro wood identification，chemical and physical testing of wood and wood revived products．

161．Industrial Controls（3）
One lecture and six hours of laboratory．
Prerequisite：Industrial Arts 61 ．
Study of industrial controls，including the electrical and electronic systems used in automated manufacturing methods．Emphasis on circuit functions，systems applications，and recent advancements in control techniques．
174．Fluid Power（3）
One lecture and six hours of laboratory．
Prerequisite：Industrial Arts 71.
Study of fluid power，including hydraulic and pneumatic systems．Emphasis on circuit design and applications．
184．Printing Processes and Operations（3）
One lecture and six hours of laboratory．
Prerequisite：Industrial Arts 181.
Recent advancements in the technology of graphic arts－study of work related to various printing processes．
185．Photo－offset Lithographic Principles and Operations（3）
One lecture and six hours of laboratory．
Prerequisite：Industrial Arts 18
Study and experimentation in the field of offset lithography

## 190．Supervised Field Experience（3－6

Prerequisite：Sponsorship by a full－time Industrial Studies Department faculty member．
Supervised industrial experience in related occupational field．Specific assignments to be arranged in consultation with the adviser and selected industries．Maximum credit nine units
191．Industrial Safety（3）
The integration of accident prevention into management functions．The organization of raining and safety programs emphasizing the detection and control of hazards，analysis of data，investigations and environment modifications for safety effectiveness．
192．Industrial Materials（3）
A survey of various types of manufacturing materials used in industry．Evaluation of materials composition，physical and mechanical properties with emphasis on processing requirements and product design．
193．Manufacturing Processes（3）
A survey of manufacturing processes used in industry．Evaluation of forming，shaping， A survey of manufacturing processes as they relate to characteristics of material and product design．
194．Industrial Proposals and Specifications（3）
Research，practice and investigation in the planning and writing of industrial proposals and plant manufacturing systems specifications．
195．Plant Layout and Material Handling（3）
Study of education and industrial plant layout for expeditious flow of materials．

## Italian

In the College of Arts and Letters
Faculty
Professor：Vergani，G
Associate Professor：Vergani，L
Lecturers：Funston，Mracek
Offered by the Department of French and Italian Languages and Literatures
Minor in Italian．

## Italian Minor

The minor in Italian consists of a minimum of 15 units in Italian，six units of which must be in upper division courses．

High School Equivalents
High school foreign language courses may be used for purposes of placement in college courses and may be counted toward meeting the foreign language requirement in vario majors. These high school courses will not count as conege credit toward graduation. three years the equivalent of Italian 2; and four years the equivalent of Italian 3 . The last year-course taken by a student in the high school language sequence may be repeated in college for graduation credit, not to exceed four units of repeated foreign language work Lower Division Courses
Native speakers of Italian will not receive credit for taking lower division courses in Italian except with advance approval from the department.

1. Elementary (4) I, II
2. Elementary (4) I, II
Four lectures and one hour of laboratory.

Fronunciation, oral practice, readings on Italian culture and civilization, essentials of grammar. Not open to students who have completed three years of high school Italian.
2. Elementary (4) I, II
2. Four lectures and one hour of laboratory.

Prerequisite: Italian 1.
Continuation of Italian 1. Not open to students who have completed four years of high school Italian.
3. Intermediate (4) I 2

A practical application of the fundamental principles of grammar. Reading in Italian of cultural material, short stories, novels or plays; oral and written practice.
4. Intermediate (4) II

Prerequisite: Italian
Continuation of Italian 3. Reading of selections from Italian literature.
10. Conversation (2) I

Prerequisite: Italian 2 or three years of high school Italian.
Practice in the spoken language; practical vocabulary, conversation on assigned topics; simple dialogues and plays.
11. Conversation (2) II

Prerequisite: Italian 10 or Italian 3, or four years of high school Italian.
Continuation of Italian 10.

## 99. Experimental Topics (2-4)

Refer to the catalog statement on Experimental Topics on page 106. Limit of nine units applicable to a bachelor's degree in courses under this number of which no more than three units may be applicable to general education requirements.

Upper Division Courses
101A-101B. Advanced Oral and Written Composition (3-3)
Prerequisites: Italian 4 and 11.
Translation into Italian from moderately difficult English prose. Outside reading of modern Italian prose, with monthly written reports in Italian. Readings and oral discussions in Italian on various facets of Italian life and culture.
102A-102B. Survey of Italian Literature (3-3)
Prerequisite: Italian 4
mportant movements, authors and works in Italian literature from the Middle Ages to the present.
103A-103B. Dante and the Divine Comedy (3-3)
Prerequisites: Italian 4 and 11.
The poet, his cultural background, and his political-historical mission.
104A-104B. Literature of the Italian Renaissance (3-3)
Prerequisites: Italian 4 and 11.
Literature of the 15th and 16th centuries as presented in the works of Poliziano, Lorenzo De'Medici, Pulci and Boiardo; Machiavelli, Ariosto, Michelangelo, Cellini and Tasso.
144A-144B. Masterpieces of Italian Literature (3-3)
Works of outstanding Italian writers in English translation. Semester I: From Dante to Machiavelli. The awakening of Italian letters, culminating in the Renaissance. Semester II: Italy in spiritual crisis-the Reformation, Romanticism, Fascism. The search for a national dentity from Galileo to contemporary poets and novelists.
66. Honors Course (1-3)

Refer to Honors Program
185. Selected Topics (3)

Topics in Italian language, literature, culture and linguistics. Conducted in English or in Italian. See class schedule. Maximum credit six units.
199. Special Study (1-3) I, II

Individual study. Maximum credit six units. This course is intended only for students who are currently enrolled in or who already have credit for all upper division courses in Italian available in any given semester.

Prerequisite: Consent of staff.

## Japanese

## In the College of Arts and Letters

Faculty
Assistant Professor: Yun
Offered by the Department of Classical and Oriental Languages and Literatures
Courses in Japanese.
Major or minor work in Japanese is not offered.
Lower Division Courses
Native speakers of Japanese will not receive credit for taking lower division courses except with advance approval from the department.

1. Elementary (4)

Four lectures and one hour of laboratory. Pronunciation, oral
2. Elementary (4)
and one hour of laboratory
Prequationane 1.
Fxprine 1 .
Refer to the catalog statement on Experimental Topics on page 106. Limit of nine units Refer to the catalog statement on Experimentar this number of which no more than three units may be applicable to general education requirements.

Upper Division Courses
103. Readings in Japanese (4) I
103. Readings in Japanese

Prerequisite: Japanese 2. Readersation.
104. Readings in Japanese (4) II
04. Readings in Japanese 103

Prerequisite: Japanese 103.103 , with readings in poetry, mainly Haiku.
185. Topics in Japanese Studies (1-4)
185. Topics in Japanese Studies (1-4) Topics in Japanese credit eight units.
199. Special Study (1-3) I, II
199. Special Study (1-3) I, II

Individual study. Maximum instructor.

## Journalism

In the College of Professional Studies
Member of American Association of Schools and Departments of Journalism The news-editorial sequence is accredited by American Council on Education for Journalism
Faculty
Emeritus: Wimer
Professors: Holowach (Chairman), Julian, Odendahl, Sorensen
Associate Professors: Buckalew, Haberstroh
Assistant Professors: Spevak, Whitney
Lecturers: Learn, Love
Offered by the Department
Major in journalism with the A.B. degree in liberal arts and sciences. Single subject teaching credential in English in area of journalism. Minor in journalism

## Journalism Major

With the A.B. Degree in Liberal Arts and Sciences
All candidates for a degree in liberal arts and sciences must complete the graduation requirements listed on page 60 of this catalog
for graduation, of which a maximum of解

Preparation for the major. Journalism 50 and 51A. ( 6 units.)
Major. A minimum of 24 upper division units in journalism to include Journalism 102, 121 $153,156,157$, and 154 or 159 , and six units of electives.

Emphasis in Magazine
Preparation for the major. Journalism 50 and 51A. ( 6 units.
Major. A minimum of 24 upper division units in journalism to include Journalism 101, 102, 180, and 191 (Internship with units) and nine units selected from Journalism 150, 151, 153

Emphasis in Mass Communications
Preparation for the major. Journalism 49, 51A, 51B, and Sociology 1, 60, and Mathematics 3. ( 18 units.)

Major. A minimum of 24 upper division units in journalism to include Journalism 102, 117, nine units of electives.
Emphasis in News-Editorial
Preparation for the major. Journalism 50, 51A, and 51B. (9 units.)
Major. A minimum of 24 upper division units in journalism to include Journalism 102, 121 , 144, 151 , two semesters' enrollment in 192 (minimum of three units), 197, and six units of electium), 194, or 199 .
med edum), 194, or 199.

Emphasis in Photojournalism
Preparation for the major. Journalism 50, 51A, and 51B. (9 units.)
Major. A minimum of 24 upper division units in journalism to include Journalism 102, 103, 104, 125, 150, 191 (Internship-minimum of three units in photography), and six units of
electives. electives.

## Emphasis in Public Relations

Preparation for the major. Journalism 49,50, and 51A. (9 units.)
Major. A minimum of 24 upper division units in journalism to include Journalism 104, 121 or 162, 153, 180, 191 (internship in public relations), and nine units of electives selected from
Journalism 122, 181 or 184, and 183 .

Major. A minimum of 24 upper division units in journalism to include Journalism 102, 104, 121, 124, 125, 191, and six units of electives

## Journalism Minor

The minor in journalism consists of 15 units in journalism, nine units of which must be in upper division courses.

## Journalism

For the Single Subject Teaching Credential in English
All candidates for a teaching credential must complete all requirements for the applicable specialization as outlined in the section of this catalog on the School of Education
This major may be used by students in Teacher Education as an undergraduate major for the A.B. degree.
The requirements for the single subject teaching credential in English in the area of journalism are being revised. For further information consult the department.

## Lower Division Courses

49. Introduction to Mass Communications (3) I, II

The work of mass media, their interrelationships, and the services they perform for society; common problems and responsibilities of the mass media; training and background needed in different media.
50. News and Feature Photography (3) I, II

Two lectures and three hours of laboratory
An elementary course designed primarily for students of journalism and public relations; experience with professional photographic equipment and film processing; contact and projection printing; emphasis on composition and news value of pictures. Not open to students with credit in Industrial Arts 40.

## 51A. News Reporting (3) I, II

Prerequisite: Sophomore standing and ability to type
Study of reporting techniques, with intensive laboratory practice in gathering, evaluating, and writing the basic types of news stories
51B. Advanced News Reporting (3) I, II
Prerequisite: Grade of $C$ or better in
 includes some reporting for the campus newspaper, The Daily Aztec.
92. Newspaper Production (1-3) I, II

Three hours of laboratory required for each unit. Total credit in Journalism 92, 93, 192, and ximum of three units of Journalism 92, or its equivalent, may be counted in the total required for
Prerequisite: Consent of instructor.

Special work in journalism by arrangement with the instructor. Includes reporting, editing, taking and processing pictures, working with the printer, proofreading in production of The Daily Aztec.
93. Magazine Production (1-3) I, II

Three hours of laboratory required for each unit. Total credit in Journalism 92, 93, 192, and 193 limited to eight units.
Special work in yearbook and magazine production by arrangement with the instructor Includes editing and photographic work on campus magazines.
99. Experimental Topics (2-4) Refer to the catalog statement on Experimental Topics on page 106. Limit of nine units applicable to a bachelor's degree in courses under this number.

Upper Division Courses

101. Magazine Article Writing (3) I, II Gathering material and writing articles marketing of at least one article emphasized
press. Production (3) I, I
102. Law of Mass Communications (3) I, II advertising laws, postal regulations, and Libel, defamation, privacy, censorses, radio, television; rights and responsibilities of ommunicators in reporting public affairs.
103. Magazine Editing (3) II

Mechanics of the editorial process in magazines, with emphasis on industrial and business publications; selection and preparation of editorial material; picture selection, cropping, captioning; graphic production processes; layout; preparation of dummies; special purpose booklets and magazines.
104. Radio and Television News Writing and Editing (3) I, II
(Same course as Telecommunications and Film 112.)
Gathering, writing, and editing news in special forms required by radio and television
105. Editorial Writing (3) I

Principles and policies of editorial composition for mass communications media.
117. History of Mass Communications (3) I, II

American journalism from colonial times to the present, with special attention to radio and other mass media which have entered the news and entertainment field; the relation of their development to society.
118. The Foreign Press (3) I

The four theories of the press. Flow of international news. Analysis of the foreign media Problems of propaganda, governmental control, language, and economic support.
121. Current Problems in Mass Communications (3) I, II

Forces affecting American mass communications today: Government restrictions economics, pressure groups, censorship, mechanical developments, interrelationships of the media and society; professional ethics.
122. Public Opinion Measurement (3) I

Same course as Psychology 122. )
The history, methods, and problems of public opinion and attitude measurement Emphasis will be placed upon the polling of consumers and voters. Students will be given field experience
124. Radio News Production (3) I, II

Prerequisite: Journalism 104 or Telecommunications and Film 112.
Radio news production with experience in writing, editing national wire copy and local copy, preparing tapes and on-the-spot recordings of news events for programs produced over the campus radio station and local commercial radio stations. Maximum credit six units.
125. Television News Production (3) I, II

Two lectures and three hours of laboratory.
Prerequisite: Journalism 104 or Telecommunications and Film 112
Television news production with experience in photographing news events, processing and editing film, and writing copy to film for programs produced over the campus and loca commercial television stations. Maximum credit six units.
144. Reporting of Public Affairs (3) II

Prerequisites: Journalism 51A and 51B
Coverage of the city hall, courthouse, police headquarters, federal agencies, courts, and other public and political centers.
150. Advanced News and Feature Photography (3) II

Two lectures and three hours of laboratory.
Prerequisite: Journalism 50.
Techniques for achieving the technical and story-telling quality in photojournalism.
151. News Editing (3) I, II

Three lectures and two hours of laboratory.
Prerequisite: Journalism 51B.
Editing copy, writing headlines, making up pages, handling telegraph copy.
152. High School Journalism (3) II

Methods of conducting high school journalism classes. Editorial, business and mechanical aspects of school publication work, with emphasis on copy editing, headline writing and ayout. Not open to journalism majors.
153. Newspaper Advertising (3) I, II

Principles of advertising for newspapers and trade papers. Emphasis on copywriting, layout, typography and production. Use of consumer and market surveys, and advertising readership studies in planning local advertisers' sales programs and promotions.
154. Newspaper Advertising Practice (1-3) I, II

Prerequisite: Journalism 153.
Practical work in servicing accounts in advertising on campus media. Supervised work in preparation of copy and layout. Copy-testing methods emphasized. Maximum credit six
units.
155. Advanced Editing Techniques (3) I

Prerequisite: Journalism 151.
Principles of typography, page layouts, and use of pictorial material; selection, evaluation, editing, and display of news.
156. Advertising Campaigns (3) I

Prerequisite: Journalism 153 or Telecommunications and Film 103.
Cases and problems dealing with advertising campaigns and decision making involving copy themes, artwork, and media imagery.
157. Advertising Copy, Layout, and Production (3) I, II

Prerequisite: Credit or concurrent enrollment in Journalism 153.
Preparation of copy, layout planning, and production of advertising
159. Advertising Research and Analysis (3) II

Prerequisite: Journalism 153.
Evaluation and use of data collecting and measurement for print media advertising. Cases and problems, with emphasis on quantitative and qualitative characteristics of print advertising.
162. Mass Communications and Society (3) I, II

Prerequisite: Sociology 1
Social factors underlying nature, functions of mass media. Theories, models, research in media as culture carriers, as opinion shapers, and in relation to government.
166. Honors Course (1-3) I, II

Refer to Honors Program.
177. Research Methods in Mass Communications (3) II

Prerequisite: Sociology 60 .
Investigate tools and methods of mass media; content analysis, readership studies, audience measurement, experimental designs, and representative studies.
180. Public Relations (3) I, II

Principles, methods and objectives in the field of public relations; evaluation of the "princips" of institutions and industry; case studies of public relations problems.
181. Public Relations Techniques and Media Usage in Elections (3) II

Prerequisite: Journalism 180
Use media usage. (Formerly numbered Journalism 179.)
182. Publications Workshop (3) I, II, S

Individual problems in high school publication problems. Maximum credit six units.
183. Problems in Public Relations (3) II

Prerequisite: Journalism 180
Current public relations problems of industry, public agencies and other institutions.

## 184. Public Relations Practices (3) I

Prerequisite: Journalism 180.
Fxamination of current public relations practices in a wide variety of local commercial industrial, financial, governmental, cultural and social organizations. Use of the local community's public relations resources.
191. Internship in Journalism (1-3) I, II 104 or 153 or 180 ; and consent of the instructor. Prerequisites: Journansmistent with the nature of the internship.
Prerequite and television stations, and on public relations, publicity, and advertising staffs of civic and business groups. Maximum credit six units with no more than three units in any one semester.
192. Newspaper Production (1-3) I, II
192. Newspaper of laboratory required for each unit. Total credit in Journalism 92, 93, 192, and 193 limited to eight units.
Prerequisite: Journalism 51B.
Special work in journalism by arrangement with the instructor. Includes reporting, editing, taking and processing pictures, working with the printer, proofreading in production of The Daily Aztec.
193. Magazine Production (1-3) I, II

Three hours of laboratory required for each unit. Total credit in Journalism 92, 93, 192, and 193 limited to eight units.
in yearbook and magazine production by arrangement with the instructor Includes editing and photographic work on campus magazines.
194. Editorial Conferences (1-3) I, II

More than three hours a week per unit of credit.
Prerequisites: Journalism 192 or 193, and consent of publication adviser
Techniques for solving problems in publication production through individual daily onferences with faculty adviser. Open only to editorial executives of The Daily Aztec and department magazine. Maximum credit six units.
197. Investigative Reporting (3) I, II
Prerequisite: Journalism 51B.

Development of articles of substance and depth in specialized fields. Research, analysis, and interpretation of complex issues in the news. Maximum credit six units.
199. Special Study (1-3) I, II
ximum credit six units.
Prerequisite: Consent of instructor

## Graduate Courses

200. Scope and Method of Mass Communications (3)

Intensive preparation in methodology applicable to the various fields related to mass media study.
202. Seminar: Mass Media and the Law (3)

Prerequisite: Journalism 102 or Telecommunications and Film 105
Case studies of legal restrictions and guarantees affecting radio, television, motion pictures, advertising, and printed media.
217. Seminar: History of Journalism (3
rerequisite: Journalism 117
Directerch on topics of history of American journalism.
218. Seminar in International Journalism (3)

Prerequisite: Journalism 118
In-depth exploration of the foreign press and cross-cultural communication; the place of the press in national development and international stability; national images and world opinion; censorship, propaganda and other barriers to international understanding
221. Seminar: Media Problems (3)

Prerequisite: Six units in courses applicable to the Master of Science degree in Mass Communications.
Reading, investigation, and research concerning current topics in problems of mass media.
222. Mass Communications and Public Opinion (3)

Prerequisite: Journalism 122 or 177 . propaganda analysis; creation and perpetuation of images and stereotypes.
240. Major Projects in Mass Communications (1-6)

Prerequisite: Journalism 121 or Telecommunications and Film 183.
Design and execution of an in-depth project in one of these areas: advertising campaign, series of detailed expository articles or news stories, or model public relations campaign. Maximum credit six units.
253. Seminar in Print Advertising Problems (3)

Prerequisite: Journalism 156 or 157 .
Investigation of the practice, responsibility, and philosophy of advertising in print media with individual projects, cases, and current literature.
262. Seminar: Mass Communications and Society (3)

Prerequisite: Journalism 162.
Rights, responsibilities, and characteristics of mass media and mass communications practitioners; characteristics and responsibilities of audiences and society.
283. Seminar in Public Relations (3)

Prerequisite: Journalism 180.
Analysis and critique of contemporary public relations programs and theory. Development of a comprehensive public relations project involving original research
298. Special Study (1-3) $\mathrm{Cr} / \mathrm{NC}$

Prequisite: Co crit six units.
 instructor
299. Thesis (3) $\mathrm{Cr} / \mathrm{NC}$

Prerequisite: An officially appointed thesis committee and advancement to candidacy Preparation of a project or thesis for the master's degree.


## Latin

In the College of Arts and Letters

## Faculty

Professors: Ingham, Warren
Associate Professors: Genovese, Sutherland
Assistant Professor: Eisner
Offered by the Department of Classical and Oriental Languages and Literatures Major and minor work in Latin is offered under classics. (Refer to this section of the catalog on Classics.)

High School Equivalents
High school foreign language courses may be used for purposes of placement in college courses and may be counted toward meeting the foreign language requirement in variou majors. These high school courses will not count as college credit toward graduation.
The first two years of high school Latin may be counted as the equivalent of Latin 1, three years the equivalent of Latin 2. The last year-course taken by a student in the high schoo language sequence may be repeated in college for graduation credit, not to exceed four unit of repeated foreign language work.

## Lower Division Courses

(See also courses in classics.)

1. Elementary (5) I

Introduction to Latin, emphasizing grammatical foundations of classical prose. Aimed Introduction to Latin, emphasizing grammatical foundations of comprehension. Not open to students who have completed three years of high school Latin.
2. Elementary (5) II

Prerequisite: Latin 1.
Continuation of Latin grammar with selections illustrating syntax and style. Not open to students who have completed four years of high school Latin.
99. Experimental Topics (2-4)

Refer to the catalog statement on Experimental Topics on page 106. Limit of nine units pelicable to a bachelor's degree in courses under this number of which no more than three units may be applicable to general education requirements.

Upper Division Courses
103. Readings in Latin Prose (3) I

Prerequisite: Latin 2.
Readings selected from classical Latin masterpieces in history, philosophy, oratory, letters Authors may include Sallust, Cicero, Pliny the Younger. Emphasis on rapid reading.
104. Readings in Latin Poetry (3) II

Prerequisite: Latin 103.
Patin masterpieces in epic, lyric, elegy, comedy. Authors include Vergil, Catullus, Ovid, Plautus.

## 107. Late Latin (3)

Prerequisite: Latin 2. The changes in Latin throughout the centuries.

## The changes in Lating in Latin (3-4)

155. Advanced Reading i
Prerequisite: Latin 104.

Prerequisite: Latin 104 . Extended, intens, Caesar, Tacitus, Livy, Terence, Horace, Propertius, Petronius, Juvenal. Emphasis on style, content, interpretation. Maximum credit nine units
199. Special Study (1-3) I, II
199. Specidual Study. Maximum credit six units.

Prerequisite: Consent of instructor.

## Linguistics

 In the College of Arts and LettersFaculty
Professors: Frey, Tidwell
Associate Professors: Donahue, Seright (Chairman)
Assistant Professors: Cooper, Drake, Underhill
Lecturers: Dil, Elgin
Offered by the Department
Master of Arts degree in linguistics.
Major work in linguistics is not offered
Minor in linguistics.

## Minor in Linguistics

The minor in Linguistics consists of a minimum of 15 units selected from the following nine units of which must be from Linguistics: Linguistics 65, 180, 181, 182, 183, 184, 185, 186 187, 188, 190, 196; Anthropology 120, 122, 124; Philosophy 131

Lower Division Courses
65. Language Study (3) I, II

Introduction to the principles and practice of modern linguistics as applied to the study of English. (Formerly numbered English 65.)
99. Experimental Topics (2-4)

Refer to the catalog statement on Experimental Topics on page 106. Limit of nine units applicable to a bachelor's degree in courses under this number of which no more than three units may be applicable to general education requirements.

Upper Division Courses
180. The English Language (3) I, II

The history of English and its present-day use. (Formerly numbered English 180.)
181. The Structure of English (3) I, II

The structure of modern English, including the various approaches to linguistic analysis. (Formerly numbered English 181
182. American English (3) I, II grammar and vocabulary. (Formerly numbered English 182.)
183. English Linguistics (3) II

Prerequisite: Open only to seniors and graduate students who have had Linguistics 180 , 181, or 196 .
Advanced study of linguistic theory and its application to the analysis of English. (Formerly numbered English 183. )
184. Phonemics and Morphemics (3) I

The study of procedures for arriving at the phonetic inventory of languages and the structuring of sound units (both linear and intonational) into phonemic systems; the study of morphemic hierarchies and their arrangements in forming words. (Formerly numbered English 184.)
185. Theory and Practice of English as a Second Language (3) II

The nature of language learning; evaluation of techniques and materials for the teaching of English as a second language. (Formerly numbered English 185.)
186. Sociolinguistics (3) I

Prerequisite: Three units in linguistics or sociology
Investigation of the correlation of social structure and linguistic behavior.
187. Psycholinguistics (3) II

Prerequisite: Three units in linguistics or psychology.
Psychological aspects of linguistic behavior.
188. Field Methods in Linguistics (3) II
(Same course as Anthropology 126.)
Prerequisites: Three units in linguistics or Anthropology 104, and consent of instructor. Principles and techniques of linguistic analysis. Problems and methods in the phonetic transcription and analysis of unwritten, non-Indo-European languages. Emphasis on phonetics, phonemics, field techniques, and work with informants.
190. Selected Topics in Linguistics (2-3) I, II

Specialized study of a selected topic in linguistics. May be repeated with new content. Maximum credit six units.
196. General Linguistics (3) I

Open only to seniors and graduate students. Recommended: Reading knowledge of Latin French, Spanish or German.
The principles of linguistic development illustrated chiefly from the Classical, Romanic and Germanic language groups. (Formerly numbered General Language 196.)

## 199. Special Study (1-3) I, II

avimum credit six units.
Prerequisite: Consent of instructor.

## Graduate Courses

220. Indo-European (3)

Prerequisite: Anthropology 104 or Linguistics 183
Phonology, morphology, and syntax of the Indo-European language community, with special attention to "Centum" and "Satem" relationships. (Formerly numbered English 220.)
221. Structure of a Non-Indo-European Language (3)

The structure of andind inctron inding grammar, reading of texts, and sessions with a native speaker of the language, if possible 223. Old English (3)

Study of Old English phonology, morphology, and syntax. (Formerly numbered English 223.)
224. Middle English (3)

Ming of historical English dialects. (Formerly numbered English 224. )
290. Bibliography and Methods of Linguistic Research (3)

Prerequisite: Twelve upper division units in linguistics; introduction to bibliographical echic exercises and problems in methods and exposition of research, including editorial procedures. Recommended for the first semester of graduate work.
295. Seminar in Linguistics (3)

Prerequisite: Completion of three units of 200 -numbered courses in the master's progran for linguistics
for linguistics. Research in linguistics, course content varying according to instred English 295.)
298. Special Study (1-3) $\mathbf{C r} / \mathrm{NC}$

Prerequisite: Consent of staff; to be arranged with department chairman and instructor Individual study. Maximum credit six units.

## 299. Thesis (3) $\mathbf{C r} / \mathrm{NC}$

 Prerequisites: An officially appointed thesis committee andPreparation of a project or thesis for the master's degree.

## Mathematics

## In the College of Sciences

Faculty
Emeritus: Clark, Emerson, Lemme
Professors: Becker, Branstetter, Bray, Burton, Deaton, Drobnies, Eagle, Fountain, Garrison, Gindler, Harris, Harvey, Ho, Holmes, Moser, Riggs, Saltz, Shaw (Chairman), smith, Van de Wetering, Warren, Warschawski, Willerding
Associate Professors: Bryant, Burdick, Davis, Hager, Howard, Khazanie, Kopp, Lesley,
Lopez, Macky, Marcus, Nower, Romano, Ross, Short, Villone, Whitman
Assistant Professors: Baase, Carpenter, Eckberg, Elwin, Flanigan, Herndon, Hintzman,
Korevaar, Marosz, McLeod, Park, Self, Vinge
Offered by the Department
Master of Arts degree in mathematics.
Master of Science degree in mathematics
Master of Science degree in computer science
Master of Science degree in statistics.
Master of Arts for teaching service with a concentration in mathematics Major in mathematics with the A.B. degree in liberal arts and sciences. Major in mathematics with the A.B. degree in applied arts and sciences.
Minor in mathematics.
Teaching major in mathematics for the single subject teaching credential.

## Mathematics Major

With the A.B. Degree in Liberal Arts and Sciences
All candidates for a degree in liberal arts and sciences must complete the graduation requirements listed on page 60 of this catalog

Preparation for the major. Mathematics 50,51, and 52. ( 13 units.) Recommended: Physics $4 \mathrm{~A}-4 \mathrm{~B}-4 \mathrm{C}$.
Major. A minimum of 24 upper division units selected with approval of the departmental adviser before starting upper division work, including Mathematics 121A, 149, and 150A, and 121A and 160; 134 and 140A; 134 and 143; 135A-125B; 136 and 139, 150A 150B; 150A A-121B;

## Mathematics Major

With the A.B. Degree in Applied Arts and Sciences
All candidates for a degree in applied arts and sciences must complete the graduation requirements listed on page 60 of this catalog

A minor is not required with this major.
Preparation for the major. Mathematics 50,51, and 52 . ( 13 units.) Recommended: Physics 4A-4B-4C.
Major. A minimum of 24 upper division units selected with approval of the departmental adviser before starting upper division work, including Mathematics 121A, 149, and 150A and one two-semester sequence chosen from the following: Mathematics 119 and 170; 121A-121B 121 A and $160 ; 134$ and $140 \mathrm{~A} ; 134$ and $143 ; 135 \mathrm{~A}-135 \mathrm{~B} ; 136$ and $139 ; 150 \mathrm{~A}-150 \mathrm{~B} ; 150 \mathrm{~A}$ and 158

Emphasis in Computer Sciences
Preparation for the major. Mathematics 7, 37, 50, 51, 52 . (19 units.)
Major. A minimum of 24 upper division units to include Mathematics 135A, 136, 137, 139; Mathematics 121A or 150A; and nine units selected, with the approval of the adviser, from
mathematics or closely related areas.

Emphasis in Statistics
Preparation for the major. Mathematics 50,51, and 52. (13 units.)
Major. A minimum of 24 upper division units in mathematics to include Mathematics $121 \mathrm{~A}, 134,140 \mathrm{~A}, 140 \mathrm{~B}, 149$; nine additional units selected, with the approval of the adviser, from mathematics or closely related areas.

## Mathematics Minor

The minor in mathematics consists of a minimum of 21 units in mathematics, to include in the lower division Mathematics 50 and 51 or Mathematics 21, 22 and 23, and in the upper division, nine units in mathematics with not more than three units selected from 101, 104, $110 \mathrm{~A}, 130 \mathrm{~A}$.

## Mathematics Major

For the Single Subject Teaching Credential
All candidates for a teaching credential must complete all requirements for the applicable specialization as outlined in the section of this catalog on the School of Education.
This major may be used by students in Teacher Education as an undergraduate major for the A.B. degree.
being revised. For further information consult the departmen

## Mathematics Placement Examination

All students who expect to enroll in Mathematics 3, 4, 19, 20, 21, 40, or 50 and have not Alled prerequisite courses at San Diego State University must take the mathematic placement tests. Students in elementary education who expect to enroll in Mathematics 10A placement or 110A and have not completed prerequisite courses at San Diego State University mus take the Mathematics Education Placement Test. These tests may be used to satisfy all o part of the prerequisite requirements for these courses and they also serve as a basis for the selection of students for the mathematics honors program. The schedule for thes examinations will be posted on the mathematics bull these examinations to be taken by the entering freshman or the transfer student prior to registration. Refer to the calendar

## Lower Division Courses

3. Intermediate Algebra (3) I, II

Prerequisite: One year of elentary algents, radicals, logarithms, quadratic equations arithmetic and geometric progressions. Not open to students with credit in Mathematics 20 or higher-numbered courses.
4. Trigonometry (2) I, II
4. Trigonometry (2) I, II Prerequisites. Mathematics 3 at this university or qualification on Mathematics Placemen either credit in Mathematics 4 may be taken concurrently with either Mathematics 40 or 50 Basic concepts of analytic trigonometry.
7. Introduction to Computer Programming (2) I, II

One lecture and three hours of laboratory.
Prerequisite: Mathematics 3.
The use of a problem-oriented language and peripheral equipment. Machine organization Extensive programming of problems on the computer.
10A. Mathematics for Elementary School Teachers (3) I Open only to students working towards a teaching credentialification on Mathematics Prerequisites: High school algebra and geometry, or qualis
Education Placement Test. Sets and relations, functions, the development of the number system from the nats. numbers, including the whole nurs (3) I
10B. Mathematics for Elementary School Teachers (3) I Open only to students working toward a teaching Mathematics Education Placement Test. Prerequisite: Mathemat theory and congruences, metric and nonmetric geometry. Elementary number theory and congruences, mepts from algebra.
Introduction to (3) I, II
18. Introduction to Mathematics (3)

Prerequisites: Two years of high school mathematics. Topics from logic, modern algebra, and analysis designed applications. Not open to introduction to the structuthematics 40 or higher-numbered courses.

## 276 / Mathematics

19. Elementary Statistics (3) I, II

Two lectures and two hours of laboratory.
Two lectures and two hours of laboratory.
Prerequisite: Mathematics 3 at this university or qualification on the mathematics placement examinations.
Descriptive statistics: Histogram, frequency polygon, measures of central tendency and variability. Elementary probability. The binomial and normal distributions. Estimation and hypothesis testing for population proportions and means. (Formerly numbered Mathematics 12.)
20. Mathematics for Business Analysis (3) I, II

Prerequisite: Mathematics 3 at this university or qualification on the mathematics placement examinations.
Basic mathematics for business students, including topics from finite mathematics and calculus.
21. Mathematical Analysis (3) I, I

Prerequisite: Mathematics 3 at this university or qualification on the mathematics placement examinations.
Concepts and applications of algebra, analytic geometry and the polynomial calculus, with mofessional with credit in Mathematics 50 .
22. Mathematical Analysis (3) I, II

Prerequisite: Mathematics 21.
A continuation of Mathematics 21 including concepts of trigonometry and the calculus of elementary transcendental functions. Not open to students with credit in Mathematics 51 .
23. Mathematical Analysis (3)

Infinite series, partial differentiation, multiple integrals. For the nonmajor. (Not open to Infinite series, partial differentiation,
students with credit in Mathematics 52.)
37. Intermediate Computer Programming (4) I, II

Prerequisite: Mathematics 7.
General concept of machine and assembly languages, including data representation looping and addressing techniques, subroutine linkages and use of system and programmer-defined macros
40. College Algebra (3) I, II

Prerequisite: Mathematics 3 at this university or qualification on the mathematics placement examinations.
Functional notation, mathematical induction, complex numbers, De Moivre's theorem inequalities, binomial theorem, determinants, etc. Not open to students with credit in Mathematics 50.
49. Introductory Matrix Algebra (3)

Matrices, vectors, linear dependence and independence, basis, change of basis, similarit and congruence. Applications to systems of equations, characteristic values and orthogonality.
50. Single Variable Calculus (5) I, II

Prerequisites: Mathematics 40 at this university, with minimum grade of C , and credit or concurrent registration in Mathematics 4; or qualification on the mathematics placement examinations.
Topics in analytic geometry; differentiation and integration of single variable functions, with emphasis on techniques.
51. Calculus and Linear Algebra (4) I, II

Prerequisite: Mathematics 50 with minimum grade of C
Infinite series, linear equations and matrices, real vector spaces, linear transformations, determinants, eigenvalues. Emphasis on techniques in low dimensional cases.
52. Multivariable Calculus (4) I, I

Prerequisite: Mathematics 51 with minimum grade of C
Partial differentiation, differential equations, multiple integrals, applications.
55A-55B. Elementary Proofs (2-2) I, II
Prerequisite: Mathematics 50 with minimum grade of C . Mathematics 55 A , with minimum grade of C , is prerequisite to 55 B .
Semester I: Elementary algebraic systems, sets, functions, and induction. Semester II: Real numbers and limits.

130A. Statistical Methods (3) I
Two lectures and two hours of laboratory
Prerequisite: Mathematics 19 or equivalent statistics course.
One- and two-sample hypothesis tests, paired difference tests, tests for variances, analysis of variance. Linear regression and correlation. Chi-square tests. Simple nonparametric tests. The power of hypothesis tests.
130B. Statistical Methods (3) II
Prerequisite: Mathematics 130 A . Multiple reg
applications.
applications.
134. Probability (3)

Prerequisite: Credit or concurrentability by enumeration of the cases, discrete and Definitions, computation of probability by enumeration of the cases, discrete and distributions.
135A. Numerical Analysis and Computation (3) I
Prerequisites: Mathematics 7 and 52 .
rerequisites: Mathemation (convergence, errorbound, rate of Iteration methods to solve non to solve systems of nonlinear equations. Application to convergence). Iteration complex zeros of a polynomial; Bernoulli's method and differenc equations. Floating point arithmetic.
135B. Numerical Analysis and Computation (3) II
Prerequisites: Mathematics 118A or 119, 121A and 135A. Iterated linear interpolation
The interpolating polynomial, Lagrangian representation. Itynomial using difference
nverse interpolation. Representations of the interpolating polynomial sum of ordinary differential differentiation. Numerical int
136. Data Structures (3

Prerequisite: Mathematics 37.
Basic concepts of data. Linear lists, strings, arrays, and orthogonal lists. Representation of rees and graphs. Multilinked structures.
137. Finite Mathematics, with Computer Applications (3)

Prerequisite: Mathematics 23 or 52.
Equivalence and order relations, Boolean algebra, finite machines and their optimization, logical design
139. Programming Languages (3)

Prerequisite: Mathematics 37.
Formal definition of programming languages including specification of syntax and semantics. Structure of algorithmic languages. Special purpose languages.
140A. Mathematical Statistics (3)
Prerequisite: Mathematics 134 . and interval estimations and hypothesis testing with Splications to problems in various fields.
applications to problemstistics (3) II
140B. Mathematical Statistics (3)
Prerequisite: Mathematics 140A
Prerequisite: Mayesian decision theory and nonparametric statistics. Estimations and hypothesis testings in linear models.
141. Statistics, Theory and Applications (3)
141. Statistics, Theory and Applica
Prerequisite: Mathematics 140A

Applications of and case studies employing statistical techniques from the areas of experimental design, nonparametric inferences, decision theory and selected topics.
143. Stochastic Processes (3)

Prerequisite: Mathematics 134
Introduction to stochastic processes with selected applications.
149. Linear Algebra (3) I, II

Prerequisite: Mathematics 23 or 52
A study of linear equations, Euclidean spaces, linear transformations, matrices, determinants, and eigenvalues.
150A-150B. Modern Algebra (3) I, II
Prerequisites: Mathematics 22 and 60 , or 51 . Mathematics 150 A is prerequisite to 150 B . theory of equations, and finite mathematics
152. Number Theory (3)

Prerequisites: Mathematics 22 and 60 or 51
Selected topics from the theory of numbers to include congruences, Diophantine equations, and a study of prime numbers.
155. Mathematical Logic (3)

Prerequisite: Mathematics 51 or 60 or Philosophy 20.
governing sentential connectives and the universal and existential quantifiers with applications. Not open to students with credit in Philosophy 121. 156. Logical Foundations of Mathematics (3)

Prerequisite: Mathematics 52 or 155 . Development of various viewpoints on foundations of mathematics: logicism, intuitionalism, formalism.
157. Machines and Recursive Functions (3)

Prerequisite: Mathematics 55A or 137 or 155
Definition of algorithm by abstract (Turing) machines and by recursion. Application of this definition to the limitations and capabilities of computing machines. Applications to logic, algebra, analysis.
158. Automata Theory (3) II

Prerequisite: Mathematics 150 A .
Definition and algebraic description of finite automata. Reduced forms for sequential machines. Regular sets and expressions. Introduction to context-free languages.
160. Introduction to Topology (3)

Prerequisite: Mathematics 121A.
Topological spaces. Functions, mappings, and homeomorphisms. Connectivity, compactness. Metric spaces.
166. Honors Course (1-3) I, II

Refer to the Honors Program.
170. Partial Differential Equations (3)

Prerequisite: Mathematies 119.
Study of boundary-initial value problems via separation of variables, eigenfunction expansions, Green's functions, and transform methods. Introductory material includes uniform convergence, divergence theorems and Fourier series.
175. Functions of a Complex Variable (3)

Prerequisite: Mathematics 52
Prerequisite: Mathemache Cauchy-Riemann equations, theorem of Cauchy, Laurent series, calculus of residues.
176. Compiler Construction (3)

Prerequisites: Mathematics 136 and 139. Scanners and parsers. Precedence grammars. Run-time storage organization. Code generation and optimization.
177. Artificial Intelligence (3) II

Prerequisite: Mathematics 155. state space. Theorem proving by machine. Resolution principle and its applications
187A-187B. Probability and Statistics for Secondary Teachers (3-3)
187A-187B. Probability and measures of central tendency and dispersion, characteristics of frequency functions of discrete and continuous variates; applications.
196. Advanced Topics in Mathematics (1-3) I, II
196. Advanced
Prerequisite: Consent of instructor.

Prelected topics in classical and modern mathematics. May be repeated with the approval of the instructor. Maximum credit six units.
198. Directed Readings in Mathematics Literature (1)
198. Directed Prequisite: Credit or concurrent enrollment in the upper division mathematics course in which readings are to be undertaken.
in which readings are to be undertaken. Individually directed readings in mathematics literature.
199. Special Study (1-3) I, II

Prerequisite: Consent of instructor.
Individual study. Maximum credit six units.
Graduate Courses
200. Seminar (1-3)

Prerequisite: Consent of instructor.
Prerequisite: Consent of instructor. Maximum credit six units applicable on a master's degree.
202. Geometrical Systems (3)

Prerequisites: Mathematics 150 A and an upper division course in geometry Ordered and affine geometries, decompositions, dilations. Projectivities and projective pace. Absolute geometry, isometrics, groups generated by inversions.
203. Topics in Algebra (3)

Prerequisites: Mathematics 121A and 150A
Unique factorization domains, rings and ideals, groups, algebraic field extensions. A course designed for secondary school teachers.
204A-204B. Topics in Analysis (3-3)
Prerequisites: Mathematics 121 A and 150 A . Mathematics 204A is prerequisite to 204B
Topics in analysis, including the real number system, convergence, continuity, differentiation, the Riemann-Stieltjes integral, complex analysis, desis secondary teacher a broad understanding of the fundamental concepts.
205. Advanced Mathematical Logic (3)

Prerequisite: Mathematics 150 A or 155 .
First-order theories, completeness theorems, arithmetization, Godel's incompleteness First-ord
theorem.
206. Applications of Computer Science (3)

Prerequisite: Classified graduate standing in Mathematics of Computer Science.
Topic to be chosen from such applications as theorem proving simulation, learning theory, graphics, definition languages. Maximum credit six units applicable on a master's degree.
212. Advanced Ordinary Differential Equations (3)

Prerequisites: Mathematics 119 and 121 A
Prerequisites: Mathematics 119 and 121A. Wronskians, adjoint systems, Sturm-Liouville
Existence and uniqueness theorems. boundary value problems, equations of Fuchsian type.
214. Advanced Partial Differential Equations (3)

Prerequisite: Mathematics 170 .
Theory and application of the solution of boundary value problems in the partial differential equations of engineering and physics by various methods; orthogonal functions, the Laplace transformations, other transformation methods, Green's functions.
220A-220B. Topology (3-3)
Prerequisite: Mathematics 160. Mathematics 220A is prerequisite to 220 B .
Metric spaces, regular spaces, Hausdorff spaces, general topological spaces, arcs and curves, and the Jordan curve theorem.
222A-222B. Functional Analysis (3-3)
Prerequisites: Mathematics 149 and 160. Mathematics 222A is prerequisite to 222 B .
Banach spaces, Hilbert spaces, spectral theory and Banach algebras.
224A-224B. Functions of a Complex Variable (3-3)
Prerequisites: Mathematics 121 B and 175 . Mathematics 224 A is prerequisite to 224 B .
Analytic continuation, elliptic functions, conformal mapping, Riemann surfaces.
226A-226B. Functions of a Real Variable (3-3)
Prerequisite: Mathematics 121 B . Mathematics 226 A is prerequisite to 226 B .
Point sets, functions and limits, continuity, differentiations, Riemann and Lebesgue integration.
230. Rings and Ideals (3)

Prerequisite: Mathematics 150B
A development of the theory of rings.
231. Theory of Groups (3)
rerequisite: Mathematics 150B
A development of the theory of groups.
232. Theory of Fields (3)

A study of both finite and infinite fields, and field extensions.
233. Linear Algebra and Matrix Theory (3)

Prerequisite: Mathematics 149
nants, and vector spaces.
240A-240B. Advanced Mathematical Statistics (3-3)
Prerequisites: Mathematics 121A and 134. Mathematics 240A is prerequisite to 240B Hypothesis testing and estimation: optimality considerations; applications of the linear
hypothesis, invariance and unbiasedness to analysis of hypothesis, invariance and unbiasedness to analysis of variance and regression problems
sequential techniques, decision theory.
241. Advanced Probability (3)

Prerequisites: Mathematics 121A and 134.
Probability spaces, integration of random spaces and product measures; conditional measures and convergence in probability, product 242. Nonparametric Statistics (3)

Prerequisite: Mathematics 140B
Tolerance regions, randomness problems, most powerful rank tests, the invariance methods, consistency and efficiency of tests.
243. Sample Surveys (3)

Prerequisite: Mathematics 140A
of clusters. 24 .
244. Multivariate Analysis (3)

Prerequisites: Mathematics 140B and 149
canonical correlation distributions, multivariate analysis of variance, factor analysis, canonical correlation.
245. Linear Statistical Hypothesis Testing (3)

Prerequisites: Mathematics 140A and 149 .
The multivariate normal distribution; distribution of quadraic forms; linear and curvilinear models; general linear hypotheses of full rank, regression models.
246. Statistical Decision Theory and Applications (3)

Prerequisites: Mathematics 121A and 140B.
Sequential and nonsequential decision methods, complete classes of decision functions, admissible decision functions, adaptive control systems, stochastic stability and control.
247. Design of Experiments (3)

Prerequisites: Mathematics 140A and 149.
Experimental design models, a basic approach as well as a matrix algebra approach.
260A-260B. Theory of Computability (3-3)
Prerequisies Mathematics 137 or 155 , and 157
Turing machines and their variants. Godel numbering and unsolvability results. Models of computation.
265A-265B. Formal Languages and Syntactic Analysis (3-3)
Prerequisites: Mathematics 136, 139, and 157 or 158 ,
Definition of formal grammars; arithmetic expressions and precedence grammars, context-free and finite-state grammars. Algorithms for syntactic analysis. Relationship between formal languages and automata.
268A-268B. Computer Architecture and Programming Systems (3-3)
Prerequisites: Mathematics 136 and 139.
Topics to include computer architecture, operating systems, I/O hardware and software translators. Selected applications such as simulation, computer graphics, CAI are additional optional topics.
Prerequisited Numerical Analysis (3)
Numerical methods in linear algebra (solving linear systems, inverting matrices eigenvalue problems). Elimination and iteration methods. Ill-conditioned systems. Detailed error analysis.
70B. Advanced Numerical Analysis (3)
Prerequisite: Mathematics 270A.
Polynomial approximation (least squares approximation, orthogonal polynomials, Chebyshev polynomials, trigonometric approximation), numerical solution of partial differential equations.
297. Research (1-3) Cr/NC

Prerequisite: Six units of graduate level mathematics.
Research in one of the fields of mathematics. Maximum credit six units applicable on a master's degree.
298. Special Study (1-3) Cr/NC

Prerequisite: Consent of staff; to be arranged with department chairman and instructor Individual study. Maximum credit six units.

## 999. Thesis or Project (3) Cr/NC

Prerequisites: An officially appointed thesis committee and advancement to candidacy Preparation of a project or thesis for the master's degree.

## Mexican-American Studies

Faculty
Associate Professor: Nuñez
Assistant Professors: Blourock, Villarino
ecturers: Chairman), Preston, Rascon, Rico, Urista Instructor: De Rivera
Offered by Mexican-American Studies
Major in Mexican-American Studies with the A.B. degree in liberal arts and sciences. Minor in Mexican-American Studies.
Single subject teaching credential in social sciences in the area of Mexican-American Studies.

## Mexican-American Studies Major

With the A.B. Degree in Liberal Arts and Sciences
All candidates for a degree in liberal arts and sciences must complete the graduation requirements listed on page 60 of this catalog
double major is strongly remmended for students majoring in Mexican-American Studies.
approved by the adviser in Mexican-American Studies
Preparation for the major. Mexican-American Studies 1A-1B. (6 units.)
Major. A minimum of 24 upper division units to include Mexican-American Studies 100; History 182A-182B; History 183A or 183B or Comparative Literature 180; and 12 units selected from (social sciences) Mexican-American Studies 101, 102, 103, 104, 105, 111, 121 , 122A-122B; or 12 units selected from (humanities) Mexican-American Studies 131, 132, 133 , 134, 135, 165; or 12 units selected from (bilingual systems) Mexican-American tudies 170, 172A, 172B, 173A, 173B, (for college teaching, studes (education) Mexican-American Studies 170, 180, 182, 183, 184, 185, 186.

Foreign language requirement. Students majoring in Mexican-American Studies must Foreign language requ of Spanish by satisfactory completion of 20 units of Spanish (Spanish $1,2,3,4,10,11$, or equivalents), or by written and oral examinations administered by Mexican-American Studies.

## Mexican-American Studies Minor

The minor in Mexican-American Studies consists of a minimum of 15 units in The minor in Mexican-American Studies consist be in upper division courses.

## Mexican-American Studies

## or the Single Subject Teaching Credential in Social Sciences

All candidates for a teaching credential must complete all requirements for the applicable specialization as outlined in the section of this catalog on the School of Education This major may be used by students in Teacher Education as an undergraduate major fo the A.B. degree.
The requirements for the single subject teaching credential in social sciences which includes the area of Mexican-American Studies are being revised. For further information consult the department.

> Lower Division Courses

A-1B. Introduction to Mexican-American Studies (3-3)
Introduction to the culture and the civilization of the Mexican-American. Semester History; Mexican and U.S. roots; the new identity. Semester II: Contemporary problems; social and political movements.

2A-2B. Oral and Written Communication for the Spanish-Speaking (3-3)
Training for the Spanish-speaking in processes of oral and written expression. Semester Oral expression; addressing the barrio: formal delivery. Semester II. Written expression English grammar and composition; the term paper. Mexican-American Studies 2A is equivalent to Speech Communication 3. Mexican-American Studies 2B is equivalent to English 5.
Mexican-American Studies 2 A is not open to students with credit in Speech Communication 3 and Mexican-American Studies 2 B is not open to students with credit in English 5.
10. Mexican-American in Transition (3)

Modern Chicano social problems recognizing the sociological factors involved. Emphasis on scientific method of approach. Evaluation of various causes and solutions of problems of the Chicano. Mexican-American Studies 10 is equivalent to Sociology 10.
11. Field Instruction (3-6)

Field work in the barrio. Directed research and development projects in the San Diego Chicano community. It is recommended that this course be taken concurrently with Mexican-American Studies 1A or 1B. Maximum credit six units.
20A-20B. The Mexican-American Role in the American Political System (3-3)
Semester I: Relationship between the Mexican-American community and the American political system. Semester II: The Mexican-American in relation to his city, county, and state institutions in California. This year course meets the graduation requirement in American Institutions.
30. Mexican Literature in Translation (3)

Contemporary Mexican prose and poetry in translation.
40. History and Sociology of Racism (3)

Survey and analysis of majority group racism and its effects upon minority ethnic groups and society.
41A-41B. History of the United States (3-3)
Emphasis on Spanish and Mexican influences. Semester I: U.S. expansion to 1848 Semester II: 1848 to the present. The Treaty of Guadalupe Hidalgo; history of Mexican immigration; farm labor and urban Chicano history; contemporary movements. This year course meets the graduation requirement in American Institutions.
50. Introduction to Mexican-American Culture (3)

The individual Chicano and his cultural pattern: the acquisition of his culture, innovation and invention, direction of his cultural development, diffusion and interpenetration of Mexican and U.S. cultures.
60. Mexican-American Art (3)

Contemporary barrio art in the Southwest. Lectures and exhibitions by Chicano artists of California.
65A. History of Mexican-American Drama (3)
The Teatro Campesino of Luis Valdes: the Los Angeles Teatro Urbano. Theory and practice in Contemporary Chicano Theater, including literary, critical, and technical aspects practice in viewed against the historical background.
65B. Mexican-American Dramatic Production (3)
Two lectures and three hours of laboratory.
Theatrical practices and organization of productions; writing for the Chicano theater; presentation of plays in the barrio and the college.
65C. Mexican and Chicano Music (3)
Music of Mexico and the barrio: emphasis on the corrido, its history and development in Mexico and the U.S.
99. Experimental Topics (2-4)

Refer to the catalog statement on Experimental Topics on page 106. Limit of nine units applicable to a bachelor's degree in courses under this number of which no more than three units may be applicable to general education requirements.

## Upper Division Course

100. Mexican-American Culture and Thought (3)
101. Mexican-American Culture and Thought (3) Nahua and European origins to the Intellectual history of the Mexican-American enth and twentieth centuries. The concept of Raza de bronce and Aztlán.
102. Community Organization and Development (3)

Th or or creative roles in educational, political, social change. Role of the professional organizer.
102. Contemporary Problems of the Barrio (3)

Sociological and practical analysis of barrio problems. Observation in informal agencies for experience and sensitizing.
103. Narcotics in the Mexican-American Community (3)

Prevention and cure of drug problems; old and new methods and formal and informal agencies explored.
104. Penology and Criminology and the Chicano (3)

The Chicano and the Pachuco and the penal institutions. Who goes to jail, and why. Field trips to penal institutions, courtrooms.
105. Mexican-American Life Styles (3)

The Mexican-American family in the past, present, and future. Traditional and evolving roles of the man and the woman. The new alternatives in the twentieth century.
111. Advanced Field Instruction (3)

Advanced field work in the barrio. Directed research and development projects in the San Diego Chicano community. Maximum credit six units.
121. Immigration Law and Practices (3)

Legal and political status of the immigrant from Mexico; process of immigration; counseling the immigrant.
122A-122B. The Chicano in Urban Politics (3-3)
Prerequisite: Consent of instructor. Mexican-American Studies 122A is prerequisite to 122B.
Semester I: Theory of urban politics; study and observation in county, city, and community organizations and agencies. Identification of specific problems. Semester II: dentification of specific urban problems; study and observation in county, city and community organizations and agencies. Exploration of practical solutions. Field trips.
131. Chicano Poetry: Creative Writing (3)

Reading and writing of Spanish-English macaronic verse: a writing workshop in which students are given opportunity to criticize each other's work. Poetry is the point of departure and goal in sight. Maximum credit six units.
132. Chicano Prose: Creative Writing (3) Exploration of new form and content in Mexican-American prose. Maximum credit six units.
133. Prehispanic Literature (3)
133. Prehispanic Literature (3)

Literature of a
134. Language of the Barrio (3)

Pachuco, calo, and barrio Spanish: a linguistic study.
135. Mexican-American Literature (3)

Ideas, forms, history of significant Mexican-American prose, poetry and other literary genres.
165. Advanced Chicano Dramatic Production (3)

Two lectures and three hours of laboratory.
Theatrical practices and organization of productions; writing for the Chicano theater; presentation of plays in the barrio and in college.
166. Honors Course (1-3) I, II

Refer to Honors Program.
170. Bilingual and Bicultural Education (3) I, II

Prerequisite: Mexican-American Studies 1A-1B
Philosophy of bilingual and bicultural education; investigation of bilingual models and exploration of research in area. Introduction to bilingual methods. (Formerly numbered
171. Bilingual Linguistics (3) I

Prerequisite: Mexican-American Studies 1A or 1B.
Prerequisite: Mexican-American Studies 1A or 1B.
Basic elements of linguistics in English and Spanish; definitions and applications. A study of comparative elements in bilingual linguistics. Taught bilingually.
172A. Bilingual Linguistics, Spanish (3) I
Prerequisite: Credit or concurrent registration in Mexican-American Studies 171.
Prerequisite: Crecit or concurrent registration in Mexican-American Studies 171.
A Spanish-English description incorporating the historical and dialectal elements of linguistics. Spanish syntax, phonology, morphology and semantics. Theories and principles of teaching in bilingual systems. This coorse is taught in Spanish. (Formerly numbered
Mexican-American Studies $171 \mathrm{~A}-171 \mathrm{~B}$-171C.).

## Microbiology <br> In the College of Science

## Facuity

Emeritus: Myers
Professors: Baxter, Kelly, Moore, Walch (Chairman)
Associate Professors: Anderes, Phelps
Assistant Professor: Steenbergen
Lecturers: Campbell, Hemmingsen, Jokela
Offered by the Department
Master of Science degree in microbiology.
Major in microbiology with the A.B. degree in liberal arts and sciences.
Major in microbiology with the B.S. degree in applied arts and sciences
Major in Environmental Health with the B.S. degree in applied arts and sciences.
Minor in microbiology.
Single subject teaching credential in life sciences in area of microbiology.

## Microbiology Major

With the A.B. Degree in Liberal Arts and Sciences
All candidates for a degree in liberal arts and sciences must complete the graduation requirements listed on page 60 of this catalog. To satisfy the requirement in foreign language, it is strongly recommended that students select French, German, or Russian.

A minor is not required with this major.
Preparation for the major. Biology 1,2, and 15 or Mathematics 19; Chemistry 1A-1B, 4 or Preparation for the major. Biond 12 , or 40 and 50 ; and Physics $1 \mathrm{~A}-1 \mathrm{~B}$, or $2 \mathrm{~A}-2 \mathrm{~B}$ and $3 \mathrm{~A}-3 \mathrm{~B}$ (39-42 units.) Recommended: Chemistry 13.
Major. A minimum of 24 upper division units in Microbiology and approved related fields o include Microbiology 101, 103, 105, and 114 or Biology 155; and Chemistry 115A-115B Remaining units to be selected from courses in microbiology, and approved courses in other biological sciences, chemistry and physics.

## Microbiology Major

With the B.S. Degree in Applied Arts and Sciences
All candidates for a degree in applied arts and sciences must complete the graduation requirements listed on page 60 of this catalog
A minor is not required with this major.
Preparation for the major. Biology 1, 2, and 15 or Mathematics 19; Chemistry 1A-1B, 4 or 5 , and 11 or 12 ; Mathematics 21 and 22 , or 40 and 50 ; and Physics 1A-1B, or $2 \mathrm{~A}-2 \mathrm{~B}$ and $3 \mathrm{~A}-3 \mathrm{~B}$ (39-42 units.) Recommended: Chemistry 13.
Major. A minimum of 36 upper division units in microbiology and approved related fields to include Microbiology 101, 103, 105, and 102 or 115; Chemistry 115A-115B; and three of the following courses: Microbiology 104, 107, 114, 116. Recommended: Chemistry 117, 109A and 109B. Remaining courses to be selected from courses in microbiology and approved courses in other biological sciences, chemistry, and physics.

## Medical Technology Curriculum <br> In Applied Arts and Sciences

The curriculum in medical technology, which prepares for the licensed profession of Public Health Microbiologist or Clinical Laboratory Technologist or Bioanalyst, may be obtained by taking the microbiology major with the B.S. degree, but following a modified arrangement of courses. A description of the curriculum follows:
Public Health Microbiologist. To fulfill the academic requirements to qualify for the icensing examination given by the California State Department of Public Health for Publi Health Microbiologist, the student should follow the major in microbiology described for the B.S. degree, but should include Microbiology 102, 104, 107, 109, and Zoology 128 Recommended: Microbiology 107L, 111A-111B, 114; Zoology 108 and 126

Microbiology / 287
examination given by the To fulfill the academic requirements to qualify for the licensing for medical technologists siven for Clinical Technologist and the certification examination should follow the major in microbiology described for the BS dinical Pathologists, the studen Microbiology 102, 104, 107, 109, and Zoology 128, and should substitutee, but should include for Chemistry 115A-115B. Recommended: Biology 150 and 151. Mier 111A-111B, 114; Zoology 108 and 126.

## Environmental Health Major

With the B.S. Degree in Applied Arts and Sciences
All candidates for a degree in applied arts and sciences must complete the graduation requirements listed on page 60 of this catalog.
A minor is not required with this major
Preparation for the major. Biology 1 and 2; Chemistry 1A-1B, 4 or 5 , and 11 or 12 ; Physics 19- Geology 2B and 3A-3B; Mathematics 21 and 22, or 40 and 50 ; Biology 15 or Mathematics 19; Geology 2; Health Science and Safety 65; and Sociology 1. (48-53 units.)
Major. A minimum of 36 upper division units to include Biology 110; Microbiology 101, 02, 111A-111B, 112, 113; Zoology 126; Public Administration 160; Fngineering 123A 125. The prerequisites for Engineering 123A are waived for students in this major

## Microbiology Minor

The minor in microbiology consists of a minimum of 15 units in microbiology to include
Mierobiology 101, 103 and 105.

## Microbiology

## For the Single Subject Teaching Credential in Life Science

All candidates for a teaching credential must complete all requirements for the applicable secialization as outlined in the section of this catalog on the School of Education.
The requirements for the single subject teaching credential in life sciences which includes the area of microbiology are being revised. For further information consult the department.

## Lower Division Course

1. Microbiology and Man (3) I, II

The biology of microorganisms and their significance in disease, agriculture, sanitation and industry. Not open to biological sciences, nursing and dietetics majors. Fulfills the general education requirement in the natural science area

## 1L. Microbiology and Man, Laboratory (1) I, II

Three hours of laboratory.
Prerequisite: Credit or concurrent registration in Microbiology 1
Laboratory exercises designed to complement material presented in Microbiology 1 ulfills the genera education laboratory requirement in the natural science area
10. General Microbiology (4) I, II
wo lectures and six hours or
Prell but will in Microbiology 1 may nroll numbered Microbiology 1.)
99. Experimental Topics (2-4) Refer to the catalog statement on Experimental Topics on page 106. Limit of nine units applicable to a bachelor's degree in courses under this number of which no more than three units may be applicable to general education requirements.

## Upper Division Courses

101. General Microbiology (4) I, II

Two lectures and six hours of laboratory.
Two lectures and six hours of lab.
Prerequisite: Chemistry 11 or 12.
The actions and reactions of microorganisms in response to their environment, both natural and as changed by other organisms, including man. Also includes an introduction to the pathogens.
102. Pathogenic Bacteriology (4) I, II

Two lectures and six hours of laboratory.
Prerequisites: Microbiology 101; Chemistry 4 or 5. Recommended: Chemistry 114A or 115A.

Bacterial and rickettsial agents of disease in man and other animals. Consideration of Bacterial and rickettsial agents of disease ine inciting agents and mechanisms of host host-parasite relationships, the biology of the and identification of bacterial pathogens.
Fund Serology (4) I, II
Two lectures and six hours of laboratory. 111 A or 115 A ; and one other upper division Prerequisites: Microbio
biological science course.
The immunochemistry of antigens and antibodies and their reactions. Immunohematology The immunochemistry of antigens techniques.
104. Medical Mycology (4) I, II
104. Medical Mycology (4) I, II

Two lectures and six hours of laboratory.
rereqic agents of disease in human and other animals. Consideration of the biology of Mycotic agents of disease in hume relationships, including factors affecting virulence and immunity. Experience in systematic identification.
105. Microbial Physiology (4) I, II

Two lectures and six hours of laboratory.
Prerequisites: Microbiology 101; Chemistry 4 or 5; and Physics 2A-2B. Recommended:
Prerequisites: Microbiology 10s 3A-3B.
Physiology of selected bacteria, fungi, and other microorganisms.
107. General Virology (2) I, II

Prerequisite: Microbiology 101. Recommended: Microbiology 102 and 103.
Viruses, their structure, function, culture, and methods of study.
107L. General Virology Laboratory (2) II
Six hours of laboratory.
Prerequisites: Microbiology 102 and credit or concurrent registration in Microbiology 107 The 108.)
109. Hematology (4) I, II

Two lectures and six hours of laboratory.
Prerequisite: Microbiology 101
Prerequisite: Microbiology 101 . The stu
methods
111A-111B. Epidemiology (2-2)
Prerequisite: Microbiology 102; Biology 15 or Mathematics 19 . and noninfectious diseases they of the tra
112. Principles of Environmental Health (4) I
112. Principles of Environmental Health laboratory and field work.

Three lectures and Piology 15 or Mathematics 19; Health Science and Safety 65; and Microbiology 101.
Meneral principles of environmental sanitation, including the relationship of the various aspects of physical environment to preventive medicine; the provision of clean air and water, aspects of physte disposal, safe food supply, and adequate habitation
113. Environmental Health Administration (4) II

Three lectures and three hours of field work.
Prerequisite: Microbiology 112.
Concepts of organization and administration applied to environmental health; factors
affecting these at the local, national and international levels.
114. Bacterial and Viral Genetics (2) I

Prerequisite: Microbiology 101. Recommended: Chemistry 114A or 115A.
The genetics of bacteriophages; selected animal viruses and bacteria.
114L. Bacterial and Viral Genetics Laboratory (2) I
Six hours of laboratory.
Prerequisite: Credit or concurrent registration in Microbiology 114.
115. Advanced General Microbiology (4) II

Two lectures and six hours of laboratory.
Prerequisite: Microbiology 101. Recommended: Chemistry 114B or 115B; Microbiology 105 , Biology 101, or Botany 130 .
Taxonomy, comparative physiology and ecology of representative microorganisms found in various natural environments.
230. Seminar in Medical Mycology (2) Prerequisite: Microbiology 104 or consent of instructor May be repeated with new content. Maximum credit four units applicable on a master's degree.
240. Seminar in General Microbiology (2)

Prerequisite: Microbiology 105 or consent of instructor.
May be repeated with new content. Maximum credit four units applicable on a master's degree.
245. Seminar in Aquatic Microbiology (2)

Prerequisite: Microbiology 105 or 116 or Biology 113
May be repeated with new content.
Maximum credit four units applicable on a master's degree.
250. Seminar in Virology (2)

Prerequisite: Microbith new 107 or consent of instructor. May
260. Seminar in Immunology and Serology (2)

Prerequisite: Microbiology 103 or consent of instructor. degree.
270. Biology of Animal Pathogenic Fungi (4)

Three lectures and three hours of laboratory
Three lectures and three hours of laboratory. Biology 155, and Microbiology 102.
Physiological, cytological, genetical, and ecological factors relating to pathogenesis of the
fungi-causing diseases in man and other animals.
272. Advanced Pathogenic Bacteriology (4)

Three lectures and three hours of laboratory.
Prerequisites: Microbiology 102 and consent of instructor.
Biological and chemical nature of disease-producing bacteria. Application of experimental information to diagnostic laboratory procedures.
290. Bibliography (1)

Use of basic reference books, journals, pertinent bibliographies preparatory to the writing of a master's thesis.
291. Research Techniques (3)

Prerequisites: Major in a biological science and two upper division courses in the area of microbiology or consent of instructor.
Analysis of research procedures in microbiology
297. Research (1-3) $\mathrm{Cr} / \mathrm{NC}$

Research in one of the fields of microbiology.
Maximum credit six units applicable on a master's degree
298. Special Study (1-3) $\mathrm{Cr} / \mathrm{NC}$

Prerequisite: Consent of staff; to be arranged with department chairman and instructor. Individual study. Maximum credit six units.
299. Thesis or Project (3) $\mathrm{Cr} / \mathrm{NC}$

Prerequisites: An officially appointed thesis committee and advancement to candidacy Preparation of a project or thesis for the master's degree.

## Music <br> In the College of Professional Studies

The Department of Music is a Member of the National Association of Schools of Music

## Faculty

Emeritus: Smith, L D., Smith, D., Springston
Professors: Anderson, Blyth, Bruderer, Estes, Forman, Genzlinger, Hogg, Hurd, Lambert, Mracek, Savage, Sheldon, Smith (Chairman), Snider, Ward-Steinman
Associate Professors: Almond, Brunson, Meadows, Rohfleisch
Assistant Professors: Flye, Hill, Logan, Loomis, Mitchell, Moe, Murphy, Yates Lecturers: Greenbush, Huber, O'Donnell

## Offered by the Department

Master of Arts degree in Music
Major in music with the A.B. degree in liberal arts and sciences.
Bachelor of Music degree in applied arts and sciences.
Minor in music
Teaching major in music for the single subject teaching credential

## Music Curricula

The music curricula are designed to fulfill the needs of all students: (1) those who have professional ambitions in music performance, or seek a foundation for graduate study leading to college or university teaching; (2) those who are preparing for one of the several state teaching credentials; (3) those whose major professional who are interested in music as an elective study area for the enrichment of their cultural background.

General Basic Requirements
General basic requirements for the B.M. degree in applied arts and sciences, the A.B degree with a major in music in liberal arts and sciences or in teacher education are as follows:
 study for credit.
2. In the area of performance studies, each entering student is required to declare his major instrument (voice, piano, clarinet, etc.), take an examination thereon for classification and complete six semesters of study on that instrument for the A.B. degree for the Single Subject Teaching Credential and eight semesters for the B.M. degree. (The requirements in terms of semesters of study
examination for classification. To qualify for upper division study, music majors must complete successfully a Junior Leve To qualify for upper division study, music majors must complete successfurth ady in Music 50 examination which will be admestudent recital during each semester in residence, according to departmental recital requirements.
to departmenting groups each semester 4. As laboratory experien the requirement in courses numbered 70 through 90 and 170 through 190 as stated to meet the requirement in courses numbered to be met in a major group in which the major instrument or voice is regularly used.

## Music Major

With the A.B. Degree in Liberal Arts and Sciences
噱 All candidates 60 of this catalog. Students must choose French, German or Italian to meet the language requirement
A minor is not required with this majo
A major. Music $8 \mathrm{~A}-8 \mathrm{~B}, 10 \mathrm{~A}-10 \mathrm{~B}, 10 \mathrm{C}, 58 \mathrm{~A}-58 \mathrm{~B}$, and four units of Preparation for
Music 50. ( 23 units.)
Music 50. (23 units.) 24 upper division units to include Music 108, 152A, 152B, six units Major. A minimum of 24 upper
selected from $154 \mathrm{~A}-154 \mathrm{~B}-154 \mathrm{C}-154 \mathrm{D}$, four units selected from 170 through 188, six units of selected fivision electives.

## Music Major

With the B.M. Degree in Applied Arts and Sciences
All candidates for a degree in applied arts and sciences must complete the graduation
requirements listed on page 60 of
A minor is not rec
Preparation for the major. Music 8A-8B, 10A-10B, 10C-10D (may be waived in full or in part by examination), $58 \mathrm{~A}-58 \mathrm{~B}$; six units selected from courses numbered Music 70 through
90 ; four to eight units in Music ( 54 units.)
Major. Forty-four to 49 upper division units to include two units selected from Music $148 \mathrm{~A}-148 \mathrm{~B}$ or $149 \mathrm{~A}-149 \mathrm{~B}, 152 \mathrm{~A}-152 \mathrm{~B}, 158 \mathrm{~A}-158 \mathrm{~B}$, six units selected from courses numbered 170 through 190, four to eight units in Music 150, and the requirements in one of the following fields of emphasis:
(a) Performance. Ten units to include Music 167, 197, and seven units to be selected with the aid of the depart
Music 141 and 142 .)
Students emphasizing performance must appear in a joint recital during the junior year and must present a solo recital during the senior year. The student must pass an audition of the program to be performed before the music faculty no less than one month in advance of the recitals.
of the recitals.
(b) Music History and Literature. Ten units to include four units of Music 199 and six units of courses to be selected with the aid of the departmental adviser from related fields such as history, etc.
During his senior year, the student emphasizing music history and literature is required to organize, prepare program notes, and present two recitals consisting of recorded or "live" performances. Each will deal with representative works of a certain period, composers, or styles to be compared. Such students must pass an audition of the
be performed no less than one month in advance of the recitals.
(c) Composition. Ten units to include two units of Music 7, two units of Music 107, 197 and four units selected with the aid of the departmental adviser.
An interview with the Department Chairman is required for admission to this emphasis.
The student emphasizing composition is required to present a concert of his compositions during the senior year and present the scores of works to be performed to the music faculty no less than one month in advance of the performance.
Foreign Language Requirement. Eight to twelve units (or equivalent knowledge demonstrated in a test of reading knowledge administered by the foreign language department concerned in consultation with the Department of Music) as follows:

1. Vocalists-one semester each of French, German, and Italian. 2. Music History and Literature students-12 units of French, German, or Italian. 3. All other-eight units of one foreign language chosen from French, German, or Italian (except that classical guitar students may substitute Spanish)

## Music Minor

To be admitted to the minor program, the student must demonstrate vocal or instrumental performing ability.
The mits 26 units in music to include Music 8A-8B, 10A-10B, 58A-58B,解 he departmental adviser.

## Music Major

For the Single Subject Teaching Credential
All candidates for a teaching credential must complete all requirements for the applicable specialization as outlined in the section of this catalog on the School of Education.
Students in teacher education may use this major for the A.B. degree in applied arts and sciences by completing additional departmental requirements in recital attendance and performance, and proficiency examinations in voice and piano.
Preparation for the major. Music 8A-8B; 10A-10B-10C-10D (may be waived in full or in part by examination); 15A; four units selected from courses numbered Music 20A through $35 ; 46 \mathrm{~A}-46 \mathrm{~B}$; four units of Music 50 ; 58A-58B; four units selected from courses numbered Music 70 through 90. (31-35 units.)
Teaching major. A minimum of 30 upper division units to include Music 146A-146B-146C. one unit selected from Music 148A or 149A; two units of Music 150; 152A-152B; 155; 158A-158B; two units selected from courses numbered Music 170 through 190.

Electives in Music
The Music Department offers certain courses for students who are interested in music as an elective study area for the enrichment of their cultural background. Courses particularly suited for these needs are Music 51 and 151 and the music courses numbered 70 to 90 and not be included in this group. Enrollment by qualified students who wish to elect these courses is encouraged.

## Performance Studies for Credit

Credit may be allowed for performance studies under the following conditions:

1. Properly enrolled music majors may enroll for performance studies with resident Properly enrolled music majors
faculty without an additional fee.
2. Properly enrolled music majors who elect to study off campus with a teacher approved by the Department of Music may do so and may apply for credit by examination. Application for such credit mits ine each semester in the Office of the Registrar withis the examination will of each semester.
Students may under no circumstances change teachers in the middle of a semester without first securing the permission of the chairman of the Department of Music,
Pron San Diego State University, the student is Prior to the start of performance studies at San Diego State University, the student is required to take a preliminary audition conducted indicate his status at the beginning of his study.
3. Students who have dropped out of school or have stopped taking performance studies Students who required to present another preliminary audition.
4. At the end of each semester, the Department of Music will sponsor a jury examination At the end of each itsfy itself that its standards have been met.

## Lower Division Courses

1. Recitals (1) I, II Preparation for individual sols perrits requirements. Maximum credit four units.

## or recitals in accordance with departm Majors (3) I, II

Basic Music
Four hours.
Rudimentary music theory involving the elements of music: melody, rhythm, and Rudiny. Developing the understanding of these elements through instrumental and vocal harmony. Developing the understanding of these end part-singing, the keyboard, and simple melodic and harmonic instruments.
Composition Laboratory (1) II
Composition Laboratory
Prerequisite: Consent of instructor.
Prerequisite: Consent of instructor. Maximum credit two units.

## 8A-8B. Comprehensive Musicianship (3-3) I, II

Two lectures and two hours of activity.
Prerequisite: Music 8 A is prerequisite to 8 B .
Direct analysis of musical styles and forms as they have evolved historically; composition, Direct analys improvisation, performance, and instrument with non-Western musical systems.
developments in related ary Class Instruction (1-1) I, II

## Two hours.

Prerequisite: Music 10A is prerequisite to 10 B . reading, notation, scales, chords, and Basic keyboard experience through study of music reading, inmediate songs and piano sight-reading covering a repertoire of beginning and literature, with emphis teaching at the kindergarten-primary level.

10C-10D. Piano-Elementary Class Instruction (1-1) I, II
Two hours.
Prerequisite
Prerequisite: Music 10B is prere
Continuation of Music 10A-10B.
15A. Voice-Elementary Class Instruction (1) I, II
15A. Voice-El
Two hours.
Two hours. Mastery of the fundamentals of voice. Not open to voice majors.
15B. Voice-Elementary Class Instruction (1) I, II
Two hours
Prerequisite: Music 15A.
Observation of individual or group lessons; critiques and discussion; performance in class. 20A. Strings-Elementary Class Instruction (1) I

Two hours.
Fundamentals of violin, viola, cello, and string bass by lecture and acquisition of elementary skills. Not open to students with credit in Music 120A.
20B. Strings-Elementary Class Instruction (1) II
Two hours.
Prerequisite: Music 20A or 120A
Fundamentals of violin, viola, cello, and string bass by lecture and acquisition of elementary skills emphasizing those instruments not previously studied in Music 20A or 120A. Not open to students with credit in Music 120B
25A. Clarinet and Flute-Elementary Class Instruction (1) I, II
Two hours
Fundamentals of the clarinet and flute by lecture and acquisition of elementary skills. Not open to students with credit in Music 125A.
25B. Oboe and Bassoon-Elementary Class Instruction (1) I, II
Two hours.
Two hours. open to students with credit in Music 125B.
30. Brass-Elementary Class Instruction (1) I

Two hours.
Fwo hours. open to students with credit in Music 130
35. Percussion-Elementary Class Instruction (1) I, II

Two hours.
Fundamentals of percussion through acquisition of elementary skill on the snare drum and by demonstration and lecture regarding all commonly used percussion instruments of definite and indefinite pitch. Not open to students with credit in Music 135.
40. Guitar-Elementary Class Instruction (1) I, II

Two hours.
Open only to music or elementary education majors. Fundamentals of guitar by acquisition of elementary skills. Not open to students with credit in Music 140.
50. Performance Studies (1-2) I, II

Prerequisite: Open only to music majors. Audition and approval by departmental faculty. Fifteen one-half hour private lessons or thirty one-hour group sessions for one unit; fifteen one-hour private lessons for two units
Studies in technical, stylistic, and aesthetic elements of artistic performance. Candidate for the B.M. degree with Performance emphasis enroll for two units of credit per semester Candidates for the A.B. degree and for the B.M. degree in composition and in music histor

credit for Music 50 is eight units.
. Harpsichord
C. Organ
D. Voice
E. Flute
F. Oboe
G. Clarinet
H. Saxophone
Bassoon
K. French Horn
M. Tromben
N. Baritone Horn
O. Tuba
. Percussion
Q. Violin
R. Viola
T. Contrabass
U. Harp
V. Classical Guitar
X . Classical Accordion
Y. Composition
51. Introduction to Music (3) I

Practical approach to hearing music with understanding and pleasure, through study of epresentative compositions of various styles and performance media, great musicians and reir art. Music correlated with other arts through lectures, recordings, concerts. Closed to music majors and minors.

## 2. Opera Theatre (2) I, II

## Four hours.

The interpretation and characterization of light and grand opera. Specific work in coordination of operatic ensemble. Maximum credit eight units.
58A-58B. Comprehensive Musicianship (5-5) I, II
Four lectures and two hours of activity.
Prerequisite: Music 8 B . Music 58 A is prerequisite to 58 B
Prerequisite: Music 8B. Music 58A La preqten 19th and 20th century harmony. Counterpoint and texture in Medieval, Renaissance, and Baroque styles.
99. Experimental Topics (2-4)

Refer to the catalog statement on Experimental Topics on page 105. Limit of nine units Refer to the catalog statement on Experimental Topics on parer which no more than three applicable to a bachelor's degree in courses under this number

## Performance Organization Courses

Pourses are devoted to the study in detail and the public The performance organization coursesentative literature for each type of ensemble and performance of a wide range of represencal experience in rehearsal techniques.
designed to provide students
Three hours.
Prerequisite: Consent of instructor.
Prerequisite: Consent of instructor.
Sections for string, woodwind, brass, piano, vocal, and mixed ensemble groups. Maximum credit four units.
75. Marching Band (1)

Concurrent registration in Music 75 and 76 required. Combined activity, six hours.
Prerequisite: Consent of instructor
Maximum credit two units.
76. Symphonic Band (1) I, II 76 required. Combined activity, six

Semester I: Concurrent registration
hours.
Semester II: Activity, five hours.
Prerequisite: Consent of inst
80. Symphony Orchestra (1) I, II
80. Symphony

Five hours. Consent of instru
Maximum credit four units.
85. Concert Choir (1) I, II
85. Concert C

Prerequisite: Consent of instructor.
Maximum credit four units.
86. Treble Clef (1) I, II

Three hours.
Three hours.
87. Men's Glee Club (1) I, II

Three hours.
Maximum credit four units.
88. University Chorus (1) I, II

Three hours.
Three hours.
Open to and
89. Jazz Ensemble (1) I, II

## 89. Jazz Ensen

Prerequisite: Consent of instructor.
Maximum credit four units.
Collegium Musicum (1) I, II
Three hours.
Prerequisite: Consent of instructor.
Maximum credit four units.
101. Recitals (1) I, II

Preparation for individual solo performances and attendance at a minimum of 12 concerts or recitals in accordance with department requirements. Maximum credit four units.
104. Eighteenth Century Counterpoint (3) I, II

Trerequisite: Music 58B. exercise in appropriate forms. (Formerly numbered Music 59B.)
105. Modern Harmonic Practice (3) I, II

Prerequisite: Music 58B.
Analysis and composition in modern idioms
106. Sixteenth Century Counterpoint (3) I, I

Prerequisite: Music 58B.
Contrapuntal techniques of the sixteenth century, as revealed in the works of Palestrina Lassus and Ingegeneri. Compositional exercises in setting parts of the Mass and in writing motets.
107. Composition Laboratory (1) II

Three hours of laboratory.
Prerequisites: Music 7 and consent of instructor
Continuation of Music 7. Maximum credit two units.
108. Form and Analysis (2) I, II

Prerequisite: Music 58B
Musical structure and design from traditional and modern literature; development of dailed analytical techniques.
109A-109B. Instrumentation and Arranging (2-2) I, II
Prerequisite: Music 58B. Music 109A is prerequisite to 109 B
Arerequisite: Music of music for full orchestra. Selected works of students to be performed by standard orchestras.
110. Electronic Music (2)

One lecture and three hours of laboratory
Prerequisite: Consent of instructor. multimedia application in live performance.
120A. Strings-Elementary Class Instruction (1) I
Fundamentals of violin, viola, cello and string bass by lecture and acquisition of elementary skills. Not open to students with credit in Music 20A.
120B. Strings-Elementary Class Instruction (1) I
Two hours.
Fundamentals of violin, viola, cello and string bass by lecture and acquisition of elementary skills emphasizing those instruments not previously studied in Music 20A or 120A. Not open to students with credit in Music 20B.
125A. Clarinet and Flute-Elementary Class Instruction (1) I, II Two hours.
Fundamentals of the clarinet and flute by lecture and acquisition of elementary skills. Not open to students with credit in Music 25A
125B. Oboe and Bassoon-Elementary Class Instruction (1) I, II
Two hours.
Fundamentals of oboe and bassoon by lecture and acquisition of elementary skills. Not
open to students with credit in Music 25B.
130. Brass-Elementary Class Instruction (1) I

Two hours.
undamentals of brass instruments by lecture and acquisition of elementary skills. Not open to students with credit in Music 30.
135. Percussion-Elementary Class Instruction (1) I, II
wo hours.
Fundamentals of percussion through acquisition of elementary skill on the snare drum and by demonstration and lecture regarding all commonly used percussion instruments of definite and indefinite pitch. Not open to students with credit in Music 35
140. Guitar-Elementary Class Instruction (1) I, II

Two hours.
Open only to music or elementary education majors.
Fundamentals of guitar by acquisition of elementary skills. Not open to students with
141. Performance Studies Pedagogy (3) I, II

Two lectures and three hours of laboratory
rerequisite: Consent of instructor
Teaching beginning and intermediate applied music. Survey and evaluation of teaching materials. Observation of individual or group lessons.
A. Piano
B. String
142. Performance Studies Laboratory (2) I, II

One lecture and three hours of laboratory
Prerequisite: Music 141A is prerequisite to 142A and 141B is prerequisite to 142B
Practical experience in the teaching of individual or group lessons.
A. Piano
B. String
C. Voice
143. Music Literature for Elementary Teachers (3) I, II

Prerequisite: Music 2 or 8 B .
Music literature suitable for teaching at the elementary school level; includes background information and ways of classroom presentation
144. Folk Music (3) I, II

Prerequisite: Masic Participation in singing and playing folk music

## 145. Music in Contemporary Life (3) I, II

45. Music in Contemporary Prerequisite: Music 2 or 8B.

Frerequisite: Music in society to include its psychological, physical and recreational uses; music as communication; the composer, the musician, and the audience.
146. Practicum (2) I, II
146. Practicum (2) I, II
Usually taken concurrently with practice teaching and emphasizing the application of best practices.
A. Choral Music
B. Instrumental Music
147. Perspectives in Music (3)

Prerequisite: Music 2 or 8 . Musical inships of music to the visual arts and the humanities.

## 148A-148B. Choral Conducting (1-1) I, II

Three hours.
Prerequisite: Music 58B. Music 148A is prerequisite to 148 B
Elements of baton technique and development of basic skills common to choral Elements Representative literature and techniques for choral organizations will be studied conducting. Rep. and performed. Practical experienumbered Music 146A.)
149A-149B. Instrumental Conducting (1-1) I, II
Three hours.
Prerequisite: Music 58B. Music 149A is prerequisite to 149B. The class will prepare and Orchestra and band scores of graduated levels of advancemerly numbered Music 146B.) conduct instrumental
150. Performance Studies (1-2) I, II

Prerequisite: Open only to music majors. Audity one-hour group sessions for one unit; 15 Fifteen one-hate lessons for two units.
one-hour private lessons for two units.
Studies in technical, stylistic and aesthetic elements of artistic performance. Candidates Studies in technical, stylistic and aesteric ele emphasis enroll for two units of credit per semester. Candidates for the A.B. degree and for the B.M. degree in composition and in musich credit and literature enroll for one unit of credit per semester. For conditionus major. Maximum and literature Performance Studies for Credit in the section is given, see Music 150 is eight units.
credit for
A. Piano
B. Harpsichord
C. Organ
D. Voice
E. Flute
F..Oboe
G. Clarinet
G. Clarinet
$\stackrel{\text { K }}{\text { K }}$. French Hor
R. Viola
A. Piano
B. Harpsichor
C. Organ
L. Trumpet
. Trumpet
. Trombone
. Tuba
P. Percussion
Q. Violin
S. Cello
T. Contrabass
U. Harp
V. Classical Guitar
X. Classical Accordion
Y. Composition
151. Great Music (3) I, II

Significant music literature of the various historical periods with emphasis on the stylistic characteristics through directed listening.
A. Musical Masterpieces of the 18th and 19th Centuries.
B. Musical Masterpieces of the 20th Century
C. Masterpieces of Grand Opera.
D. Twentieth Century American Jazz.

152A-152B. History of Music (3-3) I, II
Prerequisite: Music 58B. Music 152A is prerequisite to 152 B .
The chronological development of musical art and forms from the Middle Ages to the present. Analytical score study and assigned recordings. Familiarity with musicological
153. Opera Theatre (2) I, II

Four hours.
Interpretation and characterization of light and grand opera. Specific work in coordination of opera ensemble. Maximum credit eight units.
154. Music Literature (2) I, II

A concentrated study of the literature in the several areas listed. Analysis by use of scores and of recordings, when available.
A. Chamber Music Literature-Strings
B. Symphonic Literature
C. Keyboard Literature
155. Ethnic Musics (3)

World music outside the European art tradition with emphasis on the musics of India, Africa, East Asia and Indonesia.
158A-158B. Comprehensive Musicianship (5-5) I, II
Four lectures and two hours of laboratory
解
Continuation of Music 58A-88B. Counterpoint from 18th to 20th century, serial techniques, jazz, electronic music. Individual projects in instrumentation, composition, analysis, non-Western musics.
166. Honors Course (1-3) I, II

Refer to Honors Program.
167. Junior Recital (1) I, II

Prerequisite: Junior standing in music.
Selection of literature for recital program not to exceed 30 minutes in length; theoretical analysis and historical study of scores chosen; preparation for public performance; and examination before committee of music department faculty.
196. Experimental Topics (2-4)

Refer to the catalog statement on Experimental Topics on page 106. Limit of nine units applicable to a bachelor's degree in courses under this number of which no more than three units may be applicable to general education requirements.
197. Senior Recital (2) I, II

Prerequisite: Senior standing in music
Selection of literature for recital program not to exceed one hour in length; theoretica analysis and historical study of scores chosen; preparation for public performance; and examination before committee of music department faculty.
199. Special Study (1-3) I, II

Individual study. Maximum credit six units
Prerequisite: Consent of the department chairman.
Performance Organization Courses
The performance group courses are devoted to the study in detail and the public performance of a wide range of representative literature for each type of ensemble, and designed to provide students with practical experience in rehearsal techniques.
170. Chamber Music (1) I, II

Three hours.
Prerequisite: Consent of instructor.
Section for string, woodwind, brass, piano, vocal, and mixed ensemble groups. Maximum
credit four units.
175. Marching Band (1) I

Concurrent registration in Music 175 and 176 required. Combined activity, six hours
rerequisite: Consent of instructor
Maximum credit two units.
176. Symphonic Band (1) I, I

Semester I: Concurrent registration in 175 and 176 required. Combined activity, six hours. Semester II: Five hours per week.
Prerequisite: Consent of instructor.
Maximum credit four units.
180. Symphony Orchestra (1) I, II

Five hours.
Prerequisite: Consent of instructor.
Maximum credit four units.
185. Concert Choir (1) I, II Five hours.
Prerequisite: Consent of instructor
Maximum credit four units.
186. Treble Clef (1) I, II

Three hours.
Maximum credit four units.
187. Men's Glee Club (1) I, II

Three hours.
Maximum credit four units.
188. University Chorus (1) I, II

Three hours.
Open to all persons interested in performing oratorio, cantata, opera and the extended choral works. No entrance auditions are required. Maximum credit four units.
189. Jazz Ensemble (1) I, II

Three hours
Prerequisite: Consent of instructor.
Maximum credit four units.
190. Collegium Musicum (1) I, II

Three hours.
Prerequisite: Consent of instructor,
Maximum credit four units.
200. Seminar in Music Education (3)

Prerequisite: Consent of instructor.
Seminars in music education are offered to provide an opportunity for concentrated study in the several areas listed
A. Development and Teaching of Strings
B. Choral and Vocal Techniques
C. General Music
201. Foundations of Music Education (3)

History and philosophy of music education in relation to current trends in the teaching of music.
20. Administration and Supervision of Music Education (3)

Currimistrat and and the role of the supervisor-consultant.
204 Cemparative Music Education (3)
204. Comparative Music Education (3) Various international philosopther systems.
207. Composition (2 to 3)

Three hours of laboratory and public performance of an extended original work as a project.
various media, development of original idiom, intensive study Adodern music.
208. History and Development of Music Theory (3)
208. History and Developmand 152B.

A survey of important theoretical approaches to music, from pre-Socratic writers to the Asent
209. Advanced Orchestration (2)
09. Advanced Orchestration

Prerequisite: Music 109B. Intensive work in the practical storing fors members will be performed
210. Electronic Music (3)

Prerequisite: Undergraduate concentration in composition.
Theory, techniques and composition of various kinds of electronic music.
211. Analytical Studies of Music (3)

Prerequisite: Music 108 .
Melodic, formal, contrapuntal and harmonic analysis of music.
213. Seminar: Music Theory (3)

Prerequisites: Music 104 and 106.
Principles of traditional harmony and ear training.
246A. Advanced Choral Conducting (2)
Prerequisite: Music 146B.
Course designed to develop skills at professional level; study of different styles of choral literature and their relationship to conductor's art; score analysis and experience in conducting.
246B. Advanced Instrumental Conducting (2)
Prerequisite: Music 146B.
Course designed to develop skills at professional level; study of conducting style as related
to band and orchestra literature score analysis and experience in conducting.
250. Advanced Performance Studies (2)

Fifteen one-hour private lessons
rerequisite: Audition before music faculty
Advanced studies in technical, stylistic and aesthetic elements of artistic performance culminating in a graduate recital. Maximum credit four units applicable on a master's degree
A. Piano
B. Harpsichord
C. Organ
J. Bassoon
R. Viola
S. Cello
E. Flute
F. Oboe
G. Clarinet
H. Saxophone
L. Trumpet
M. Trombone
N. Baritone Horn
Tuba
P. Percussion
T. Contr
U. Harp
V. Classical Guitar

## (3)

252. Seminar in Music History (3)

Prerequisites: Music 152B and consent of instructor
Seminars in music history are offered for intensive study in each of the historical eras as isted below.
A. Music of the Middle Ages and Renaissance
B. Music of the Baroque Era
C. Music of the 18th and 19th Centuries
$\underset{\mathrm{E}}{\mathrm{D} . \text {. American Music }} \mathrm{Cent}$ Music
253. Musicology (3)

Prerequisite: Music 152B.
Problems and research in musicology. Projects in bibliography, source materials, music history, criticism, aesthetics and related fields. Writing and presentation of a scholarly paper. 255. Seminar: A Major Composer (3)

Prerequisite: Music 152B. Completion of a seminar in Music 252 is recommended.
The life, milieu and works of a major composer, such as Bach, Mozart or Schubert will be studied. Maximum credit six units applicable on a master's degree.
260. Seminar in the Notation of Polyphonic Music (3)

Prerequisite: Music 152B. Completion of Music 252A is recommended.
Problems related to the notation of Medieval, Renaissance and Baroque music. Examples
Notation od into modern notation.
A. Notation of Ensemble Music: White Mensural Notation
B. Notation of Ensemble Music: Black Notation to the End of Franconian Notation. 270. Seminar: Interpretation of Early Music (3)

Prerequisites: Completion of Music 252 A and 252 B is recommended
Performance practice in Medieval, Renaissance and Baroque music; projects in music editing; reports; performance on historical instruments. Participation in the Collegium 290. Research Proc
290. Research Procedures in Music (3)

Reference materials, bibliography, investigation of current research in music, processes of
thesis topic selection and techniques of scholarly writing.
298. Special Study (1-3) $\mathrm{Cr} / \mathrm{NC}$

Prerequisite: Consent of staff; to be arranged with department chairman and instructor. Individual study. Maximum credit six units.
299. Thesis or Project (3) $\mathrm{Cr} / \mathrm{NC}$

Prerequisites: An officially appointed thesis committee and advancement to candidacy. Preparation of a project or thesis for a master's degree.

## Nursing

## In the College of Professional Studies

## Agency Member of the National League for Nursing

Accredited by the California Board of Nursing Education and Nurse Registration and by the National League for Nursing

## Faculty

Emeritus: Nye
Professors: Black, Coveny, Johnson, Moses, Petrie (Director), Salerno, Sirovica, Thomas Associate Professor: Laiho
Assistant Professors: Barton, Flagg, Hassall, La Monica, Laws, Leslie, Moffett, Richards, Assistant Professors: Bark
Lecturers: Blanchard Clerkin, Colwell, Dodson, Ford, Gunning Heifetz, Rehman Schwartz, Wong

## Offered by Nursing

Major in nursing with the B.S. degree in applied arts and sciences

## Nursing Major

With the B.S. Degree in Applied Arts and Sciences
All candidates for a degree in applied arts and sciences must complete the graduation requirements listed on page 60 of this catalog
A minor is not required with corre of C or better in each nursing course completed in satisfaction of requirements with a grade of. Directed clinical experience in hospitals and health agencies in San Diego County is an integral part of the program. Graduates are eligible to apply for licensing a County is an integral partifornia and to apply for the California Certificate of Public Health Nursing.

All students, including registered nurses, are subject to the same requirements. However, graduates of associate degree and diploma programs in nursing may, after evaluation of their competency, be placed in appropriate advanced nursing classes.
Nursing reserves the right to evaluate for acceptance, prerequisite courses required for nursing major completed over five years prior to application for admission or readmission. Preparation for the major. Biology 9; Chemistry 1A-1B, 11; Microbiology 10; Psychology 1; Sociology 1; Zoology 8; three units in human growth and development; thre units in personality development; three units in marriage and the fam (
Major. A minimum of 50 upper division units in Nursing to include Microbiology 118 , Marsing 101, 102, 103A-103B, 104A-104B, 105, 106, 116, 130, 131, 132, 133, 136, 137; and four units Nursing $101,102,103 \mathrm{~A}-151,152,153,154$ and 155. A minimu selected nursing course in order to enroll in the next sequential course

## Upper Division Courses

101. Maternal-Neonatal Nursing (3) I, II
102. Maternat-Neonimum grade of C in each course listed under Preparation for the Major Prerequisites: Minimum registration in Nursing 102 103A and 104A
in Nursing; concurrent registration in Nursing ingats, including the recognition of the Principles of care of mothers and newborn the importance of family relationships.
manifestation of basic needs with enpis (4) II
103. Maternal-Neonatal Nursin

Twelve hours of laboratory.
Prerequisites: Concurrent registration in Nursing
Clinical experience in the care of mothers and newborn infants including all phases of the maternity cycle.

103A-103B. Psychiatric and Mental Health Nursing (2-1) I, II
Prerequisites: Nursing 103A: Concurrent registration in Nursing 101, 102 and 104A. Nursing 103B: Nursing 103A and concurrent registration in Nursing 104B, 130 and 131.
Beginning development in the utilization of principles and concepts of mental hygiene in meeting needs of patients exhibiting both normal and deviant behavior.
104A-104B. Psychiatric and Mental Health Nursing Experience (2-2) I, II
Six hours of laboratory.
Prerequisites: Nursing 104A: Concurrent registration in Nursing 101, 102 and 103A. Nursing 104B: Nursing 104A and concurrent registration in Nursing 103B, 130 and 131.
Clinical experience focusing on the utilization of mental health concepts in meeting needs of patients.
105. Adult Health Nursing (4) I, II

Prerequisites: Nursing 130 and concurrent registration in Nursing 106, 132 and 133.
The analysis of the health-illness needs of the adult and the nursing therapies necessary for the promotion of optimum health.
106. Adult Health Nursing Experience (4) I, II

Twelve hours of laboratory.
Prerequisites: Concurrent registration in Nursing 105, 132 and 133
Clinical experience in recognizing and meeting the health needs of the adult patient in variety of settings.
116. The Professional Role (3) I, II

Prerequisite: Concurrent registration in Nursing 136 and 137
. Focus on the multifaceted ole of the professional nurse in modern social order
130. Child Health Nursing (3) I, II

Prerequisites: Nursing 101 and concurrent registration in Nursing 103B, 104B and 131. Nursing care needs of the well and the sick child from birth through adolescence.
131. Child Health Nursing Experience (4) I, II

Twelve hours of laboratory
Prerequisites: Concurrent registration in Nursing 103B, 104B and 130.
Clinical experience focusing on growth, developmental and health needs of the child in variety of settings.
132. Community Health Nursing (3) I, II

Prerequisites: Microbiology 118, Nursing 130 and concurrent registration in Nursing 105, 106 and 133.
Principles and concepts of community health necessary to maintain the health of individuals, families and groups.
133. Community Health Experience (3) I, II

Nine hours of laboratory.
Prerequisites: Concurrent registration in Nursing 105, 106 and 132
Clinical experience, in conjunction with community agencies, directed toward attaining and maintaining the health of the total population
134. Advanced Medical-Surgical Nursing (2) I

Prerequisites: Nursing 130. Concurrent registration in Nursing 116, 135, 136 and 137.
Common problems in the care of the acutely ill patient and the patient with continuing health problems requiring a planned rehabilitation program
135. Experience in Advanced Medical-Surgical Nursing (2) I, II

Six hours of laboratory.
Prerequisite: Concurrent registration in Nursing 116, 134, 136 and 137
Directed clinical experience in the nursing care of the acutely ill patient and the long-term patient requiring rehabilitation and teaching.
136. Management of Patient Care (2) I, II

Prerequisites: Nursing 132 and concurrent registration in Nursing 116 and 137.
Principles of administration applied to the management and direction of the nursing team. Focus directed toward the development of the professional nurse in assuming a leadership
role.
137. Management of Patient Care Experience (2 or 3) I, II

Six or nine hours of laboratory.
Prerequisites: Nursing 133 and concurrent registration in Nursing 116 and 136. Clinical experience in utilizing tools and skills of management in assessing, providing and
directing health care.
151. Advanced Concepts in Clinical Nursing (4) Irregular Two lectures and six hours of laboratory.
Prerequisite: Nursing 132.
Theory and selected practice in the care of the patient with complex problems requiring intensive care, coronary care and/or rehabilitation.
152. Advanced Psychiatric and Mental Health Nursing (4) Irregular

Two lectures and six hours of laboratory
Prerequisite: Nursing 132.
Theory of and directed experience in the treatment and rehabilitation of patients with emotional and psychiatric disorders. Focus on the role of the nurse as a member of the mental health team in a variety of community settings.
153. Geriatric Nursing (4) Irregular

Two lectures and six hours of laboratory
Prerequisite: Nursing 132.
Principles of gerontology as they apply to the nursing care of the older patient in a variety of settings.
154. Advanced Maternal-Neonatal Nursing (4) Irregular

Two lectures and six hours of laboratory.
Prerequisite: Nursing 132
Theory of and experience in the care of the high-risk maternity patient and the high-risk neonate with emphasis on the needs of the family.
155. Cancer Nursing (4) Irregular

Two lectures and six hours of laboratory
Prerequisite: Nursing 132.
Theory and selected experience in the care of the cancer patient. Scope of cancer problem, pathological processes of malignancies, current medical therapies and appropriate nursing intervention are included.
160. School Nursing (3) Extension

Prerequisite: Nursing 132.
The application of health principles and current best practices in schools with emphasis on the functions of the school nurse related to the school, home and community
165A. The School Nurse Practitioner (6) Irregular
Four lectures and six hours of laboratory.
Prerequisites: Bachelor's degree in Nursing; Nursing 160.
Primary health care of school age children. Emphasis on the physical assessment.
165B. The School Nurse Practitioner (4) Irregular
Two lectures and six hours of laboratory.
Prerequisite: Nursing 165A.
Theory and supervised practice of assessing the health-illness of children in the school system.
166. Honors Course (1-3) I, II

Refer to Honors Program.
199. Special Study (1-3) I, II

Individual study. Maximum credit six units.
Prerequisite: Consent of instructor.

## Oceanography

## Administered by the Dean of the College of Sciences

San Diego State University provides preparation for work in the oceans by offering degree San Diego State University prolds supplemented by marine-related course work and programs in fundamental fields supplemented instructional and research activities are oceanographic expereau of Marine Sciences. Ocean-oriented courses and bachelor s degree coordinated by a Bureau of Marine departments of: Biology, Botany, Chemistry, Civil and programs are available ing Geography, Geology, Microbiology, Physical Sciences, Physics and Mechanian's degree with emphasis on marine problems may be earned in these Zoology. Master departments and in the School of Business Administration. The Ph.D. degr
Chemistry, Ecology and Genetics jointly Uiversity Diving Control Board is required for all Certification by the San Diego State University Divg the auspices of the University faculty and students performing SCUBA diving under the auspices of Certification information ca
100. The Oceans (2) I, II
Prerequisites: One introductory college course in a life science and one in a physical science.

Biological and physical aspects of the oceans and their significance to man; problems of modern oceanography
196. Practical Oceanography (6) I, II
aboratory field
Prerequisites: Chemistry 1A-1B; Physics 2A-2B and 3A-3B; a course in intermediate college algebra and an elementary course in statistics. Recommended: a course in analytica chemistry (Chemistry 4 or 5 ).
Practical experience in oceanography at shore installations and at sea. An intensive full-time program in the laboratory and field aspects of the marine sciences. Offered only when ship scheduling permits. Enrollment only by application; students will be notifed of selection by the tenth week of the semester preceding the desired interval because of ship berth limitations. Students will normally participate on extended cruises at sea and are advised not to enroll for other courses nor to make employment commitments during the semester.
For additional courses in Oceanography see:
Biology 113. Biological Oceanography
Chemistry 180. Chemical Oceanography
Geology 140. Marine Geology
Microbiology 116. Marine Microbiology
Physical Science 110. Physical Oceanography
Zoology 150. Marine Biology

## Philosophy

## In the College of Arts and Letters

Faculty
Emeritus: Mendenhall
Professors: Crawford, Howard, McClurg, Nelson, O’Reilly, Ruja, Shields, Snyder, Warren, Weissman
Associate Professors: Carella, Koppelman (Chairman), Lauer, Troxell
Assistant Professors: Feenberg, Rosenstein
Offered by the Department
Master of Arts degree in philosophy
Major in philosophy with the A.B. degree in liberal arts and sciences.
Minor in philosophy.

## Philosophy Major

With the A.B. Degree in Liberal Arts and Sciences
All candidates for a degree in liberal arts and sciences must complete the graduation requirements listed on page 60 of this catalog.
Preparation for the major. Nine lower division units in philosophy including Philosophy 20.
Major. A minimum of 24 upper division units in philosophy. Six units from Philosophy $101,102,103,104$ and 175; and six units from Philosophy 121, 122, 123, 125 and 128 are recommended.

## Philosophy Minor

The minor in philosophy consists of a minimum of 15 units in philosophy, nine units of which must be in upper division courses. Philosophy 101 is recommended.

## Lower Division Courses

1. Introduction to Philosophy: Values (3) I, II

Introduction to philosophical inquiry, with emphasis on problems of value, Each student encer (Formerly numbered Philosophy 1A.)
. Introduction to Philosophy: Knowledge and Reality (3) I II
2. Introduction to Philosophy: Knowledge and Reality (3) I, II
Introduction to philosophical inquiry with emphasis on problems of knowledge and reality Introduction to philosophical inquiry with emphasis on problems of knowledge and reality. conclusions. (Formerly numbered Philosophy 1B.)
. Historical Introduction to Philosophy (3) I, II heir historical contexts.
20. Logic (3) I, II

Indrodic and language. Analysis of fallacies. Uses of logic in science and in daily life.
99. Experimental Topics (2-4)
99. Experimental Topics (2-4) Refer to the catalog statement onperimental Topics on page 106. Limit of nine units Referto the catars in three units may be applicable to general education requirements.

Upper Division Courses
101. History of Philosophy I (3) I, II

Prerequisite: Three units of philosophy
Prerequisite: Three units of philo
Thales through Marcus Aurelius.
102. History of Philosophy II (3) I, II
102. History of Philosophy II

Prerequisite: Philosophy 101. Occam
Plotinus thro
103. History of Philosophy III (3) I, II

Prerequisite: Philosophy 101. R
Nicholas of Cusa through IV (3)
104. History of Philosophy IV (3)

Prerequisite: Philosophy
Fichte through Royc
105A-105B. Twentieth Century Philosophy (3-3)
Prerequisite: Six units of philosophy. Historical treatment of majemester I: Emphasis on Great Britain and the United States. Semester II. Emphasis on continental Europe.
108. Existentialism (3) I

Prerequisite: Six units of philosophy
Prerequisite. Sical aspects of Existentialism. Major emphasis is on the diversity: of thought within a common approach as this is shown in individual thinkers.
109. Ordinary Language Analysis (3) I

Prerequisite: Six units of philosophy.
Prerequisite: Six units of philosophy. with emphasis on achieving an awareness of the relationship between thinking and language.
110. Philosophy of Law (3) I
10. Philosophy of Law (3) I

Prerequisites: Three units of philosophy and three units exploration of certain key legal The nature of law and the logic of legal reasoning. An exploraty.
112. Political Philosophy (3) II

Prerequisite: Philosophy 1, 2 or 3.
Prerequisite: Philosophe political structures within which we live, such as law, power sovereignty, justice, liberty, welfare.

## 121. Deductive Logic (3) I

Prerequisite: Philosophy 20 or Mathematics 60
Principles of inference for symbolic deductive systems; connectives, quantifiers, relation Principles of deductive systems in mathematics, science and ordinary and sets. Not pen to students with credit in Mathematics 155.
122. Inductive Logic (3) II

Prerequisite: Philosophy 20. divis. The logic of experimentation and statistics Definition, classification and divis. Probability theories
123. Theory of Knowledge (3) I

Prerequisite: Six units of philosophy,
The major theories of human knowledge: mysticism, rationalism, empiricism, pragmatism. 125. Metaphysics (3) II

Prerequisite: Six units of philosophy.
Prominent theories of reality, e.g., realism and nominalism, materialism and idealism, teleology and determinism.
127. Values and Social Science (3) II

Prerequisite: Six units of philosophy
Analysis and discussion of the nature of values and value-judgment with particular reference to the social sciences. Among relevant issues: the naturalistic fallacy, facts and values; authoritarianism, emotivism, objective relativism; the individual and the community. 128. Theory of Ethics (3) I

Prerequisite: Six units of philosophy.
Significant and typical value theories and systems and the concrete problems such theories seek to explain. Emphasis will be on moral values.
129. Social Ethics (3)

Prerequisite: Philosophy 1,2 or 3.
Ethical issues of contemporary life. Individualism vs. collectivism; democracy vs. dictatorship; ethical problems arising in law, medicine, business, government and interpersonal relationships
131. Philosophy of Language (3) II

Prerequisite: Six units of philosophy.
An introduction to theories of meaning for natural languages and formal systems; concepts of truth, synonymy and analyticity; related epistemological and ontological problems.
132. Philosophy of History (3) I

Prerequisite: Six units of philosophy. inquiry. As metaphysics: A study of theories of historical development. As methodology: History as science, truth and fact in history, historical development. As methodology:
historical objectivity, the purpose of history.
133. Philosophy of Education (3) II

Prerequisite: Philosophy 1, 2 or 3
Prerequisite: Philosophy 1, 2 or 3 . conceived by major figures in the western philosophical tradition.
134. Philosophy of Literature (3)

Prerequisite: Six units of philosophy
Study of literature of philosophical significance, and of philosophical problems of literature.
135. Philosophy of Religion (3) I, II

Philosophical examination of issues raised by the religious impulse in man
136. Jewish Philosophy (3)

Prerequisite: Three units of philosophy.
Outstanding men and movements, e.g., Biblical ethics and law, Philo of Alexandria, the rabbinical tradition, the Kabbala, Moses ben Manimon, Moses Mendelssohn and Martin Buber.
137. Philosophy of Science (3) I

Prerequisite: Six units of philosophy.
The basic concepts and methods underlying contemporary scientific thought Contributions of the special sciences to a view of the universe as a whole.
141. History of Aesthetics (3) I

Prerequisite: Philosophy 1,2 or 3
Major documents in the history of aesthetics.
142. Philosophy of Art (3) II

Prerequisite: Six units of philosophy.
The nature of aesthetic experience. Principal contemporary theories of art in relation to actual artistic production and to the function of art in society.
164. American Philosophy (3)

Prerequisite: Six units of philosophy.
A systematic and critical study of the work of American philosophers from the Puritans through the Pragmatists. Major emphasis is placed on Peirce, James, Royce, Santayana

## 166. Honors Course (1-3) I, II <br> Refer to Honors Program

175. A Major Philosopher (3) I, II

Prerequisite: Philosophy 101
The writings of one major philosopher. May be repeated with new content. Maximum credit six units applicable to the major. Maximum credit six units applicable on a master's degree.
195. Selected Topics (3) I, II

Prerequisite: Six units of philosophy
A critical analysis of a major problem or movement in philosophy. May be repeated with new content. Maximum credit six units applicable toward the major in philosophy. Maximum credit six units for both 195 and 295 applicable on a master's degree.

## 196. Topies in Asian Thought (3)

Prerequisite: Six units of philosophy
Selected philosophical themes, traditions or figures, e.g., substantialism and onsubstantialism in Indian Thought, Chinese Buddhist Schools, Gandhi. Maximum credit nonsubstantialism in units with three units applicable on a master's degree.

## 199. Special Study (1-3) I, II

Individual study. Maximum credit six units
Prerequisites: Twelve upper division units in philosophy and consent of instructor. Graduate Courses

## 201. Seminar in Ancient Philosophy (3)

Prerequisite: Twelve upper division units in philosophy including Philosophy 101.
Directed research i major author (e.g., Plato or Aristotle), or a school (e.g., the Pythagoreans or the Stoics), or a problem (e.g., causation or the state). Maximum credit six units applicable on a master's degree.
202. Seminar in Medieval Philosophy (3)

Prerequisite: Twelve upper division units in philosophy including Philosophy 102
Directed research in a major author (e.g., Augustine or Aquinas), or a school (e.g., Do-Aristotelianism), or a problem (e.g., political philosophy or reason and authority) Maximum credit six units applicable on a master's degree.
203. Seminar in Modern Philosophy (3)

Prerequisite: Twelve upper division units in philosophy including Philosophy 103.
ajor author (e.g., Hume or Kant), or a school (e.g., the continental
(eationalists or the British empiricists), or a problem (e.g., the nature of substance). Maximum credit six units applicable on a master's degree
205. Seminar in Contemporary Philosophy (3)

Prerequisite: Twelve upper division units in philosophy including Philosophy 105.
Prerequisite: Tirected research in a major author (e.g., Dewey or Wittgenstein), or a school (e.g., the
Directed research in a major author (e.g., Deblem (e.g., perception or personhood) Maximum credit six units applicable on a master's degree.
211. Seminar in Legal Philosophy (3)

Prerequisite: Twelve upper division units in philosophy.
Directed research in recurrent themes of philosophical significance in jurisprudential literature.
212. Seminar in Political Philosophy (3)

Prerequisite: Twelve upper division units in philosophy
Prerequisite: Twelv in a major problem in political philosophy or the work of a major political philosopher.
221. Seminar in Deductive Logic (3)
(3) units in philosophy including Philosophy 121.

Prerequisite: Twelve upper division units in philosophy including Problems of definability, consistency and A comparison of deductive systems in logic. Problems of derics.
223. Seminar in Epistemology (3)
223. Seminar in Epistemology division units in philosophy

Prerequisite: problems concerning meaning, perception and knowledge.
225. Seminar in Metaphysics (3)
225. Serequisite: Twelve upper division units in philosophy.

An inquiry into the search of significant qualities of reality
228. Seminar in Ethics (3)
228. Seminar in twity

Prerequisitary ethical issues. Critical analysis of the works of some leading theorists, such as Moore, Dewey, Stevenson and Toulmin.
231. Seminar in Semantics and Logical Theory (3)

Prerequisite: Twelve upper division units in philosophy including Philosophy 121 and 131.
Contemporary issues in the foundations of logic and theories of language.
235. Seminar in Philosophy of Religion (3)

Prerequisite: Twelve upper division units in philosophy including Philosophy 135
A philosophical investigation of the nature of religious thought: its structure, grovth and significance.
236. Seminar in Philosophy of Art (3)

Prerequisite: Twelve upper division units in philosophy
An analysis, criticism and comparative study of selected philosophies of art
237. Seminar in Philosophy of Science (3)

Prerequisite: Twelve upper division units in philosophy including Philosophy 122 and 137. The methodology of the empirical sciences. The logical structure of science.
295. Seminar in Selected Topics (3)

Prerequisite: Twelve upper division units in philosophy
Directed research in a major problem or movement in philosophy. Maximum credit six units applicable on a master's degree
298. Special Study (1-3) Cr/NC
ndividual study. Maximum credit six units.
Prerequisites: Twelve upper division units in philosophy and consent of staff; to be arranged with departm
299. Thesis (3) $\mathrm{Cr} / \mathrm{NC}$

Prerequisites: An officially appointed thesis committee and advancement to candidacy Preparation of a project or thesis for the master's degree.

## Physical Education In the College of Professional Studies

Faculty
Emeritus: Schwob, Shannon, Sportsman, Tollefsen
Professors: Andrus, Benton, Carter, Cullen, Fox, Governali, Kasch, Lockman, Murphy, Olsen, A., Olsen, L., Phillips, Schutte, Scott, Terry, Ziegenfuss
Associate Professors: Barone, Broadbent, Cave, Franz, Friedman, Moore, Selder, Sucec,
Chairman)
Assistant Professors: Bird, Gutowski, Hollyfield, Lamke, Landis, Quinn, Smith, Whitby,
Wilhelm, Williamson, Willis Lecturers: Iverson, Zasueta
Offered by the Department
Master of Arts degree in physical education
Major in physical education with the A.B. degree in liberal arts and sciences
Major in physical education with the A.B. degree in applied arts and sciences.
Major in physical education for the single subject teaching credential.
Minor in physical education.
Minor in dance.

## Physical Education Major

With the A.B. Degree in Liberal Arts and Sciences
All candidates for a degree in liberal arts and sciences must complete the requirements isted on page 60 of this catalog.
Preparation for the major. Biology 140; Physical Education 41, 75, 90; Psychology 1; Zoology 8. ( 17 units.)
Major. A minimum of 24 upper division units in physical education to include twelve units from Physical Education 160,161, 170, 171, 175, 185 and 12 units selected with the
approval of the adviser.

## Physical Education Major

## With the A.B. Degree in Applied Arts and Sciences

All candidates for a degree in applied arts and sciences must complete the requirement listed on page 60 of this catalog

## Emphasis in Dance

Preparation for the major. Physical Education 50A-50B, 52, 53, 54; one unit selected from Physical Education 33A-33B and 34A-34B; Zoology 8; and 16 units selected from Art 2A, 2B, $5,50 \mathrm{~A}, 50 \mathrm{~B}, 61$; Drama 5, 30, 31, 50; Music 10A, 35, 51; Speech Communication 11A. (28 units.)
Major. A minimum of 24 upper division units to include four units from Physical Education 145D, 145E or $154 \mathrm{~A} ; 145 \mathrm{~F}, 150,151,152,153,155 \mathrm{~A}, 156$; and two units of upper division electives to be selected with the approval of the dance adviser. In addition to course requirements, the student must be a member of the Dance-Theater group and must participate in a minimum of four semesters of dance programs, preferably in the junior and emphesis does not meet the suching cripation requirements. emphasis does not meet the teaching credential requirements.

## Physical Education

## For the Single Subject Teaching Credential

All candidates for a teaching credential must complete all requirements as outlined in the section of this catalog on the School of Education

This major may be used by students as an undergraduate major for the A.B. degree in applied arts and sciences.
Preparation for the major. Biology 140; Physical Education 41, 75, 90; Psychology 1; Zoology 8. ( 17 units.) Physical Education 90 must be tace
 track and field (women), one combatives (men)
Major. A minimum of 35 upper division units to include Physical Education 160, 161, 170 171, 175, 180, 185; two units from each of the following groups for a total of 14 units: Physica 145 J . 145 or 145 J ( $145 \mathrm{~L}-\mathrm{men}$; $141 \mathrm{C}, 145 \mathrm{M}$ or 145 N -women); individual spor (men) (131A , 131B , 131C or 131D); and six units from physical education 122, 131, 141 or 145. A maximum of six additional units in physical education may be elected to count toward the A.B. degree.
A student must pass 11 competency tests listed above before admission to any practicum course.

## Physical Education Minor

The minor in physical education, planned in consultation with an adviser, consists of a minimum of 15 units in physical education, nine units of which must be in upper division courses.

## Dance Minor

The minor in dance consists of Physical Education 33A-33B, 34A-34B, 50A-50B, 53, 54; two units selected from Physical Education 150, 151, 152 or 155A, 156; and three upper division units to be selected from the areas of art, drama and music with the approval of the advise in dance. ( 15 units.)

Types of Activity Courses
A health history record is required of each student entering the university. Adapted A health histion classes to care for special needs are offered. The content of these course physical ed to give each student an opportunity to participate in many activities of carryove value, developmental nature and recreational interest. An opportunity is afframs to participate in competitive sports in the extramural and intramural programs.

Lower Division Courses
Courses offered for one unit credit meet two hours per week or equivalent. "A" signifies Courses offered "B" intermediate. Physical Education 1A-39M are acceptable for genera a begination credit.
1A. Physical Fitness and Figure Control (1)
2A-2B. Conditioning (1-1)
3A-3B. Jogging (1-1)
(Formerly numbered Physical Education 36A-36B.
$4 \mathrm{~A}-4 \mathrm{~B}$. Weight training (1-1)
(Formerly numbered Physical Education 2A-2B.)

5A. Individual adaptives (1)
Prerequisite: Consent of instructor. Individual exercise programs for those who are handicapped in some respect, or who have functional defects or deficiencies amenable to improvement through exercise. May be repeated for credit. (Formerly numbered Physical Education 38.)
8A-8B. Basketball (1-1)
9A-9B. Soccer (1-1)
10A-10B. Volleyball (1-1)
11A-11B. Softball (1-1)
(Formerly included in Physical Education 6A-6B.)
12A-12B. Field Hockey (1-1)
(Formerly included in Physical Education 6A-6B.)
13A-13B. Flag Football (1-1)
(Formerly included in Physical Education 6A-6B.)
14A-14B. Wrestling (1-1)
(Formerly numbered Physical Education 12A-12B.)
15A-15B. Track and Field (1-1)
(Formerly numbered Physical Education 11A-11B.)
16A-16B. Golf (1-1)
17A-17B. Archery (1-1)
18A-18B. Tennis (1-1)
19A-19B. Bowling (1-1)
20A-20B. Badminton (1-1)
21A-21B. Handball (1-1)
22A-22B. Fencing (1-1)
23A-23B. Racquetball (1-1)
(Formerly numbered Physical Education 36A-36B.
24A-24B. Sailing (1-1)
25A-25B. Gymnastics (Men) (1-1)
(Formerly numbered Physical Education 7A-7B.)
26A. Rhythmic Gymnastics (Women) (1)
(Formerly numbered Physical Education 46. )
27A-27B. Apparatus Gymnastics (Women) (1-1)
(Formerly numbered Physical Education 7A-7B.)
28A-28B. Ice Skating (1-1)
(Formerly numbered Physical Education 36A-36B.)
29A-29B. Swimming (1-1)
30A-30B. Synchronized Swimming (1-1)
31. Life Saving (1)

Formerly numbered Physical Education 50.)
32A-32B. Ballroom Dance (1-1)
33A-33B. Folk and Square Dance (1-1)
34A-34B. Modern Dance (1-1)
35A-35B. Ballet (1-1)
(Formerly numbered Physical Education 39.)
36A-36B. Jazz (1-1)
(Formerly numbered Physical Education 36A-36B.
38. Selected Activities (1)

May be repeated with new activity for additional credit. See class schedule for semester offerings.
39. Women's and Coed Teams (1)
(Formerly numbered Physical Education 36A-36B.
Maximum credit four units.
A. Archery
H. Softball
C. Basketball
$\underset{\mathrm{E}}{\mathrm{D} .}$ Fencing
E. Field Hockey
F. Golf
G. Gymnastics
41. Physical Education of Children (2)

Four hours of activity
Application of the principles of motor learning and muscular fitness to the elementary physical education activity program. Includes a practical field experience with elementary students. (Formerly numbered Physical Education 53.

## 45. Dance (2)

Four hours of activity.
Competency development in dance. Emphasis on skills, movements, facilities and organizational procedures in dance. (Formerly numbered Physical Education 73.)

## 47A-47B. Officiating Women's Sports (1-1)

Two hours of activity
Practice in officiating techniques in women's sports leading to official's ratings
A. Volleyball
B. Softball, Basketball. May be repeated once with new content.

## 50A-50B. Advanced Modern Dance (1-1)

Two hours of activity.
Prerequisite: Physical Education 34B
Skill techniques. Compositional factors and devices. Materials of design, rhythm and dynamics in group compositions. The use of percussion and various forms of accompaniment. (Formerly numbered Physical Education 48A-48B.)
52. Advanced Skill Techniques in Dance (1)

Two hours of activity.
Prerequit
Progressively difficult dance techniques using several creative approaches. Emphasis on motivation, 54.)
53. Introduction to Dance (2)

Dance as an art form with emphasis on the development of contemporary trends; American dance personalities and their contributions. (Formerly numbered Physical Education 81.)
54. Rhythmic Analysis Related to Movement (2) activities; percussion accompaniment; writing of percussion scores, music repertoire for dance. (Formerly numbered Physical Education 82.)
75. Sociocultural Foundations of Physical Activity (3)

Integrated approach to the understanding of the historical, philosophical and sociological forces shaping the development of physical education and sport
90. Skill Competency in Physical Education (2) $\mathrm{Cr} / \mathrm{NC}$

## Four hours of activity

Designed for potential physical education majors and minors as a prerequisite to all professional course offerings.
professiciency tests will be given in each area commonly taught in secondary physical Proficiency tests will be given in each area commony in mirst semester of declared physication major.
Upper Division Courses
120. Skin and Scuba Diving (2)

Four hours of activity.
Prerequisites: Medical examination, waiver for hazardous procedures, pass swimming competency test.
Function and knowledge of underwater diving to include diving physiology, hyperbaric onditions, medical hazards, safety procedures associated with scuba diving, proper care and conditions, medical hazards, safety procedures associated with scaion 123.)
122. Practicum: Life Saving and WSI (2)

Four hours of activity.
Prerequisite: Pass swimming competency test. Content designed to qualify expert swing Includes methods and materials for teaching all levels Water Safety

## of swimming.

130. Physical Welfare of the Athlete (3)

Two lectures and two hours of activity. Prevention, diagnosis and treatmen including basic knowledge of appropriate nutrition; the conditioning program, including dareas. (Formerly numbered Physical parameters-flex
131. Practicum: Theory and Analysis of Coaching Competitive Sports (2)

Four hours of activity. ffficiating and rules, and daily-seasonal practice planning in one of the sports listed below. A. Basketball
B. Football
D. Track and Field (including Cross Country)
E. Women's Field Sports
F. Additional sports (offered on student demand) may be repeated with new content. (Formerly numbered Physical Education 133.)
141. Practicum: Physical Education Activities for Elementary Schools (2)

Four hours of activity
Prerequisite: Physical Education 41
In-depth study of selected physical education activities for elementary school children. Includes teaching techniques, unit planning, progressions and resource materials.
A. Movement exploration activities for children
B. Rhythm and dance activities for children
C. Ball and sports activities for children
D. Track and field activities for children
E. Gymnastic activities for children
145. Practicum: Physical Education Activities for Secondary Schools (2)

Four hours of activity
Prerequisite: Passing competency tests in each activity covered in section.
Selection and care of equipment, skill analysis, teaching progressions, evaluation
techniques, organizational procedures and resource materials for selected activities as listed.
A. Weight Training, Physical Fitness. (Formerly numbered Physical Education 177.)
C. Track and Field (Men).
D. Track and Field; Softball (Women). (Formerly included in Physical Education 156.)
D. Foik Dance. (Formerly included in Physical Education 151. .
E. Square and Ballroom Dance. (Formerly included in Physical Education 151.)
F. Modern Dance. (Formerly numbered Physical Education 154.)
G. Gymnastics (Men). (Formerly numbered Physical Education 71.)
H. Gymnastics (Women). (Formerly numbered Physical Education 152.)
I. Tennis, Badminton, Racquetball. (Formerly included in Physical Education 155 and
176.)
I. Archery, Golf, Handball. (Formerly included in Physical Education 155 and 176.) K. Speedball, Softball, Touch Football (Men). (Formerly included in Physical Education
L. Volleyball, Basketball, Soccer (Men). (Formerly included in Physical Education 175.) M. Hockey, Soccer, Flag Football (Women). (Formerly included in Physical Education
156.)
N. Volleyball, Basketball (Women). (Formerly included in Physical Education 156.) O. Combatives (Men). (Formerly numbered Physical Education 174.)
150. Dance Composition (Preclassic Forms) (3)

Two lectures and two hours of activity.
Prerequisites: Physical Education 52 and 54
Compositions based on a study of preclassic dance forms as a contribution to form in contemporary dance. Study of the music of the period. Critical evaluation of group and individual compositions. (Formerly numbered Physical Education 182A.)
151. Dance Composition (Modern Forms) (3)

Two lectures and two hours of activity.
Prerequisites: Physical Education 52 and 54
Compositions related to contemporary art forms emphasizing the interaction of form and content in the creative idea. The temporal, spatial, dynamic and dramatic elements of choreography. (Formerly numbered Physical Education 182B.)

## 152. Workshop in Dance (1-2)

Choreographic techniques and skills with visiting master teachers; written report or project. Maximum credit four units. (Formerly numbered Physical Education 184.)
153. Dance Production (3)

Lecture-demonstration, recital and concert forms of dance programs. Presentation and staging of original solo and group compositions. (Formerly numbered Physical Education

154A-154B. Problems in Dance (2-2)
Prerequisite: Physical Education 50A
Problems in ethnic or modern dance; history, anthropological basis, stagecraft, accompaniment, costuming. (Formerly numbered Physical Education 153A-153B.)
55A-155B. Choreography in Contemporary Dance (3-3)
Pwo lectures and two hours of activity.
Experimentation in dance, relating
lating contemporary theories to other art forms. Force and time-space relationships as factors of choreography. (Formerly numbered Physical A. Production probl
B. Production problems for large and small groups.
56. History and Philoms for trios, duos and solos.

The cultural background of all forms of dance in various civilizations with emphasis on the relationship of the social structure to the existing dance forms. (Formerly numbered Physical Education 181.)
160. Applied Anatomy and Kinesiology (3)

Prerequisites: Biology 140 and Zoology 8
Arthrology, syndesmology and myology, with special emphasis on movement analysis. Muscle groups and their functional relationships. Application of simple mechanical principles to movement analysis. (Formerly numbered Physical Education 167.)
161. Physiology of Exercise (3)

Prerequisites: Biology 140 and Zoology 8.
Effects of physical activities on the physiological functions of the body. (Formerly numbered Physical Education 168.)
162. Exercise Physiology Laboratory (1)

Three hours of laboratory.
rerequisite: Credit or concurrent registration in Physical Education 161.
Laboratory experiences in the application of exercises and the analysis of the results.

## 163. Biomechanics of Human Movement (2)

Prerequisite: Zoology 8.
Mechanical principles as applied to movement; analysis and application to selected motor skills. (Formerly numbered Physical Education 160.)
164. Kinesiology-Biomechanics Lab (1)

Three hours of laboratory.
ucation 160 and 163.

165. Prevention and Rehabilitation of Injuries to Athletes (2)

Prerequisites. Physical Education 160 and 161.
Prevention and care of athletic injuries. Sports safety and effects of environment on health and welfare of the athlete. First aid, use of prescribed modalities. (Formerly numbered Physical Education 164.)
167. Adapted and Special Physical Education (2)

Prerequisites: Physical Education 160 and 1andicapped individuals, including prescribed exercises, activities and evaluation. (Formerly numbered Physical Education 169.) 168. Adapted and Special Physical Education Laboratory (1-4)

Three hours of laboratory per unit
Prerequisites: Credit or concurrent registration in Physical Education 167.
Supervised laboratory of practicum experience in adapted or special physical education programs. Maximum credit four units.
170. Psychological Bases of Physical Education (3)

Prerequisite: Psychology 1
Psychological parameters related to physical performance and the acquisition of motor skills. (Formerly numbered Physical Education 161.)
171. Physical Growth and Development (3)
17. Principles of human growth; performance as affected by developmental levels and individual differences in structure and function. (Formerly numbered Physical Education 163.)
175. Contemporary Sociocultural Aspects of Physical Activity (3)

Current sociological and cultural factors influencing the role and significance of sport and physical activity in modern American society.

## 314 / Physical Education

180. Physical Education Programs (3)

Organization of physical education programs in the public schools. Includes curriculum ent, legal bases, materials, facilities and constraints in the ucation.
182A-182B. Administration of Interscholastic Sports and Extracurricular Activities (3-3)
Materials covering the organization and administration of activities such as interscholastic
 intramural and extramural activities. (Formerly numbered Physical Education 165.)
A. Interscholastic sports
B. Extracurricular activities
185. Measurement and Evaluation in Physical Education (3)

Two hours of lecture and two hours of activity.
Elements of statistical techniques appropriate to physical education criteria for test selection; construction and evaluation of tests; and the administration of a testing program in physical education. (Formerly numbered Physical Education 162.)
196. Experimental Topics (2-4)

Refer to the catalog statement on Experimental Topics on page 106. Limit of nine units applicable to a bachelor's degree in courses under this number of which no more than three units may be applicable to general education requirements.
197. Workshop in Physical Education (1-2)

Methods, techniques and development of skills in such areas as aquatics, combatives, gymnastics, rhythms and dance, and individual and team sports. Designed for secondary school administrators, teachers, coaches, recreation and youth leaders. Maximum credit six units. (Formerly numbered Physical Education 178.)
198. Supervised Field Experience (1-3)

Prerequisite: Consent of department chairman.
Supervised practical experience in the area of physical education. (Formerly numbered Physical Education 179.)
199. Special Study (1-3)

Individual study. Maximum credit six units.
Prerequisite: Consent of department chairman.

## Graduate Courses

200. Seminar (3)

An intensive study in advanced physical education, topic to be announced in the class schedule. Maximum credit six units applicable on a master's degree.
201. Curriculum in Physical Education (3)

Prerequisite: Major or minor in physical education, or equivalent.
Curricula in physical education. Special emphasis on curriculum construction and evaluation.
202. Administration of Physical Education in the Secondary Schools (3)

Prerequisite: Major or minor in physical education, or equivalent.
Topics include personnel problems, selection and maintenance of equipment and facilities program organization and evaluation, budget and related items.

## 203. History of Physical Education (3)

Historical forces guiding the development of physical education from ancient to modern times.
204. Problems in Recreation (3)
(Same course as Recreation 204.)
Current problems facing the recreation profession, through a review of literature discussion of trends, and observation of school and community situations. Analysis and evaluation of actual problems. Written reports required.
205. Current Trends and Issues in Physical Education (3)

A critical appraisal of contemporary trends and issues.
206. Seminar in Competitive Athletics (3)

Prerequisite: Major or minor in physical education or recreation
Knowledge and appreciation of the skills, techniques and teaching methods involved in the coaching of athletics; the study of possible solutions to problems associated with the program of competitive school athletics.
207. Advanced Kinesiology and Biomechanics (3)

Prerequisite: Physical Education 160 .
Principles of mechanics applied to the analysis of human motion. Electromyography and cinematography as aids in analysis. Kinetic analysis of movement
208. Advanced Physiology of Exercise (3)

Prerequisites: Physical Education 160 and 161.
Advanced aspects of the physiology of exercise. Effects of exercise on human beings in relation to health, longevity, morphology and performance.
209. Advanced Adapted Activities (3)
Prerequisite: Physical Education 167,

Prerequisite: Physical Education 167.
Postural divergencies, lack of physical development, physical handicaps and special programs. Individual exercise programs. Preventive and corrective exercises. Functional examinations and the physician's report. Ethical procedures and limitations.
211. Advanced Evaluation in Physical Education (3)

Prerequisite: Phy Education 185.
Mether apparatus used in testing physical performance Sources of error, limitations on application and interpretation. Practice in construction and use
13. Problems in Physical Education (3)

Prerequisite: Major or minor in physical education
A study of selected areas of the physical education program.
215. Philosophical Foundations for Physical Education (3)

Major philosophies and their application in physical education
220. Principles of Neuromuscular Tension (3)

Prerequisite: Physical Education 160 .
e causes of muscular hypertension and the application of 221. Exercise Flectrocardionraphy (3)
221. Exercise Electrocardiography (3) electrocardiography with emphasis on ergometric methods and application to exercise physiology.
223. Advanced Exercise Physiology Laboratory (3)
223. Advanced Exercise Phe
Nine hours of laboratory.
Prerequisite: Physical Education 167

A laboratory course designed to develop competency in respiratory metabolism pulmonary function, gas analysis, blood chemistry and ergometry. Experience in the application of exercise procedures with human subjects and analysis and interpretation of results.
227. Fitness of Adults (3)

One lecture and six hours of laboratory.
Prerequisite: Physical Education 16
Evaluation, exercise prescription and training of adults. An understanding of the underlying hypokinetic diseases of adults and the procedures used in coping with the associated health problems of an automated environment.
261. Seminar in Motor Learning and Motor Performance (3)

Prerequisite: Physical Education 170.
A review of research in physical education and related fields plus experimental laboratory experiences in motor learning.

## 291. Research Techniques (3)

Prerequisites: Major in physical education and Physical Education 185
Principles and methods of planning and carrying out the investigation of problems related to physical education. The development of research designs and practice in formulating and testing hypotheses as well as the interpretation of results. (Prerequisite to thesis.)

## 295. Seminar in Physical Education (3)

Prerequisites: Physical Education 291 and advancement to candidacy for the master's degree in physical education.列 students foll

## 298. Special Study (1-3) Cr/NC

Prerequisite: Consent of department chairman

## 299. Thesis (3) $\mathrm{Cr} / \mathrm{NC}$

Prerequites: An officially appointed thesis committee and advancement to candidacy. Prerequisites: An officially appoister the master's degree.

## Physical Science <br> In the College of Sciences

Faculty
Emeritus: Watson
Professors: Dessel, Merzbacher, Shull (Chairman)
Associate Professors: Feher, Ingmanson, Metzger
Assistant Professors: Dowler, Jackson, May, Phleger, Springer, Thompson, Wallace

## Offered by the Department

Master of Arts degree in physical sciences for teaching
Teaching major in the physical sciences for the single subject teaching credential. See TTeaching major in the physical sciences for the catalog section Professional Schools: Courses and Curricula. See "School of Education" also for description of an interdepartmental major in physical sciences.
Minor in physical science.

## Physical Science Minor

The minor in physical science consists of a minimum of 15 units selected from astronomy, chemistry, geology, physical science and physics with the approval of the departmen adviser. Nine of the 15 units must be in upper division courses, six units of which must be taken in physical science.

## Lower Division Courses

1. General Physical Science (4) I, I

Three lectures and three hours of laboratory.
Designed specifically to show why an understanding of science is essential for a complete liberal education. Topical emphasis varies with instructor. Satisfies general education requirements in physical science including laboratory. Not open to students with credit or concurrent registration in Physical Science 2A or 10A.
2A-2B. Principles of Physical Science (3-3) I, II
Prerequisite: Physical Science 1 or 2 A is prerequisite to 2 B
The nature of the physical universe with emphasis on the whole field of physical science rather than on its separate division Not open to students with . registration in Physical Science 1 or 10A. Physical
3. Experimental Methods in Physical Science (1) I, II

Three hours of laboratory
rerequisite: Credit or concurrent registration in Physical Science 2A
Methods in physical science as illustrated by the use of significant examples from the various disciplines. The technique of observation, measurement and discovery of relationships. Fulfills the general education laboratory requirement in the natural science area.
10A-10B. Structure and Concepts of Physical Science (4-4) I, II
Three lectures and three hours of laboratory
Physical Science 10A is prerequisite to 10B. is suited for people interested in science instruction at the elementary level. Not open to students with credit or concurrent registration in Physical Science 1 or 2A
55. Technology and Human Values (3) II

Prerequisite: Physical Science 1.
Technologies such as solar and fusion power, lasers, computer services, transport, synthetic food and their impact on values and life styles of developed countries. Characteristics of postindustrial society, future shock and biological revolution. Curve extrapolation and simulation by games and computer.
99. Experimental Topics (2-4)

Refer to the catalog statement on Experimental Topics on page 106. Limit of nine units applicable to a bachelor's degree in courses under this number of which no more than three units may be applicable to general education requirements.

> Upper Division Courses
110. Physical Oceanography (3) I, II

Prerequisites: Chemistry 1A, Mathematics 40, Physics 1A or 2A
History and structure of the ocean basins; geochemistry and origins of sea water; dynamics of ocean currents, waves and tides, heat budget of the oceans.

## Graduate Courses

200. Seminar (2 or 3)

An intensive study in advanced physical science, topic to be announced in the class schedule. Maximum credit six units applicable on a master's degree.
210. Advanced Topics in Physical Science (3) I, II

Prerequisite: Undergraduate major or minor in one of the physical sciences
Selected topics in classical and modern physical science. Topics covered in a particular emester to be announced in the class schedule. Maximum credit six units applicable on a master's degree.
261. General Relativity and Cosmology (3)

Prerequisites: Mathematics 119 and consent of instructor.
Introduction to General Relativity. Topics include: absolute differential calculus of Ricci nd Livi-Civita, development of the ordinary and null geodesic equations, field equations, application to classical astronomical problems and high energy astrophysics.
298. Special Study (1-3) Cr/NC
credit six units
rerequisite: Consent of staff; to be arranged with department chairman and instructor.
299. Thesis or Project (3) $\mathrm{Cr} / \mathrm{NC}$

Prerequisites: An officially appointed thesis committee and advancement to candidacy. Preparation of a thesis or project in one of the physical sciences for the master's degree.

## Physics

## In the College of Sciences

Faculty
Emeritus: Craig, Kalbfell, Moe, Terhune
Professors: Garrison, Morris, Nichols, Piserchio, Skolil, Smith, Snodgrass, Teasdale, Templin (Chairman), Wolf, Wolter
Associate Professors: Cottrell, Lilly, Rehfuss, Roeder
Assistant Professors: Burnett, Solomon
Offered by the Department
Master of Arts degree in physics
Master of Science degree in physics.
Master of Science degree in radiological physics
Major in physics with the A.B. degree in liberal arts and sciences.
Major in physics with the B.S. degree in applied arts and sciences.
Major in chemical physics with the B.S. degree in applied arts and sciences. Single Subject teaching credential in physical sciences in the area of physics Minor in physics.

## Physics Major

With the A.B. Degree in Liberal Arts and Sciences
All candidates for a degree in liberal arts and sciences must complete the requirements listed on page 60 of this catalog
To meet the foreign language requirement for graduation, students should choose French, German or Russian.
A minor in mathematics is required. It should include Mathematics $50,51,52,118 \mathrm{~A}-118 \mathrm{~B}$ and three units from Mathematics 121A, 150A, or 175. Mathematics 104 is acceptable for indents preparing for elementary or secondary teaching. Students planning graduate work physics should take additional mathematics beyond these listed.
Preparation for the major. Chemistry 1A-1B or 10A-10B; Mathematics 50, 51, 52; Physics 4A-4B-4C. ( 35 units.)
Major. Twenty-seven upper division units in physics and mathematics to include Physics $100 \mathrm{~A}-100 \mathrm{~B}, 102 \mathrm{~A}-102 \mathrm{~B}, 103,116$ and 170 ; Mathematics 118A-118B. For preparation for graduate work in physics, the student should choose from Physics 106, 114, 151, 175, 180, 186, $190,196,198 \mathrm{~A}$ and 198 B .

## Physics Major

With the B.S. Degree in Applied Arts and Sciences
All candidates for a degree in applied arts and sciences must complete the graduation A minor is noted on page 60 of this catalog.
A minor is not required with this major
Preparation for the major. Chemistry 1A-1B or 10A-10B; Mathematics 50,51 and 52 , Physics 4A-4B-4C. ( 35 units.)
Major. Thirty-nine upper division units in physics and mathematics to include Mathematics 118A-118B, Physics 100A-100B, 102A-102B 103, 104, 16,170 , units of electives. Courses are to be selected in consultation with the departmental and six Concentrations in the areas of applied physics, scientific instrumentation, nuclear physics, optics and teacher education are available in this degree.

## Chemical Physics Major

## With the B.S. Degree in Applied Arts and Sciences

Preparation for the major. Chemistry 1A-1B or 10A-10B, 5 , and 12; Mathematics 50,51 and 52; Physics 4A-4B-4C. ( 43 units.)
Major. Thirty-nine upper division units to include Chemi-try 110A-110B, 112, 127A and 55. Mathematics 118A; Physics 100A-100B, 102A-102B, 103,116 and 190.

## Physics Minor

The minor in physics consists of a minimum of 15 units in physics, six units of which must be in upper division courses.

## Physics

For the Single Subject Teaching Credential in Physical Sciences
All candidates for a teaching credential must complete all requirements for the applicable specialization as outlined in the section of this catalog on the School of Education.
The requirements for the single subject teaching includes the area of physics are being revised. For further information consult the department.

## Lower Division Courses

Maximum credit 15 units for any combination of Physics $1 \mathrm{~A}-1 \mathrm{~B}, 2 \mathrm{~A}-2 \mathrm{~B}, 3 \mathrm{~A}-3 \mathrm{~B}, 4 \mathrm{~A}-4 \mathrm{~B}-4 \mathrm{C}$ and 5.
1A-1B. Elementary Physics (4-4) I, II
Two lectures, one discussion and three hours of laboratory.
Prerequisites: Two years of high school mathematics. Physics 1 A is prerequisite to 1B. Not open to students who have had high school physics.
This course is for students in those liberal arts and preprofessional courses not requiring physics with calculus. Physics 1A is not open to students with credit in 2A or 4A;1B not open to students with credit in $2 \mathrm{~B}, 4 \mathrm{~B}$, or 4 C
2A-2B. General Physics (3-3) I, II
Prerequisites: Completion of high school physics. Physics 2A is prerequisite to 2B Recommended: For Physics 2A, concurrent registration in 3A; for Physics 2B, concurrent registration in 3B
This course is for students in those liberal arts and preprofessional courses not requiring physics with calculus. Physics 2 A is not open to students with credit in 1 A or $4 \mathrm{~A} ; 2 \mathrm{~B}$ not open o students with credit in $1 \mathrm{~B}, 4 \mathrm{~B}$, or 4 C .
3A-3B. Physical Measurements (1-1) I, II
Three hours of laboratory
Prerequisite for 3A: Credit or concurrent registration in Physics 2A.
Prerequisite for 3B: Physics 3A and credit or concurrent registration in Physics 2B.
A laboratory course to accompany Physics 2A-2B. Semester I: Properties of matter A laboratory course to and Semester II: Electricity, magnetism and light. Physics 3A is not open to students with credit in 1 A or $4 \mathrm{~A} ; 3 \mathrm{~B}$ not open to students with credit in $1 \mathrm{~B}, 4 \mathrm{~B}$, or open
4 C .

4A-4B-4C. Principles of Physics (4-4-4) I, II
Three hours of lecture and three hours of laboratory
Prerequisites for 4A: Completion of high school physics or equivalent and credit or concurrent registration in Mathematics 50 .
Prerequisites for 4 B : Physics 4 A with a grade of C or better and credit or concurrent registration in Mathematics 51 .
regrerequisites for 4 C : Physics 4 B with a grade of C or better and credit or concurrent registration in Mathematics 52 .
Certain students may, with consent of the Department, substitute credit in Mathematics 22 for the indicated mathematics courses.
f physics in the areas mechanics, wave understanding of the fundamental principles
4E. Principles of Physics for Engineers (4)
4E. Principles of Physics for Engineers (4)
Three lectures and three hours of laboratory.
Prerequisites: Completion of high school physics or equivalent and credit or concurrent registration in Engineering 50A.
Designed to prepare the engineering student for Physics 4 C without duplication of the material on mechanics present in the engineering curriculum. Open only to engineering majors. Not open to students with credit in Physics 4A or 4B.
5. Introductory Physics (4) I, II

Three lectures and three hours of laboratory.
Some of the more important phenomena and concepts in physics with practical illustrations and applications. Not open to students with credit for Physics $1 \mathrm{~A}-1 \mathrm{~B}, 2 \mathrm{~A}-2 \mathrm{~B}$, or $4 \mathrm{~A}-4 \mathrm{~B}-4 \mathrm{C}$.
11. Special Topics in Physics (1 or 2) I, II

Prerequisite: Credit or concurrent registration in Physics 1B, 2B, or 4B; or credit in Physics 5.
Individual study and laboratory work in the area of the student's major interest. Each student will be assigned a member of the staff who will supervise his work.
73. Introductory Electronics (3) I, II

Two lectures and three hours of laboratory
Prerequisites: Physics 1B, or 2 B and 3 B , or 4 B ; and Mathematics 22
Modern electronic devices and their utilization in scientific instruments. Not open to . 103
99. Experimental Topics (2-4)

Refer to the catalog statement on Experimental Topics on page 106. Limit of nine units applicable to a bachelor's degree in courses under this number of which no more than three units may be applicable to general education requirements.

## Upper Division Courses

100A-100B. Classical Physics (3-3) I, II
Prerequisites: Physics 4C and credit or concurrent registration in Mathematics 118A. Semester I: Newtonian mechanics and wave motion. Semester II: Electrostatics and magnetostatics.
102A-102B. Modern Physies (3-3) I, II
Prerequisite: Physics 4C. Physics 102A is prerequisite to 102B.
Semester I: Atomic and molecular physics, solid state physics, atomic spectroscopy and introductory quantum mechanics. Semester II: Kinetic theory, classical and quantum statistics, and thermal radiation.
103. Basic Electronics (3) I, II

Two lectures and three hours of laboratory
Prerequisites: Physics 1 B , or 2 B and 3 B , or 4 B ; and Mathematics 22 .
Modern electronic devices and their utilization in scientific instruments. Not open to
students with credit in Physic 73 . students with credit in Physics 73.
104. Advanced Electronics (3) I, II

Two lectures and three hours of laboratory
Prerequisite: Physics 73 or 103.
Conventional and operational amplifiers, oscillators, pulse and digital electronics, with emphasis on their use in the modern physics laboratory
106. Optics (3) II

Prerequisites: Physics 1 B , or 2 B and 3 B , or 4 C ; and a working knowledge of calculus.
Reflection Reflection, refraction, dispersion, interference, diffraction, double refraction and polarization, with applications to optical instruments, wave propagation, radiation, spectra
and the nature of light.

## 107. Optical Design (3) <br> Prerequisite: Physics 4C.

Ray tracing, aberrations, matrix methods, optical instrumentation
111. Concepts in Modern Physics (3) I, II

Prerequisite: Physics 1B, 2B or 5.
Modern developments in physics for nonphysics majors, including relativity, introductory quantum theory, and atomic nuclear and solid state physics.
114. Acoustics (3) I

Prerequisites: Physics 100B and 116
Wave motion and its application to the production, transmission and reception of sound. Development of acoustic circuits using electroacoustic analogs.
116. Advanced Physical Measurements (3)

One lecture and six hours of laboratory.
Prerequisites: Physics 4C and credit or concurrent registration in Physics 103.
A course stressing laboratory experiments and measurements chosen from the major areas of physics. (Formerly numbered Physics 120A.)

## 118. Nuclear Energy (2)

Prerequisite: Physics 1B, or 2 B and 3 B , or 4 C , or 5
Nuclear sources of energy, introduction to nuclear reactors, radiation problems associated with nuclear reactors and devices, plowshare, radioactivity in the environment.

## 121. Radiation Physics (3)

One lecture and six hours of laboratory.
Prerequisite: Physics 1B, or 2B and 3B.
X-rays, radioactivity, interaction of radiation with matter, and methods of measurement.
May not be used in the physics major.
122. Senior Physics Laboratory (2) I, II

Prerequisite. Physics
Prequed Preris
Advanced of the following areas: acoustics, nuclear physics, heat and thermodynamics, advanced computers. Combinations of two areas in one semester may be taken with consent of the instructor. May be repeated with new content. Maximum credit four units.

## 123. Methods of Electronic Instrumentation (2)

Six hours of laboratory
Modern electronics instrumentation used in making physical measurements. May not be used in the physics major.
135A-135B. PSSC and PPC Physics (4-4)
Three lectures and discussions and three hours of laboratory.
Prerequisite: Physics 1B, or 2B and 3B
A new approach to the study of major concepts of physics. Designed for those who plan to teach science. The course is based on materials prepared by national groups of teachers such as the Physical Science Study Committee and the Harvard Project Physics.
148. Nuclear Physics Laboratory (3) II

One lecture and six hours of laboratory.
Prerequisite: Physics 116 or 121.
Techniques and instrumentation for the detection, identification and measurement of the properties of nuclear radiations and particles, and their use in the study of nuclear reactions
151. Nuclear Physics (3) I, II

Prerequisite: Physics 190.
Nuclear Phenomena, theory of the nucleus, cosmic rays, and high-energy reactions of particles.
154. Theory of Scientific Instrumentation (3) I

Prerequisites: Physics 73 or 103, and Mathematics 52.
Transducers, noise, signal-to-noise ratio improvement, lock-in detection, signal averaging, time-domain/frequency-domain analysis, the discrete Fourier Transform, digital filtering and processing of experimental data.

## 156. Digital Computers (3) I

Prerequisites: Mathematics 7 and 118B. Physics 73 or 103
Prerequisites: Mathematics; electronic and magnetic flip-flop circuits; memory devices; prome programming; complete computer systems. Auting out results rapidly. Typical applications and limitations.

11--85474
163. Electronic Instrumentation (2) I

Six hours of laboratory
credit or concurrent enrollment in Physics 154.
Prerequisites: Physics 104 and credit or concurre and digital filters, lock-in detection, nalog-to-digital (A/D) and digital-to-analog (D/A) conversion, digital readout devices with emphasis on their use in modern laboratories.
164. Techniques of Scientific Instrumentation (3) II

One lecture and six hours of laboratory.
Prerequisite: Physics 4C.
Nuclear and optical instrumentation, low temperature and high vacuum techniques, magnet technology.
166. Honors Course (1-3) I, II

Refer to Honors Program.
170. Electromagnetic Theory (3) I, II

Prerequisites: Mathematics 118B, Physics 100B and 102B. Electrostatics and magnetostatics treated by vector m
173. Ph

Prerequisites: Mathematics 118B, Physics 100B and 102B
Conductors; Fermi model; thermionic, photoelectric and field emission; contact potentials space charge. Semiconductors, linear equivalent, circuits, elements of frequency and time domain analysis, linear feedback circuits.

## 175. Advanced Mechanics (3) I

Prerequisites: Mathematics 118B and Physics 100B
Special theory of relativity, generalized coordinates, Lagrangian and Hamiltonian formulations, normal coordinates, theory of vibrations and introduction to continuum mechanics
180. Solid State Physics (3) II
rerequisites: Mathematics 118B, Physics 100B and 102B
Elastic, thermal, electric, magnetic and optical properties of solids. Introduction to the energy band theory of solids, with applications to dielectrics, semiconductors and metals. 186. Modern Optics (3) I

Prerequisites: Mathematics 118 B , Physics 100B and 102 B
Optics of solids, coherence and partial coherence theory, Fourier optics, holography, 187. Modern Optics Laboratory (2) I, II

Six hours of laboratory
Prerequisite: Credit or concurrent registration in Physics 186
Experiments in various fields of modern optics such as holography, Fourier spectroscopy
190. Introductory Quantum Mechanics (3) I, II

Prerequisites: Mathematics 118B, Physics 100B and 102B
The physical basis of the quantum theory and its mathematical formulation in terms of Schroedinger's wave equation.
193. Minicomputer Interfacing (3) II

Two lectures and three hours of laboratory
Prerequisite: Physics 104
Theory and practice of minicomputer control and interfacing techniques. Elementary machine language programming, computer control of experiments, basics of ADC and DAC information theory, and minicomputer architecture will be covered.
196. Advanced Physics (1-3) I, II

Prerequisite: Consent of instructor
Selected topics in classical and modern physics. May be repeated with the approval of the instructor. Maximum credit six units.
198A. Senior Research (1) I, II
One discussion period and two additional hours per week to be arranged.
Prerequisite: Senior standing in physics and an acceptable plan for graduation within on year.

Selection and design of individual research project. Oral and written progress reports. 198B. Senior Research (2) I, II

Two discussion periods and four additional hours per week to be arranged
Prerequisite: Physics 198A with grade of C or better
Laboratory work, progress reports, oral and written final reports.
199. Special Study (1-3) I, II

Individual study or laboratory work on a special problem in physics selected by the Credit, hours and topics the staff who will supervise his work Ged in each case. Maximum credit six units.
200. Seminar (1-3)

Prerequisite: Consent of instructor.
An intensive study in advanced physics, topic to be announced in the class schedule Maximum credit six units applicable on a master's degree
205. Theoretical Mechanics (3)
Prerequisite: Physics 175

Prerequisite: Physics 175
Mechanics utilizing
vibration, coupled circuits. Lagrange's and methods. Study of the motion of rigid bodies, 210A-210B. Mather 210A-210B. Mathematics of Physies (3-3
Prerequisite: Mathematics 118B. Physics 210A is prerequisite to 210B
Topis from and probability ther and tensor analysis, orthogonal function theory, calculus ariations and probability theory with particular emphasis on applications to physical heory
14. Advanced Acoustics (2)

The acoustic wave equation in two and three dimensions. Propagation of sound in bounded media and enclosures. Radiation and scattering. Electrical-mechanical-acoustical elements and circuits.

## 219. Statistical Mechanics (3)

Prerequisites: Physics 175 and 190 kinetic theory, low-pressure phenomena, Boltzmann transport equation, irreversible processes.
220. Radiation Physics (2)

Topics in nuclear radiation phenomena, including interaction of radiation with matter radiation detectors.
221. Radiological Physics (2)

One lecture and three hours of laboratory.
Prerequisite: Physics 148.
Topics and problems in radiological physics
222. Health Physics (2)

One lecture and three hours of laboratory.
Prerequisite: Physics 148
Topics and problems in health physics.
231. History of Physics (2)

Prerequisite: Bachelor's degree in physics or chemistry.
Lectures and readings in the history of physics with emphasis on the history of classical physics and the subsequent development of the quantum theory.

## 232. Concepts in Relativity (2)

Prerequisites: Physics 135A and credit or concurrent registration in Physics 135B
The development of the concepts of relative motion from Einstein's assumptions and from experimental results. Designed for physics teachers.
248. Advanced Nuclear Physics Laboratory (3)
One lecture and six hours of laboratory.

One lecture and six hours of laboratory.
Prerequisite: Physics 148
Experimental work involving subcritical reactor assembly, neutron generator, whole-body counter, etc.
251. Nuclear Physics (3)

Prerequisites: Physics 151 and 175
Thery of mation radioactivity, nuclear structure and high energy physics.
270A-270B. Electromagnetic Theory (3-3)
270A-270B. Electromagnetic Theory 270 A is prerequisite to 270 B
Prerequisite: Physics 170 . Physics 2 varying electric and magnetic fields; propagation of radiation; antennas, wave guides.
275A 275B. Quantum Mehanics (3-3)
Prerequisites: Physics 151 and 175. Physics 275A is prerequisite to 275B
Quantum theory of radiation, molecular and nuclear systems. Approximation methods.
280. Theory of the Solid State (3)

Prerequisites: Physics 175, 180 and 190.
The band theory of solids, with applications to the electrical and optical properties of dielectrics, semiconductors and metals.

## 286. Advanced Optics (3)

Prerequisite: Physics 186 . Selected topics in advanced optics such as rigorous diffraction theory, optical spectra, lasers, nonlinear optics
297. Research (1-3) Cr/NC

Prerequisite: Consent of department chairman
Research in one of the fields of physics. Maximum credit six units applicable on a master's degree.
298. Special Study (1-3) Cr/NC

Individual study. Maximum credit six units. Prerequisite: Consent
299. Thesis (3) $\mathbf{C r} / \mathrm{NC}$ Pres Prerequisites: An officially appointed thesis committee and aders degree.
Preparation of a project or thesis in physics for the master's

## Political Science

In the College of Arts and Letters

## Faculty

Emeritus: Leiffer
Professors: Andrain (Chairman), Crain, Feierabend, Generales, Gripp, Janssen, Johns, Kahng, Miles, Nesvold, Padgett
Associate Professors: Conniff, Cutter, Funston, Hobbs, Lewin, Schultze, Terrell Assistant Professors: Anderson, Fairlie, Keiser, Loveman, Soule
Lecturers: Aboud, Fisher, Newton
Offered by the Department
Master of Arts degree in political science
Major in political science with the A.B. degree in liberal arts and sciences.
Minor in political science.

## Political Science Major

## With the A.B. Degree in Liberal Arts and Sciences

All candidates for a degree in liberal arts and sciences must complete the graduation requirements listed on page 60 of this catalog.
Students majoring in political science must complete a minor in another field to be approved by the chairman of the major department.
Preparation for the major. Political Science 1,2,3 and three units of either statistics or logic. (12 units.)
Major. A minimum of 24 upper division units to include (a) three units in Political Science 128 or 197, and (b) 21 upper division units in political science distributed among at least four of the groups listed below, provided that at least three units shall be taken in Group II.
Group I: Research Methods. Courses numbered 100 to 104.
Group II:: Political Theory. Courses numbered 105 to 114.
Group III: Politics. Courses numbered 115 to 134.
Group IV: Public Law. Courses numbered 135 to 139 . 165 to 179
Group VI: Comparative Government. Courses numbered 180 to 195

## Political Science Minor

The minor in political science consists of a minimum of 15 units of political science, to include Political Science 1, and 2 or 3, and nine units in upper division courses.


## Lower Division Courses

1. Introduction to Political Science (3) I, II

Basic concepts of political science including an introduction to the scope of the discipline and representative methods of acquiring political knowledge. Illustrative materials drawn primarily from the American experience.
Completion of both Political Science 1 and 2 will meet all requirements in American Institutions.
2. Introduction to American Government and Politics (3) I, II

The origin and development, structure and operation of the government of the United Ctates, national, state and local.
Completion of both Political Science 1 and 2 will meet all requirements in American Institutions. Political Science 2 will meet the requirements in U.S. Constitution and California government
3. Introduction to Comparative Government (3) I, II

Analytical models and techniques for examination of the problems of decision-making and control in various political systems. Emphasis on patterns of political action in various cultural contexts.
4. Elementary Statistics for Political Science (3)

Prerequisites: Political Science 1 and 2, and Mathematics 3 or qualification on mathematics placement examination.
Quantitative methods in political science. Tabular and graphic presentation, measures of central tendency, simple correlation and sampling techniques. Not open to students with credit for another course in statistics.
99. Experimental Topics (2-4)

Refer to the catalog statement on Experimental Topics on page 106. Limit of nine units applicable to a bachelor's degree in courses under this number of which no more than three units may be applicable to general education requirements.

Upper Division Courses

## Research Methods (Group I)

100A-100B. Research Methods in Political Science (3-3) I, II
Prerequisite: Political Science 4. Political Science 100 A is prerequisite to 100 B .
The research process, from research design through data processing, analysis and interpretation. Problems of application to election statistics, census data, roll-call records, sample survey data and biographical information.

Political Theory (Group II)
105. American Political Thought (3) I, II

The development of American ideas concerning political authority from the period of colonial foundation to the present time.
106A-106B. Socialist Political Thought I, II
Prerequisites: Political Science 1 or 2, and 111B or 112.
Semester I: Socialist thought from an historical perspective. Semester II: Selected topics in socialist thought.
110. Politics and the Arts (3) I, II

Prerequisites: Political Science 1 and 2
The contribution of the artistic media to the activity and understanding of politics. This course does not meet the departmental requirements for majors of a course from Group II. 111A-111B. Theory of the State (3-3)

Prerequisite: Political Science 111A is prerequisite to 111B
The nature of the state, its organization and activities, and its relation to the individual and other states.
112. Modern Political Thought (3) I, II

Major writers of political thought in the lowing topics may be covered: conservatism, Freud, Marx, liberalism, utilitarianism, socialism, fascism, positivism and existentialism.
113. The Theory of Political Inquiry (3)

Prerequisites: Political Science 1,2 and 3 . formation, theory building and verification.
114. Problems in Political Theory (3)
114. Problems in Political Theory (3)

Prerequisite: Six upper political theory; intensive development of select issues.
115. American Institutions (3) I, II

The principles of the Constitution of the United States of America, and a survey of the political and social institutions which have developed under the Constitution. Meets the graduation requirement in the United States Constitution and California state and loca government. When taken with Political Science 105, 117 or 18 , with aber in political in American history, institutions and ideals. Not open to students with credit in Political Science 2.
116. American National Government (3) I, II

Prerequisite: Political Science 2 or 115 , or History 17A-17B
An intensive examination of the primary institutions of the national government. Critical analysis of changing aspects of traditional relationships among the institutions of president, congress and the judiciary
117. State Politics (3) I, II relations, including both official and unofficial institutions. Emphasis on California. Meets the relations, including both official and unofrial instiont.
118. Urban Politics (3)

Prerequisite: Political Science 1 or 2.
The processes by which social conflicts in American urban areas are represented and regulated. Urban political culture; ecology; group development and activity; power structures; and reform movements are surveyed. The character of the urban politica "problem" and proposed solutions are evaluated. (Formerly numbered and entitled Political Science 148, Government and Politics of Metropolitan Areas.)
119. Community Political Behavior (3)

Prerequisite: Political Science 1 or 2.
The studies of structure of community power are summarized and critically evaluated. The issues of community conflict are treated both by case study and comparative methods Examples are drawn primarily from American-urban experience. (Formerly numbered Political Science 150.
120. Political Parties (3) I, II

A critical analysis of the political party as a part of the process of government; party organization and activities; nominating and campaign methods; theories and functions of the party system; party responsibility. The function of the two-party system in American government.
121. Political Behavior (3) I, II

Prerequisites: Political Science 4
Social and attitudinal variables in political behavior. Quantitative research data as used in electoral studies. (Formerly numbered Political Science 124.)
122. Political Communication (3) I, II
rerequisite: Political Science ?
Communication as a political process; the effects of political communications on individuals and groups.
123-S. Contemporary American Politics (3) S
A consideration of a selected group of current major political problems in terms of their possible future implications and of their relationship to established American democratic principles and ideals.
124. The American Presidency (3) I, II

Analysis of principal institutions, functions and problems of the presidency and federal xecutive branch. Attention given to presidential leadership, staffing, executive-legislative relations and policy formation
125. The Legislative Process (3) I, II

A detailed analysis of legislatures. Special attention will be devoted to the impact of dynamic factors on formal procedures.
126. Political Groups and Movements (3) I, II

Prerequisite: Political Science 1 or 2.
Pressure group activity, lobbies, mass movements; factors which explain origins and motivations of group behavior; votes, money, information, protest as political resources; theories of pluralism, power elite and mass society; class and ethnic politics.
128. Internship in Politics (2-6) I, II, S

Prerequisites: Three upper division units within Group III and consent of instructor.
Students will be assigned selectively to functional areas of politics, such as political party headquarters, elective public offices and nonpartisan political groups for work under joint supervision of activity heads and the course instructor. Participation will include project and internship conferences.
171. The Conduct of American Foreign Relations (3) I
71. The are formulated and implemented.
172 International Organization (3)
172. International Organization (3) I of legislative, administrative and judicial functions on the international level: diplomatic and of legislative, administrative and administration through commissions and unions; amicable consular corps; conferences; adsputes; the League of Nations-United Nations experiment
173. Principles of International Law (3)

The function of law in the international community. The historical development of the ideas and rules of international law and their place in the modern diplomatic and lega structure.
174. National Security Policy (3)

Objectives, instruments and consequences of national security policy
175. International Relations of the Latin American States (3)
175. International Relations of Latin American states; the organization of American states relationships with the United Nations and with the United States.
176. International Relations of the Developing Nations (3)

Prerequisite: Six units of political science.
Prerequisite: Six conflict between the developing nations and relations of such nations with the developed countries.
177. Comparative Foreign Policies (3)

Prerequisite: Six units of political science. deological areas
178. Special Problems in International Politics (3) I, II

Prerequisites: Political Science 1,2 and three upper division units within Group V. Prerequisites: Political Science 1,2 and

## Comparative Government (Group VI)

180. Government of England (3) II

The structure and functioning of the English parliamentary system with emphasis on present-day political principles and parties.
181. Government of the Soviet Union (3) I Soviet Union, with some attention to foreign Theo
182. Political Violence (3)

Prerequisite: Political Science 1, 2 or 3.
Underlying conditions, expressions and consequences of violence within political systems.
184. The Mexican Political System (3)

Prerequisite: Political Science 1 or 3 . Princips of leaders and governmental structure.
185. Governments of Continental Europe (3) I, II

The political systems of countries of western continental Europe.
186. Comparative Communist Governments (3) I, II

The interrelations between the theory and practice of modern communism as found in representative communist systems.
187. Governments and Politics of the Far East (3)

The internal political structure and foreign policies of China, Japan and Korea.
188. Governments and Politics of the African States (3) I

Domestic and international politics of specific African states,
189. Government and Politics of the Middle East (3)
189. Government and political structures of representative states in the Middle East including Turkey, Israel and the Arab states.
190. Comparative Political Systems (3) I, II
190. Comparative Political System
Prerequisite: Political Science 3.

Prerequisite: Political science 3 . An examination of selected political and governmental systems for purposes of comparative study and analysis to determine similarities, differences and general patterns and universals among political systems.
191. Governments and Politics of the Developing Areas (3) I, II Prerequisite: Political Science 1 or 3.
Internal political systems, governmental structures and the foreign policies of developing nations.
192. Political Change in Contemporary Africa (3) II

General pattern of nationalism in Africa south of the Sahara. Theories of social change and general features of contemporary African political development.
193. Proseminar in Cross-National Studies (3)

Prerequisites: Political Science 3 and 10 . Crosnment. factors which determine patterns and styles of political participation in government; factors whies.
194. Political Change in Latin America (3)
194. Political Change in Latin 1 or 3

Prerequisite: Political Science 1 or 3 . on those features which condition domestic and foreign policy making.
195. Political Systems of Latin America (3)
195. Prerequisite: Political Science 194.

Domestic and international politics of selected Latin American states.
196-S. Institute of Public Affairs (1-3) S
Study of selected phases of American or Comparative Government. May be repeated with new content and consent of instructor. Maximum credit six units.
197. Investigation and Report (3) I, II

Analysis of special topics. Admission by permission of instructor.
198. Special Problems in Comparative Politics (3) I, II
198. Special Problems in Comith Sience 1, 2, 3 and three upper division units within Group VI. Intensive exploration of selected issues in the field of comparative politics.
199. Special Study (1-3) I, II
199. Special Study (
Individual study. Maximum credit six units.

Prerequisites: Twelve upper division units in political science and consent of the instructor.

## Graduate Courses

200. Seminar in the Scope and Method of Political Science (3)
201. Seminar in the Scope and Method of systematic training in its methodology. Required of all applicants for advanced degrees in political science.
202. Seminar in Political Theory (3)

Maximum credit six units applicable on a master's degree
215. Seminar in American National Government (3)
215. Seminar in Amerix units applicable on a master's degree.
220. Seminar in Politics (3)

Prerequisite: Six upper division units in politi
from Political Science courses 115 through 134 . from Political science courses individuals and groups make demands upon political decision makers; Process by which individuals and grournels and consequences of interest articulation. emphasis on the styles, structicable on a master's degree.
221. Seminar in Political Participation (3)
221. Seminar in Polical Parision units in political science, three units of which must be from Prerequisite: Six upper divis through 134.
olitical Science Amelitical behavior.
225. Seminar in the Legislative Process (3)
225. Seminar in the Legislative Process in political science.
Prerequisite: Six upper division units in Legislative
26. Seminar in Political Psychology (3)
(Same course as Psychology 226.) Psychology 110, 112, 145; Political Science 100A-100B, Prerequisites: Six units selected from Psycholich
121 122, 190. 121, 122,190 .
Psychological factors of the individual's political behavior; psychological theo
to political variables Lic (3)
230. Seminar in Public Law (3)

Maximum credit socal Government (3) $\qquad$
250. Seminar in Local Government ( local government and intergovernmental relations Selected problems units applicable on a master's degree.

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255. Seminar in Metropolitan Government and Politics (3) Prerequisite: Political Science 117 or 118 or 119.
Government and politics in the world's major metropolitan areas. Maximum credit six units applicable on a master's degree.
256. Seminar in International Relations (3)

Maximum credit six units applicable on a master's degree
272. Seminar in International Organization (3)

Prerequisite: Political Science 172.
Analysis of selected problems of international organization with special reference to those
of the United Nations. Oral and written reports.
275. Seminar in Theories of International Relations (3)

Prerequisite: Political Science 170A or 170B.
Theoretical concepts used in the study of international political systems. Maximum credit six units applicable on a master's degree
280. Seminar in General Comparative Political Systems (3)

Prerequisite: Political Science 190 or 191, and three additional upper division units in political science.
The field of comparative politics, including historical developments, major theoretical approaches, substantive concerns, uses and limitations of the comparative method approaches, substanovaions in study of foreign political systems.
281. Seminar in Western Political Systems (3)

Prerequisite: Six upper division units in political science. comparative stude attainment and maintenance of democratic government. The responsible for the attainment and and the functioning of Western democratic political institutions.
282. Seminar in the Political Systems of the Developing Nations (3)

Prerequisite: Six upper division units in political science.
Theoretical analysis of political development, modernization and industrialization in the Theoretical analysis of poitical evenepmention about the non-Western political process. Political trends and developments in the developing nations.
283. Seminar in Latin American Political Systems (3)

Prerequisite: Political Science 190 or 191, and three additional upper division units in
polititalal science.
Political developments in selected Latin American nations, with an emphasis on the Mexican political system.
284. Seminar in Communist Political Systems (3)

Prerequisite: Six upper division units in political science
The differences and similarities among Communist nations in Europe and Asia, with particular reference to instruments of power and ideology. A comparison of Communist ruling techniques and processes.

## 290. Bibliography (1)

Exercises in the use of basic reference books, journals and specialized bibliographies, preparatory to the writing of a master's project or thesis.
291. Problem Analysis (3

Analytical treatment of selected problems in political science. Review of methods for nvestigation and reporting of data. Consideration of problems in preparation of project or hesis.
297. Research in Political Science (3) $\mathrm{Cr} / \mathrm{NC}$

Prerequisite: Consent of the department chairman
Research in political theory, political parties, comparative government, international relations, public law or American government.
298. Special Study (1-3) Cr/NC

Prerequisite: Consent of staff; to be arranged with department chairman and instructor,
Individual study. Maximum credit six units.
299. Thesis (3) Cr/NC

Prerequisites: An officially appointed thesis committee and advancement to candidacy Preparation of a project or thesis for the master's degree.

## Portuguese

In the College of Arts and Letters
Faculty
Assistant Professor: Windsor
Offered by the Department of Spanish and Portuguese Languages and Literatures
Minor in Portuguese.
Courses in Portuguese
Major work is not offered.

## Portuguese Minor

The minor in Portuguese consists of a minimum of 15 units in Portuguese, six units of which must be in upper division courses.

## High School Equivalents

High school foreign language courses may be used for purposes of placement in college courses and may be counted toward meeting the foreign language requirement in various majors. These high school courses will not count as college credit toward graduation. The first two years of high school Portuguese may be counted as the equivalent of Portuguese 1; three years the equivalent by a student in the high school language sequence Portuguese 3. The last year-course taken by a student to exceed four units of repeated foreign nay be repeate

Lower Division Courses
Native speakers of Portuguese will not receive credit for taking
Portuguese except with advance approval from the department.

## 1. Elementary (4)

Four lectures and one hour of laboratory. Pronunciat
of grammar.
2. Elementary (4)

Four lectures and one hour of laboratory
Prerequisite: Portuguese 1.
Continuation of Portuguese 1.
3. Intermediate (4)

Prerequisite: Portuguese 2 . fundamental principles of grammar. Reading in Portuguese A practical material, short stories, novels or plays; oral practice.
4. Intermediate (4)

Prerequisite: Portuguese 3.
Prerequisite. Por Portuguese 3
10. Conversation (2)
10. Conversation (2)

Prerequisite: Portuguese 2 . Practice in the sand plays.
11. Conversation (2)
11. Conversation (2)

Continuation of Portuguese 10.
Experimental Topics (2-4)
on Experimental Topics on page 106. Limit of nine units Refer to the catalog statement on expes under this number of which no more than three applicable to a bachelor's degree in courses under thisements.

Upper Division Courses
101A-101B. Advanced Oral and Written Composition (3-3)
101A-101B. Advanced Orase 4.
Prerequisite: Portuguese 4 . Oral and written comp
and Brazilaguese Literature (3)
134. Portuguese Literature (3) literature of Portugal from its A study of to the present.
begining Literature (3)
135. Brazilian Literature (3) movements, authors and works of the literature of Brazil from

A study of the iod to modern times.
185. Selected Studies (3)

Topics in Luso-Brazilian language, literature, culture and linguistics.
199. Special Study (1-3) I, II

Individual study. Maximum credit six units
Prerequisite: Consent of instructor.

## Psychology <br> In the College of Sciences

Faculty
Emeritus: Carlson, Kidwell, McCollom, Peiffer, Steinmetz, Treat, Voeks
Professors: Alf, Dicken, Feierabend, Gallo, Grossberg, Harari, Harrison, Hillix, Hunrichs, aplan, Karen, Kass, Kinnon, Koppman, Leckart, Leukel, Levine, Linton, McDonald, O'Day, Parker, Penn (Chairman), Radlow, Sattler, Schulte, Segal, Sheposh, Stevens
Associate Professors: Bryson, J., Franzini, Graf, Graham, Hornbeck, Lynn, Psomas, Rodin, Sand, Smith, Yaremko
Assistant Professors: DeFran, Jacobson, Litrownik, Manese, McCordick, Mollenauer, Plotnik, Price, Spinetta
Lecturers: Borges, Bryson, R., Buchanan, Chase, Eisen, Hillyard, Johnson, Scollay
Offered by the Department
Master of Arts degree in psychology
Master of Science degree in psychology.
Major in psychology with the A.B. degree in liberal arts and sciences,
Major in psychology with the A.B. degree in applied arts and sciences for students
Majtted to Secondary Teacher Education
Minor in psychology.

## Psychology Major

With the A.B. Degree in Liberal Arts and Sciences
All candidates for a degree in liberal arts and sciences must complete the graduation requirements listed on page 60 of this catalog
A mo plans are provided for the major in psychology: Plan A for those students who wish Two pron arts education in the field of psychology; and Plan B for those students expecting to pursue the study of psychology beyond the A.B. degree.

## Plan A

Plan A is for a nonprofessional major in psychology and is designed to provide the student with a greater understanding of human behavior as the emphasis in his liberal arts education The recommended pattern of courses for this program is not designed to facilitate graduate and professional study in psychology.

Preparation for the major. Psychology 1, 40 and 50. (Nine units.) Recommended courses in related fields: Six units in biology and/or zoology; three units in philosophy; and six units in anthropology and/or sociology.
Major. A minimum of 24 upper division units in psychology to include Psychology 106, 131, 145, and 150. It is expected that each student under Plan A will select, with the assistance of his adviser, a pattern of courses in line with his particular objectives in pursuing Plan A To facilitate the purpose of Plan A the following courses in other departments are recommended as electives: Biology 159, 160; Economics 102; and courses in home economics.

## Plan B

The purpose of Plan B is to facilitate the specific preparation of those students who wish to pursue graduate and professional preparation in clinical, industrial and personnel, social and theoretical-experimental psychology

Preparation for the major. Psychology 1, 40,50, and 70. (12 units.) Recommended courses in related fields: six units in biology and/or zoology; three units in philosophy; and six units in anthropology and/or sociology.
Major. A minimum of 24 upper division units in psychology to include Psychology 105, 110,150 , and one of the following: 111, 112, 113, 114, 115, 116, 117, or 118; and ten units selected from courses in consultation with the instead of Psychology 70 and 110

## Psychology Minor

The minor in psychology consists of a minimum of 15 units in psychology, nine units of which must be in upper division course

Approved Courses for Liberal Studies Majors (Group B)
Lower Division Courses: Psychology 1, 10, 40, and 50.
Upper Division Courses: Psychology 106, 109, 131, 145, and 150.
Lower Division Courses

1. Introductory Psychology (3) I, II

Facts, principles, and concepts which are basic to understanding human behavior
10. The Evaluation of Psychological Literature (3) I, II

Designed to increase the nonpsychologist's ability to evaluate psychological and quasi-psychological writings. Topics include methods of generating information, concept of controlled observations, interpretation of data, pitfalls in decision making and aids to critical thinking. Practical experience in evaluation will be obtained through the criticism of current articles and other activities.
12. Psychology of Individual Adjustment (3) I, II Cr/NC

Prerequisite: Psychology 1.
An examination and interpretation of the factors which go into the making of the person a he adapts himself to the social world about him. The development of the normal personality.
40. Principles of Learning and Perception (3) I, II

Prerequisite: Psychology 1.
The nature of psychological inquiry. Emphasis on principles and basic experimental data of learning and perception.
50. Introduction to Physiological Psychology (3) I, II

Prerequisite: Psychology 1.
Physiological mechanisms underlying the psychological phenomena perception, emotion, motivation, learning and psychosomatic disorders.
70. Statistical Methods in Psychology (3) I, II

Prerequisites: Psychology 1, and Mathematics 3 or qualification on the mathematics lacement examination
Quantitative methods in psychology. Measures of central tendency and variability, graphic methods and mercentiles, linear correlation, applications of the normal probability curve, methods and percentiles, hear corretation, inference. Not open to students with credit in chi-square, and an 167B.
99. Experimental Topics (2-4)
99. Experimental Topics (2-4) Refer to the catalog statement on Experimental Topics on page 106. Limit of nine units Refer to the catalog statement on experimen under this number of which no more than three units may be applicable to general education requirements.

Upper Division Courses
100. Selected Topics in Psychology (1-3) Cr/NC
100. Selected Topics in Psychology
Prerequisite: Six units of psychology.

Prerequisite: Six units of psychology. schedule.
105. Psyelogical Testing and Measurement (3) I, II
105. Psychological Testing and Measurement (3) I, II methods in any other department. Prerequisite: Psychology 7 , or asic principles of testing. The selection and critical Measur of group tests of intelligence, personality, aptitude, interest and achievement. 106. Developmental Psychology (3) I, II
106. Deverequisite: Psychology 1.

Prerequisite: Prom conception through The psychological development of the normal islaid upon the interdependence of the childhood, adolescence, maturity, and old age. Stress is laid upon the interdependence of the various periods of the individual slife. Not 70
107. Psychology of Later Maturity (3) II
107. Psychology of Later Mat
Prerequisite: Psychology 1.

The psychological, physiological, and sociological factors influencing behavior in the later years of life.
108. Advanced Developmental Psychology (3) I, II

Prerequisite: Psychology 106.
Prerequisite: Psycholegy ineas of infancy, childhood and adolescence.
109. Mental Deficiency (3) I, II

Prerequisite: One of the following: Psychology 106, Education 110, 112, 113, or
The nature and causes of mental retardation, including the psychological effects of brain injury. Characteristics of the mentally defective.
110. Introduction to Experimental Psychology (4) I, II

Two lectures and six hours of laboratory.
Prerequisites: Psychology 40 and 70 .
Understanding of experimental design, quantitative methods, and experimental reports as they are applied to all areas of psychology. Not open to students with credit in Psychology 167A-167B.
111. Experimental Psychology: Perception (4)

Two lectures and six hours of laboratory.
Prerequisite: Psychology 110
Experimental literature, assigned and original laboratory projects in the field of perception.
112. Experimental Psychology: Social (4) I, II

Two lectures and six hours of laboratory.
Prerequisite: Psychology 110
Experimental literature, assigned and original laboratory projects in the field of social psychology.
113. Experimental Psychology: Physiological (4)

Two lectures and six hours of laboratory
Prerequisites: Psychology 50 or 142 or six units of biology; and Psychology 110
Experimental literature, assigned and original laboratory projects in the field of physiologis and behavio ; on
mechanisms and behavior; includes basic electronics for biological scientists.
114. Experimental Psychology: Comparative (4) I, II

Two lectures and six hours of laboratory
Prequisite: Psychology 110
Experimental literature, assigned and original laboratory projects in the field of 115. Experive psychology
115. Experimental Psychology: Personality and Clinical (4) I, II

Two lectures and six hours of laboratory
Experimental and theoretical literature, assigned and original laboratory projects in the field of personality and clinical psychology.
116. Experimental Psychology: Learning (4)

Two lectures and six hours of laboratory.
Prerequisite: Psychology 110
Experimental literature, assigned and original laboratory projects in the field of learning.
117. Experimental Psychology: Primate Behavior (4) I, II

Two lectures and six hours of laboratory.
Prerequisite: Psychology 110
Experimental literature, assigned and original observational and experimental projects in the field of primate learning and behavior.
118. Experimental Psychology: Child Development (4) I, II

Two lectures and six hours of laboratory.
Prerequisites: Psychology 106 and 110.
Methods, techniques and principles used in the scientific study of child behavior.

## 120. Consumer Psychology (3) I, II

Prerequisite: Six units of psychology
A review of the research literature and methods relevant to the individual as a consumer in our society. Attitudes, values, and decision-making abilities of people when functioning as consumers.
121. Personnel and Industrial Psychology (3) I, II

Prerequisites: Psychology 1, and 70 or statistics in another field
Psychological principles applied to industrial problems of selection, placement and training.
122. Public Opinion Measurement (3) I
(Same course as Journalism 122.)
will be placed on thods and problems of public opinion and attitude measurement. Emphasis will be placed on the polling of consumers and voters. Students will be given field

153. Advanced Abnormal Psychology (3) Prerequisite: Psychology 150
An intensive study and evaluation of research methodology and current literature concerning the neuroses, psychoses, aphasias, ataxia, mental defect, and psychopharmacology.
155. Psychology of Human Sexual Behavior (3)

Prerequisites: Psychan 106 and 150
Evaluation of behavioral and physiological data of normal, aberrant, and dysfunctiona human sexual behavior, including description of available treatment methods.
166. Honors Course (1-3) I, II Cr/NC

R6. Honors Course (1-3) 1,
167A-167B. Statistical Methods and Experimental Psychology (4-4)
Two lectures and six hours of laboratory
Prerequisites: Psychology 40 and mathematical aptitude examination. (See Honors Program.)
Integrated approach to the understanding of statistical methods, experimental design and the writing of experimental reports as applied to all areas of psychology. Not open to students with credit in Psychology 70 and 110.
170. Advanced Statistics (3) I, II

A further study of quantitative methods in psychology with particular emphasis on methods of correlation, chi-square, and contingency, and an introduction to the analysis of variance.
17. Intermediate Correlational Analysis (3)

Prerequisite: Psychology 70.
Quantitative methods in psychology with emphasis on methods of correlation, multiple correlation, partial correlation, and factor analysis.
174. Theories of Perception (3) I, II

Prerequisite: Psychology 110.
Study of research and theory in the areas of sensation, perception, and attention.
175. Theories of Learning (3) I, II

Prerequisites: Psychology 40 and 70 .
The facts, principles, and major theories of learning
77. History of Psychology (3) I, II

Limited to psychology majors with senior standing.
The historical background of modern psychology
178. Theories of Personality (3) I, II

Prerequisites: Major in psychology and six upper division units in psychology.
Representative personality theories and supporting evidence.
179. Philosophical Issues in Psychology (3) II

Prerequisite: Twelve units of psychology.
Modern empiricism and the philosophy of science as related to issues in contemporary psychology.
180-S. Contemporary Problems in Psychology (1) S Cr/NC
Lectures open to the public.
Enrollment for credit limited to upper division and graduate majors in psychology; or onsent of instructor.
A series of six weekly lectures by visiting psychologists on subjects related to current research problems. Reading and reports required of students enrolled for credit.
197. Senior Project (1-3) I, II Cr/NC

Prerequisites: Twelve units of psychology and consent of instructor.
An individual investigation and report on a research project. Maximum credit six units.
199. Special Study (1-3) I, II Cr/NC

Individual study, including library or laboratory research and a written report. Maximum redit six units.
Prerequisite: Twenty-four upper division units in psychology.

## Graduate Courses

200. Seminar (3)
division units in psychology and consent of graduate
Prerequisites:
Prerequisites: Twenty-four upper division units in psychology and consent of graduate
adviser. An in
An intensive study in advanced psychology, topic to be announced in the class schedule.
Maximum credit six units applicable on a master's degree.
201. Selected Topics in Clinical Psychology (3)

Prerequisites: Psychology 151, 152 and consent of graduate adviser
Advanced study of such clinical topics as community mental health, forensic psychology, ethics, and autogenic training. Topics will vary on a semester basis.

## 202A-202B. Contemporary Psychology (3-3)

A comprehensive survey of contemporary literature in psychology, dealing with recent developments in the areas of learning and motivation, perception, psychophysiology, personality and psychodynamics, social behavior, and experimental inference.
204. Psychological Assessment I (4)

Two lectures and six hours of laboratory.
Prerequisites: Psychology 105, 150, 178, and consent of graduate adviser.
Theory and practice in assessment of intelligence and special abilities.
205. Psychological Assessment II (4)

Two lectures and six hours of laboratory.
Prerequisites: Psychology 151, 204 and consent of graduate adviser
Theory and practice in assessment of special abilities, personality and behavior disorder
211. Seminar in Behavior Disorders of Childhood and Adolescence (3)

Prerequisites: Psychology 106, 151 and consent of graduate adviser.
Contemporary approaches to emotional and behavioral problems of childhood and youth Considers developmental, cognitive and social variables as well as theory and treatment 212. Seminar in Behavior Disorders of Adults (3)

Prerequisites: Psychology 151 and consent of graduate adviser
Contemporary approaches to emotional and behavioral problems of adulthood. Considers developmental, cognitive and social variables as well as theory and treatment.
219. Seminar in Personnel Psychology (3)

Prerequisites: Psychology 121 and consent of graduate adviser
Problems and procedures in selection, classification, and performance appraisal, focusing on testing in industry, the interview, and other selection and assessment devices. Criterion development and measurement methods.
220. Seminar in Organizational Psychology (3)

Prerequisites: Psychology 123 or Business Administration 145, and consent of graduate advise
Applications of psychological principles and methods of investigation to problems of industrial relations and motivation of employees; factors influencing morale and employee productivity; criteria of job proficieny; psychological aspects of worker-managemen relationships and leadership.
221. Seminar in Problems in Social Psychology (3)

Prerequisites: Psychology 110, 145, 175 and consent of graduate adviser.
Factors influencing the formation of attitudes, opinions, and stereotypes; the establishment of roles during socialization of the individual; social crises, change, and resistance to change; the causes and alleviation of interpersonal conflict.
222. Seminar in Theoretical Psychology (3)

Prerequisites: Psychology 175, 178 and consent of graduate adviser.
Basic nature of theories, their relationships to data, and the characteristics of various types of constructs used in psychological theories. 223. Experimental Design (3)

Prerequisites: Psychology 110, 170 and consent of graduate adviser.
Principles and methods of planning and carrying out systematic investigations to answer questions concerning human behavior with stress on in interdependence of experimental design and statisticang groups, solution of sampling problems, and interpretation of results. techniques of equating groups, Design (3)
224. Advanced Experimental Design (3)

Prerequisite: Psychology 223 and consent of graduate adviser.
Prerequisite. Pecia Methods, techen to sources of error, limitations on interpretations, and psychophysica attention is given to sources of error, carry out experiments in preparation for origina independent investigations.
225. Principles of Test Construction (3)
225. Principles of Test Construction
Prerequisites: Psychology 105, 170 and consent of graduate adviser.

Prerequisites: Psycholegy consideration of adequate sampling techniques, item construction, item analysis, determination and enhancement of reliability and validity of tests.
226. Seminar in Political Psychology (3) Same course as Political Science 226 )
Prerequisites: Six units selected from: Psychology 110, 112, 145; Political Science $00 \mathrm{~A}-100 \mathrm{~B}, 121,122,190$; and consent of graduate adviser.
Psychological factors of the individual's political behavior; psychological theory as it applies to political variables such as: ideology, conflict, consensus, and participation.
230. Seminar in Physiological Correlates of Behavior (3)

Prerequisites: Psychology 50, 113 or 142, or nine units of biology; and consent of graduate adviser.
An exploration of current research and theory in physiological psychology with emphasis on behavioral correlates and psychophysiology
231. Seminar in Ethology and Comparative Psychology (3)
(Same course as Biology 231.) 117 or Biology 110, or Zoology 170, and consent of Prerequisites:
graduate adviser.
Current problems in ethology and comparative animal behavior. Maximum credit six units applicable on a master's degree.
233. Counseling and Psychotherapy Laboratory (4)

Two lectures and six hours of laboratory.
Prerequisites: Psychology 151, 152, 178 and consent of graduate adviser.
Supervised practice in the application of psychotherapeutic and counseling techniques from selected cognitive, dynamic, interpersonal, and behavioral approaches.
234. Behavior Therapy Laboratory (4)

Two lectures and six hours of laboratory.
Prerequisites: Psychology 151, 175,178 and consent of graduate adviser
Supervised practice in the application of behavior therapy (individual treatment) and behavior modification (group method).
270. Statistical Theory (3)

Prerequisites: Psychology 70, 105 and consent of graduate adviser.
Study of quantitative methods in psychology with emphasis on normal inference and onparametric statistics. Not open to students with credit or concurrent enrollment in Psychology 170.
275. Advanced Principles of Learning (3)

Prerequisites: Psychology 110 and consent of graduate adviser.
The empirical data, basic principles and theoretical positions of major learning theorists. Not open to students with credit or concurrent enrollment in Psychology 175.
277. Seminar in the History of Psychology (3)

Prerequisites: Psychology 110 and consent of graduate adviser
The history of modern psychology. Not open to students with credit or concurren enrollment in Psychology 177.
278. Applied Community Psychology (3)

Prerequisites: Psychology 200 (Seminar in Community Psychology), 201 and consent of graduate adviser
develonenten integration of principles of psychotherapy, behavior modification, child development, gerontology, social psych
295. Field Work in Community Psychology (3)

Prerequisites: Psychology 199 (Special Study in Community Psychology), 200 (Seminar in Community Psychology), 201 and consent of graduate adviser.

Applied community psychology in the service of the community, including supervision of undergraduate students and contact with community organizations.
296. Directed Field Experience (3 or 6)

Prerequisites: Psychology 205, 211 or 212, and 233
The student must arrange his practicum setting in cooperation with the chairman of the Psychology Department Practicum Committee and with the express approval of that committee during the semester prior to enrolling for credit in this course. Maximum credit six units.
297. Research (1-3) $\mathrm{Cr} / \mathrm{NC}$

Research in one of the fields of psychology. Maximum credit six units applicable on a master's degree.
298. Special Study (1-3) Cr/NC

Individual projects involving library or laboratory research in any area of psychological investigation or interest. Maximum credit six units applicable on a master's degree.
299. Thesis (3) $\mathrm{Cr} / \mathrm{NC}$

Prerequisites: An officially appointed thesis committee and advancement to candidacy. Preparation of a project or thesis for the master's degree. Credit is contingent upon acceptance of the completed thesis by the Department of Psychology.

## Public Administration and Urban Studies In the College of Professional Studies

## Public Administration and Urban Studies is a member of the National Association of

 Schools of Public Affairs and AdministrationFaculty
Emeritus: Love
Professors: Bigger, Gilbreath, Kitchen (Chairman)
Associate Professors: Clapp, Gazell, Gitchoff, Hamilton
Assistant Professors: Boostrom, Thompson, Walshok
Lecturers: Corso, Frankum

## Offered by Public Administration and Urban Studies

Master of City Planning degree.
Master of Public Administration degree.
Master of Science degree in criminal justice administration.
Major in criminal justice administration with the B.S. degree in applied arts and sciences.
(Refer to this section of the catalog on Criminal Justice Administration.)
Major in public administration with the A.B. degree in applied arts and sciences.
Minor in public administration.

## Public Administration Major

With the A.B. Degree in Applied Arts and Sciences
All candidates for a degree in applied arts and sciences must complete the graduation requirements listed on page 60 of this catalog
minor is not required with this major. Preparation for the major. Nine und Business Administration 83. ( 15 units.)
Major. A minimum of 36 upper division units to include Public Administration 140 and adviser this program, students may elect to specialize in urban management. Interested students should seek guidance from the director.

## Public Administration Minor

The minor in public administration consists of a minimum of 15 units to include Politica Science 2, Public Administration 140, and Public Administration 197 or 198, or other course selected with the guidance of an adviser in public administration

## Certificate in Public Administration

This certificate is designed primarily for persons who hold administrative or managerial positions or for those who seek to prepare for such responsibilities. Previous academic experience is not a prerequisite; nor need the program be accompanied by work of degree. Candidacy will be established by the director of the program. The awarding of the certificate requires completion of an approved pattern of eight grade point average of $2.5(\mathrm{C}+)$
For further information, consult the director, Public Administration Certificate Program. The department's undergraduate courses fall into three main areas: 116,146 , and 188
(1) Criminal justice. Most relevant are courses numbered 110, $111,115,116,146$, and 180 (2) Public administration. Most 156.
(3) Urban studies. Most relevant are courses numbered 148, 150, 154, and 160
90. The Urban Scene (3)

Urban society as an environment in which people interact with such public institutions as municipal and county administrations, school districts, and special authorities; community control over institutions within the urban conglomerate; improving urban life styles.
99. Experimental Topics (2-4)

Refer to the catalog statement on Experimental Topics on page 106. Limit of nine units applicable to a bachelor's degree in courses under this number of which no more than three units may be applicable to general education requirements.

Upper Division Courses
114. Negotiation and Bargaining in the Public Service (3)

Prerequisite: Public Administration 140 .
Specific issues such as strategies, the effects of threat, the physical setting, use of a third-party observer and theories of advocacy. Emphasis on analyzing simulations of the bargaining process and developing effective negotiation skills.
115. Governmental Employer-Employee Relations (3) I, II

Prerequisite: Public Administration 144.
Historical development, legal basis and organizational implications of governmental employer-employee relations; emphasis on California local government.
135. Selected Topics in Public Affairs (3)

Selected topics in the administration of public policy and problems of public administrative organization.
136. Administrative Law (3) II

The law of public office and public officers, powers of administrative authorities, scope and limits of administrative powers, remedies against administrative action.
140. Concepts and Issues in Public Administration (3)

Theory and practice of governmental administration in differing environments; role of administrators in public policy; issues facing administrators, techniques of administration. 141. Studies in Public Administration (1-3) I, II

Offered only in Extension.
Analysis of selected administrative processes and problems of governmental agencies, their legal and political relations to other agencies and to the public. May be repeated with new content with consent of instructor.
142. Management of State Governments (3) I, II

Administrative and constitutional problems of state management in the American federal system. Emphasis on California.
143. Management of Urban Governments (3) I, II

Problems of local units of government in the urban environment. Organization and function of local agencies. Emphasis on California.
144. Public Personnel Administration (3) I, II

Analysis of personnel problems. Supervision and management of public employees and public organizations in an age of change.
145. Administrative Behavior (3) I

Social, psychological, and behavioral theories of organization; concepts of administrative leadership; organization and the individual; emphasis on governmental organizations.
147. Administration and Public Policy Development (3) I, II

Process of formulating public policy with emphasis on the role of public agencies.
148. The Metropolitan Area (3) I, II

Prerequisite: Public Administration 142 or 143.
Problems of government and administration arising from population patterns and physical and social structures of metropolitan areas.
149. Comparative Public Administration (3) II

Prerequisite: Public Administration 140.
Administrative organization and process of selected foreign and American governments. Analysis of the cultural basis of administrative systems.
150. Decision Making in the Urban Community (3) I, II

Prerequisite: Public Administration 143.
Processes of dinangement of urban communities.
151. California Law of Municipal Corporations (3) I, II

Offered only in Extension.
California law governing the nature, regulation and control of the counties, charter cities, sixth class cities, school districts and special districts. The creation, alteration, dissolution, legal actions by and against, powers and duties; rights and liabilities of local governments.
152. Administrative Management (3) I, II

Areas and problems of administrative research; methods of analyzing structures and procedures in organizations; planning and administration of programs; design of forms; job classification and salary surveys; preparation of administrative reports.
153. Management of the Federal Government (3) I, II

Prerequisite: Public Administration 140.
Problems in the administration of the federal government: for example, leadership, specialization, unity of command, oversight.
154. Intergovernmental Relations in the United States (3) II

Prerequisite: Public Administration 142 or 143 or 153.
Constitution, political and administrative characteristics of American federalism,
156. Public Administrative Systems Analysis (3)
156. Public Administrative Systems Analysis (3)
Prerequisites: Public Administration 140 and a statistics course

Systems and organization analysis; survey of electronic systems; work standards and units; procedures analysis; administrative planning.
160. Principles of Planning (3) I, II

An introduction to community planning: regional, county, and city. Consideration of the Master Plan, including its purposes, contents, and method of adoption.
161. Field Studies in Government (3) II, S

Prerequisite: Public Administration 140
Study of organization, policies and functions of selected government agencies. Discussion by responsible officers and inspection of work operations and facilities in management, public safety, public works and utilities, and other major governmental operations.
162. Fiscal and Budgetary Policy (3) I, II

Prerequisite: Public Administration 140
Policies of fiscal administration and budgeting; political implications of the governmenta budget process; revenue, debt, and treasury management; the functions of accounting and financial reporting.
166. Honors Course (1-3) I, II

Refer to the Honors Program.
197. Investigation and Report (3) I, II

Analysis of special topics. Admission by permission of instructor.
198. Internship in Public Administration (2-6) I, II

Prerequisite: Consent of instructor.
Students will be assigned to various government agencies and will work under join supervision of agency heads and the course instructor. Participation in staff and internship conferences.
199. Special Study (1-3) I, II

Individual study. Maximum credit six units.
Prerequisites: Twelve upper division units in public administration and consent of instructor.

## Graduate Course

201. Scope of Public Administration (3)
rerequisite: Six
Prerequiste: Sevent of public administration as an academic discipline; a systematic evaluation of the rise and operations of large-scale public bureaucracies.
202. Seminar in Theory of Administrative Organization (3)

Prerequisite: Public Administration 201
Prerequit. Pecutive role, decision making; bureaucracy Organization and management; the executive role, decision malional system; tactics and authority and power; communicatio
strategies in ers (3)
205A. Empirical Approaches to Public Adn
Prerequisite: Public Administration 201. , i.e, legal, historical, and small-group, etc
Examination of basic restich (3)
205B. Empirical Approaches to Public Administration: Quantitative Analysis (3)
Prerequisite: Public Administration 201.
Study of techniques for the gathering of data on Pubicus data analysis methods.
survey research and methodology, exanement (3)
230. Seminar in Public Financial Managem

Prerequisite: Public Administration budgeting of public revenues.
Problems in the adic Administration (3)
240. Seminar in Public Administration (3)

Maximum credit six units applicable on a master's degree.
241. Seminar in Public Personnel Administration (3)

Prerequisite: Public Administration 201.
Analysis of selected problems in personnel administration; special emphasis on organizational development and consultation skills as emerging personnel functions. Maximum credit six units applicable on a master's degree
243. Science, Technology, and Public Policy (3)

Prerequisite: Public Administration 201, or equivalent seminar in another department. The influence of science and technology on governmental policy making; scientists as administrators and advisers; governmental policy making for science and technology; government as a sponsor of research and development.
245. Readings in Public Administration (3)

Prerequisite: Credit or concurrent registration in Public Administration 201.
Selected readings in the literature of public administration.
249. Seminar in Comparative Administration (3)

Prerequisite: Public Administration 140.
Selected problems in administration, organization, and processes of foreign and international governments. Maximum credit six units applicable on a master's degree.
250. Management of Urban Governments (3)

Selected problems in the management of urban governments. Maximum credit six units applicable on a master's degree.
255. The Metropolitan Area (3)

Prerequisite: Public Administration 143, 148, or 150.
Selected problems in the government and administration of the world's major metropolitan areas.
260. Administration and Public Policy Development (3)

Prerequisite: Twelve upper division units in social science.
Social, political, and administrative problems involved in governmental program development and change.

## 291. Problem Analysis (3)

Analytical treatment of selected problems in Public Administration. Review of methods for investigation and reporting of data. Consideration of problems in preparation of projects or thesis.
296. Internship in Public Administration (1-6)

Students will be assigned to various government agencies and will work under joint supervision of agency heads and the course instructor. Participation in staff and internship conferences. Admission by consent of instructor.
297. Research in Public Administration (3) $\mathrm{Cr} / \mathrm{NC}$

Prerequisite: Consent of Director, Public Administration and Urban Studies
Research in one of the areas of public administration.

## 298. Special Study (1-3) $\mathrm{Cr} / \mathrm{NC}$

Individual study. Maximum credit six units.
Prerequisite: Consent of staff; to be arranged with the Director and instructor.
299. Thesis (3) $\mathrm{Cr} / \mathrm{NC}$

Prerequisites: An officially appointed thesis committee and advancement to candidacy
Preparation of a project or thesis for the master's degree.
Graduate Courses in City Planning

CP 260. Seminar in Urban Theory (3)
Prerequisite: Public Administration 160.
Study of the various empirically and normatively based theories of the city and urbanization process, with emphasis on communication and transaction and institutional approaches.
CP 261. Urban Design and Land Use Planning Studio (6)
Two lectures and eight hours of laboratory.
Prerequisite: City Planning 266B.
Laboratory course concerned with graphic expression, principles of land use planning land development, and urban design. Project integrating principles. (Formerly numbered Public Administration 261A-261B.)
CP 262. History of Urban Planning (3
History of urban development and of the field of urban planning.
CP 265. Seminar in Planning Administration (3)
The administration of the planning function in urban government. Relationships between the planner and public and private agencies, governmental departments and elected

CP 266A. Seminar in Urban Planning (3)
Prerequisite: Public Administration 160 . Introductory seminar to the Master of City Planning Program, focusing upon the planner's Introductory seminar to the Master of City Planning Program, focusing upon the planner's CP 266B. Seminar in Urban Planning Methodologies (3)
CP 266B. Seminar in Urban Planning
Procedures and analytical techniques in urban planning
CP 266C. Seminar in Urban Planning Implementation (3)
CP 266C. Seminar in Urban Plannin
Analysis of the content and function of zoning, subdivision regulation, codes, capital budgeting, urban renewal, model cities, and other implementation methods and programs. CP 266D. Seminar in Urban Planning Theory (3)
Prerequisite: City Planning 266C.
Alternative theories of planning and organization of the planning function. Emphasis on conceptual foundations, relationship to governmental structure, decision making, and ideological and ethical orientations.
CP 267. Readings in Urban Planning (3)
Selected topics in urban planning. Maximum credit six units applicable on a master's degree.
CP 296. Internship in Urban Planning (3-6)
Students will be assigned to various government agencies and will work under joint supervision of agency heads and the course instructor. Participation in staff and internsinip conferences. (Formerly numbered City Planning 293.)
CP 297. Research in Urban Planning (3) Cr/NC
Prerequisite: Consent of Director of City Planning Program.
Research in one of the areas of urban planning. Maximum credit six units applicable on a master's degree.
CP 298. Special Study (1-3) Cr/NC
Prerequisite: Consent of staff.
To be arranged with Director of City Planning and instructor. Individual study. Maximum credit six units.

## Recreation

## In the College of Professional Studies

Faculty
Prefessors: Butler (Chairman), Hanson
Assistant Professors: Duncan, Hutchinson, Namba
Instructor: Gore
Offered by the Department
Major in recreation administration with the A.B. degree in applied arts and sciences. Minor in recreation.
A cooperative education program is available on a selective basis, whereby a student A cooperative education prond full-time, paid work experience during the final two years alternates semesters of study andly results in a one-year delay in date of graduation. Students of college. This prografit from approximately one and one-half years of full-time work in the program profraduation.
experience prior to graduation.

## Recreation Administration Major

With the A.B. Degree in Applied Arts and Sciences
All candidates for a degree in applied arts and sciences must requirements listed on page 60 .
The major in recreation administration Leay be planned with an emphasis in (3) Park and following four areas: (1) Leis (4) Recreation Rehabilitation.
Recreation Management, with this major
A minor is not required with this major

## Emphasis in Leisure Agency Leadership

Preparation for the major. Music 2; Physical Education 32A, 33A, 33B; Psychology 1; Sociology 1; Recreation 40, 60, 70, 80, 84. (27 units.)
Major. A minimum of 37 upper division units to include Health Science and Safety 146; Industrial Arts 101; Journalism 180; Psychology 106; Recreation 140, 165, and 184 or 198. Nine from Art 110; Industrial Arts 102, 140; Education 140; Drama 110; Physical Education 122, 151, 155, 156, 175, 176; Recreation 151.

Emphasis in Outdoor Recreation
Preparation for the major. Biology 1,2; Botany 1 ; Economics 1A; Geography $1 ;$ Recreation 40, 60, 80; and six or more units selected from Anthropology 2; Engineering 10; Geology 2 , 3 ; Zoology 50, 60. (28 units.)
Major. A minimum of 36 upper division units to include Biology 115; Geography 170, 171, 175; Health Science and Safety 146 ; Recreation 165, 175, 185; and twelve units selected from Anthropology 161; Botany 112; Business Administration 132, 145; History 185; Industrial Arts 180; Psychology 145; Sociology 150; Zoology 112, 114, 115, 116, 117, 118, 150 and 170 .

## Emphasis in Park and Recreation Management

Preparation for the major. Psychology 1; Recreation 40, 60, 70, 80, 84; Sociology 1. Four units selected from Art 2A; Business Administration 80 ; Music 2; Physical Education 32A, 33A 33B. ( 25 units.)
Major. A minimum of 38 upper division units to include Industrial Arts 101 ; Journalism 180; Public Administration 140, 143; Recreation 140, 165, 175, and 184 or 198. Nine units selected from Psychology 106; Public Administration 144, 152, 160, 162; Sociology 114, 125, 157
Emphasis in Recreation Rehabilitation

Preparation for the major. Psychology 1 ; Recreation $40,60,70,80,84$; Sociology 1 ; and four units of electives from art, aquatics, business administration, dance, drama, or music. ( 25 units.)
Major. A minimum of 36 upper division units to include Industrial Arts 101; Journalism 180; Recreation 150, 151, 165, and 184 or 198; Psychology 106, 109, 150. Nine units selected from Drama 110, 142; Physical Education 122, 1151, 154; Psychology 145, 152; Sociology 136; Education 135, 167; Health Science and Safety 154, 172, 175, 176 .

## Recreation Minor

The minor in recreation consists of a minimum of 19 units to include two lower division units in art, dance, drama, or music; Recreation 60, 70, 80, 165, and 184; and Drama 110 or Recreation 140. Recommended: Industrial Arts 101, Physical Education 151, 175, 176 ,
Psychology 106, Public Administration 144, and Recreation 150.

## Lower Division Courses

40. Challenges of Leisure (3) I, II

Study of leisure and its impact on contemporary life; issues affecting recreation in today's urbanized society.
60. Community Recreation (3) I, II

Scope of community recreation; basic philosophy of leisure time agencies; organization for youth; program planning; playground practices; basic systems of organizational and poil. formation.
70. Recreation Leadership (3) I, II

Two lectures and three hours of laboratory
Pandicrafts conduct programs in social recreation, recreational dramatics, song leading .
80. Camp Leadership (3) I, II

Principles of camp counseling and campcraft skills. Practical sessions aimed at preparin leaders for all aspects of organized youth camping. Required attendance at two week-end Sup
84. Supervised Field Work (3) I, II, Cr/NC

Prerequisites: Credit or concurrent enrollment in Recreation 70 and 275 hours' experience in recreation leadership.
Observation and participation in community recreation leadership. Practical, volunteer experience in a variety of recreational settings. Minimum of one hour per week in class plus eight hours per week at an agency.

205. Park Management (3) Alternate years

Prerequisite: Recreation 165 .
Frerequisite: Recreation 165 . Personnel and budget problems unique to park management. Coordination of activities with other public agencies.
260. Recreation Administration and Supervision (3) Alternate years

Prerequisites: Recreation 165 and 184.
Methods, techniques and evaluation systems used by chief administrators, department heads and supervisors in both public and private agencies.
261. Seminar in Specialized Facilities (3)

Prerequisite: Recreation 175.
Management methods in planning, developing and operating specialized recreation facilities such as golf courses, zoos and aquaria, botanical gardens and arboreta, beaches and marinas, centers for the handicapped, sports stadia, and others. May be repeated once in different area of specialization.

## Religious Studies <br> In the College of Arts and Letters

Faculty
Professors: Anderson, Friedman, Jordan (Chairman)
Associate Professor: Khalil
Assistant Professors: Ghazi, Swyhart
Lecturer: Coughlin
Offered by the Department
Major in religious studies with the A.B. degree in liberal arts and sciences.
Minor in religious studies.

## Religious Studies Major

With the A.B. Degree in Liberal Arts and Sciences
All candidates for a degree in liberal arts and sciences must complete the graduation
requirements listed on page 60 of this catalog
A major.
Preparation for the major. Religious Studies 20, 50; Philosophy 1, 2. (12 units.)
Major. A minimum of 24 upper division units in religious studies to include either Religious Studies 100A or 100B, at least six units from courses listed in Group I below, at least Religious Studies 100A or 100 B , at least six units from courses isted in Group I below, at least
six units from Group II, at least three units from Group III, and at least three units from Group IV. Six of the 24 upper division units required for the major may be taken from among
those courses other than religious studies courses which are included in Group III below.
Group I: Religious Studies 110, 111A-111B, 114, 115 and 116
Group II: Religious Studies 121A-121B, 126A-126B.
Group III: Religious Studies 130, 132, 135, 136, 150, 151, Philosophy 135, Sociology 138, Anthropology 153.
Group IV: Religious Studies 190, 191

## Religious Studies Minor

The minor in religious studies consists of from 15 to 22 units to include at least three lower division units in religious studies, at least three units from Group I below, at least three units from Group in, and at least three units from Group II

Group I: Religious Studies 121A-121B, 126A-126B 116
, 135, 136, 150, 151, Philosophy 135, Sociology 138

Lower Division Courses
20. World Religions (3)

Major figures, attitudes and teachings of world religions.
50. Problems of Religion (3)

Problems in the study of religions, based on the study of scripture selected from Eastern and Western religions.
99. Experimental Topics (2-4)

Refer to the catalog statement on Experimental Topics on page 106. Limit of nine units applicable to a bachelor's degree in courses under this number of which no more than three units may be applicable to general education requirements.

Upper Division Courses
100A-100B. The Bible (3-3)
Prerequisite: Three units of religious studies
The problems of composition and historical significance in the context of religious meanings. Semester I: The Pentateuch, the Prophets and the Writings. Semester II: The New Testament
110. Greek and Latin Fathers (3)

Prerequisite: Six units of religious studies.
Readings in patristic thought from Ignatius of Antioch through Augustine
111A-111B. The Western Christian Tradition (3-3)
Prerequisite: Religious Studies 110 . Religious Studies 111 A is prerequisite to 111 B
Readings in source materials illustrative of the doctrinal and institutional development of the Western Church. Semester I: The Medieval Church and early stages of the Reformation. Semester II: The Reformation and the Enlightenment.
114. The Eastern Orthodox Tradition (3)

Prerequisite: Religious Studies 110 . Patristic period to the present.
115. Judaism (3)

Prerequisite: Three units of religious studies
Major trends and teachings from the Talmudic period to the present
116. Islam (3)

Prerequisite: Three units of religious studies
Major doctrines, practices and developments from the time of Mohammed to the present. 121A-121B. Oriental Religions (3-3)
Prerequisite: Three units of religious studies. Semester I: Religions of India-especially Hinduism and Buddhism. Semester II: Religions of the Far East.
126A-126B. Scriptures of India and China (3-3)
Prerequisite: Religious Studies 50, 121A, or 121B; or six units of philosophy.
The religious and philosophical modes of thought and ways of life of the Orient. Reading and analysis of primary texts in translation. Semester I: India and Southeast Asia. Semester II: China and Japan. (Formerly numbered and entitled Philosophy 150A-150B, Asian Thought.) 130. Theory and Practice of Worship (3)

The symbolic structure of devotional performance.
131A-131B. Religion and Culture (3-3)
The relations between religion and aspects of major cultural traditions. Semester I: Primarily the plastic arts and music. Semester II: Primarily literature and drama
132. Dynamics of Religious Experience (3)

Prerequisite: Six units in humanities or social sciences.
Prerequista and major approaches in the study of individuals' religious behavior and Chier data Special attention to relevant problems in world religions and philosophical experiences. Special attentionmber Rel Religious Studies 125 .)
35. Religion and Science (3) I, II

Prerequisite: Religious Studies 20 or 50 .
Prequis exploration of the relation of science to religious conceptions of human nature and destiny.
136. Religion and Relevance (3) I, II

Prerequisite: Religious Studies 100A or 100B
 A critical exploratil ethical concerns.
140. The Oracular Tradition (3)

Prerequisites: Religious Studad West with special attention to the I Ching and the Tarot. Oracular traditions of Eness in American Society (3)
150. Religious Consciousness in American Society

Prerequisite: Three ur the traditions which have helped to shape religious pluralism Critical investigation of
151. Religion in America (3)

Prerequisite: Religious Studies 150
Selected topics in religion in America, such as Deism, transcendentalism, pragmatism, church-state relations, Jewish identity, etc. May be repeated with new content. Maximum credit six units.
166. Honors Course (1-3) I, II

Refer to Honors Program.
180. A Major Figure (3) I, II

Prerequisites: Religious Studies 20 or 50 , and three upper division units in religious studies. Life, works and significance of one major figure in a religious tradition. May be repeated with new content. Maximum credit six units.
181. A Metaphysical Doctrine (3) I, II

Prerequisites: Philosophy 2, Religious Studies 20 or 50 , and three upper division units in eligious studies.
Systematic study of a selected theme or problem basic to the teachings of one of the major religious traditions. May be repeated with new content. Maximum credit six units.
190. Advanced Studies in Religious Practices (3)

Prerequisite: Nine upper division units in religious studies including at least three units Oriental traditions and three in Western traditions.
Research in the function and significance of ritual, prayer and meditation
191. Advanced Studies in Religious Doctrines (3).

Prerequisite: Nine upper division units in religious studies including at least three units
in Oriental traditions and three in Western traditions.
Research in the significance of selected teachings of the major religions
192. Recent Christianity (3)

Prerequisite: Religious Studies 111B. Religious Studies 114 is recommended. Themes in the development of Christian institutions and doctrines in the 19th and 20th centuries
199. Special Study (1-3) I, II

Individual study. Maximum credit six units.
Prerequisite: Twelve upper division units in religious studies.

## Russian

In the College of Arts and Letters
Faculty
Professors: Dukas, Kozlik (Chairman)
Associate Professor: Fetzer
Offered by the Department of Germanic and Slavic Languages and Literatures
Master of Arts degree in Russian
Major in Russian with the A.B. degree in liberal arts and sciences.
Minor in Russian
Teaching major in foreign languages in the area of Russian for the single subject teaching credential.

## Russian Major

With the A.B. Degree in Liberal Arts and Sciences
All candidates for a degree in liberal arts and sciences must complete the graduation requirements listed on page 60 of this catalog.
te a minor in another field to be approved by the departmental adviser in Russian.
Preparation for the major. Russian $1,2,3,4,10$ and 11. ( 20 units.) Recommended: History 4A-4B.
Major. A minimum of 24 upper division units in Russian to include Russian 101A-101B 102A-102B; and 12 units in period literature excluding Russian 144A-144B, or six units in period literature and six units in Russian linguistics.

## Russian Minor

The minor in Russian consists of a minimum of 15 units in Russian to include Russian 4 and six units of upper division courses.

## Russian

For the Single Subject Teaching Credential in Foreign Languages
All candidates for a teaching credential must complete all requirements for the applicable specialization as outlined in the section of this catalog on the School of Education.
This major may be used by students in Teacher Education as an undergraduate major for the A.B. degree in liberal arts and sciences.
The requirements for the foreign languages major in the area of Russian for the single subject teaching credential are being revised. For further information consult the department.
Proficiency Examination: Before taking a student teaching assignment in Russian, the candidate for the credential may be required to pass an oral and written proficiency Languages and Literatures, Department of Germanic and Slavic Languages and Literatures concerning the examination.

## High School Equivalents

High school foreign language courses may be used for purposes of placement in college courses and may be counted toward meeting the foreign language requirement in various majors. These high school courses will not count as college credit toward graduation.
three years the equivalent of Russian 2. and four years the equivalent of Russian 3 . The 1; year-course taken by a student in the high school language sequence may be repeated in college for graduation credit, not to exceed four units of repeated foreign language work

## Lower Division Courses

Native speakers of Russian will not receive credit for taking lower division courses in Russian except with advance approval from the department

1. Elementary (4) I, II

Four lectures and one hour of laboratory
Pronunciation, oral practice, reading in Russian literature, minimum essentials of grammar. Not open to students who have completed three years of high school Russian.
2. Elementary (4) I, II

Four lectures and one hour of laboratory.
Prerequisite: Russian 1.
Continuation of Russian 1. Not open to students who have completed four years of high school Russian.
3. Intermediate (4) I

Prerequisite: Russian 2 or three years of high school Russian
A practical application of the fundamental principles of grammar. Reading in Russian of cultural material, short stories, novels or plays; oral practice.
4. Intermediate (4) II

Prerequisite. Russian 3 .
Continuation of Russian
8. Scientific Reading (2)

Prerequisite: Russian 2 or three years of high school Russian.
Intensive reading in scientific fields.
10. Conversation (2) I

Prerequisite: Russian 2 or three years of high school Russian.
Practice in the spoken language; practical vocabulary; conversation on assigned topics simple dialogues and plays.
11. Conversation (2) II 10 or Russian 3, or four years of high school Russian

Prerequisite: Russian 10 or
Cont.
99. Experimental Topics (2-4) Refer to the cataiog stas degree in courses under this number of which no more than three units may be applicable to general education requirements.

Upper Division Courses
101A-101B. Advanced Grammar and Composition (3-3) Prerequisites: Russian 4 and 11 .
Advanced grammar and stylistics; intensive writing practice; reports based on outside reading.
102A-102B. Survey of Russian Literature (3-3)
Russian literature from its beginnings, with emphasis on the nineteenth and twentieth centuries.
103. Old Russian Literature (3)

Masterpieces of Russian literature before 1700 .
104. Russian Literature of the Eighteenth Century (3)

Russian Classicism and Sentimentalism.
105A-105B. The Russian Short Story, Drama and Poetry of the Nineteenth Century (3-3) Development of the Russian short story, drama and poetry of the nineteenth century.
110A-110B. The Russian Novel of the Nineteenth Century (3-3)
Development of the Russian novel of the nineteenth century.
111. Russian Literature of the Twentieth Century (3)

Poetry, prose and drama of the twentieth century.
130. Russian Syntax and Stylistics (3)

Prerequisite: Russian 101A-101B
The structure of contemporary Russian.
131. Russian Phonology and Morphology (3)

Prerequisite: Russian 4 and 11.
The sounds and forms of contemporary Russian.
144A-144B. Masterpieces of Russian Literature (3-3) I, II
Selected Russian literary work in English translation. Semester I: The classic Russian authors of the nineteenth century-Pushkin, Gogol, Dostoyevsky, Tolstoy and Chekhov. Semester II: Literature of the Modernist and Soviet periods.
166. Honors Course (1-3) I, II

Refer to Honors Program.
185. Topics in Russian Literature (3)

Topics in Russian literature to be selected by instructor. May emphasize an author, period, movement or genre. Intended primarily for the nonspecialist. Does not fulfill language requirement. May be repeated with new content. Maximum credit six units.
199. Special Study (1-3) I, II
dividual study. Maximum credit six units.
Prerequisite: Consent of instructor.

## Graduate Course

201. History of the Russian Language (3)

Prerequisite: Twelve upper division units in Russian.
The historical development of the Russian language.
202A-202B. Old Church Slavic (3-3)
Prerequisite: Twelve upper division units in Russian.
Structure of Old Church Slavic with readings and analysis of medieval Slavic texts.
203. Slavic Linguistics (3)

Prerequisite: Twelve upper division units in Russian.
204A-204B. The Soviet Novel and Short Story (3-3)
Prerequisite: Twelve upper division units in Russian.
Intensive study of major writers of Soviet prose fiction.
205. Russian Poetry from Pushkin to the Present (3)

Prerequisite: Twelve upper division units in Russian.
The major Russian poets of the nineteenth and twentieth centuries
253. Nineteenth Century Russian Literature (3)

Prerequisite: Twelve upper division units in Russian.
Major developments in the literature of the time.
255. Seminar: A Major Author or Movement (3)

Prerequisite: Russian 290.
A major author or movement. Maximum credit six units applicable on a master's degree.
290. Research and Criticism (3)

Prerequisite: Twelve upper division units in Russian.
Purposes and methods of research in Slavic linguistics and in the literatures; theories and practice of literary criticism.
298. Special Study (1-3) Cr/NC

Individual study. Maximum credit six units.
ighteen upper division units in Russian and consent of staff; to be arranged an and instructor.
299. Thesis (3) Cr/NC

Prerequisites: An officially appointed thesis committee and advancement to candidacy Preparation of a project or thesis for the master's degree.

## Social Welfare

## In the School of Social Work

Faculty
Professors: Griffin, Kelley (Associate Dean), Pantoja, Pilcher, A., Pilcher, D., Tebor Associate Professors: Andresen, Guidry, Herman, Perry
Assistant Professors: Cohen, Fort, Watson
Lecturers: Brewer, Morgan, Olivier, Pepper
Offered by the School of Social Work
Major in social welfare with the A.B. degree in liberal arts and sciences.
Major in social welfare with the A.B. degree in applied arts and sciences Minor in social welfare

## Social Welfare Major

With the A.B. Degree in Liberal Arts and Sciences or in Applied Arts and Sciences
All candidates for a degree in liberal arts and sciences or in applied arts and sciences must complete the graduation requirements listed on page 60 of this catalog
A minor is not required with this major
The primary educational objective of this major is preparation for beginning social work practice. In addition, it serves broad educational purposes based on an understanding of contemporary social welfare programs and prepares for professional social work education at the graduate level. The major prepares for immediate employment in those social
Preparation fore 1A, 1B; Political Science 1 and 2, Preparation for the major. Ans 10, 10, and Psychology 1. ( 27 units.) Recommended: Biology 1 and 2.
a Major. (Undergraduate): A minimum of 31 upper division units to include Social Weifare 100A-100B, 180
Recommended: Social Welfare 187 (strongly recommended for those students planning to seek admission to the San Diego State University School of Social Work), Sociology 122, Psychology 106, Biology 159, and courses from anthropology, literature, history, philosophy, political science, economics, psychology and sociology. Students sho adviser in social welfare for selection and arrangement of courses.

## Social Welfare Minor

The minor in social welfare consists of a m of which must be in upper division courses.

Lower Division Courses
30. Contemporary Courtship and Marriage (3) I, II

Developing und erstanding and ability to evaluate various concepts, attitudes and value ystems as they relate to sudents in students in coping with interpersonal el 35 or other lower division course in courtship and marriage or marriage and the family
80. Explorations in Human Services (3) I, II

Two lectures and three hours of field work. Orientation to the field of social welfare. Readings, community. Work as a volunteer in the agency social welfare activities on campus in a variety of field settings. Scheduling is flexible
99. Experimental Topics (2-4) $\mathrm{Cr} / \mathrm{NC}$

Refer to the catalog statement on Experimental Topics on page 106. Limit of nine units applicable to a bachelor's degree in courses under this number of which no more than three units may be applicable to general education requirements.

Upper Division Courses
100A-100B. Man in Society (3-3) I, II
Prerequisites: Biology 1 and 2, Psychology 1, and Sociology 1. Social Welfare 100A is
prerequisite to 100B. Biological, psychological and social aspects of human growth and development from birth to death. Integration of concepts from various disciplines.
166. Honors Course (1-3) I, II

Refer to Honors Program.
May be repeated with new content. Maximum credit six units.
180A. Exploring Social Issues (3) I, II
Prerequisite: Sociology 10.
Study of the social forces and institutions as they relate to and determine social policy 180B. Exploring Social Services (3) I, II

Prerequisite: Social Welfare 180A
Study of issues and dilemmas related to the delivery of social services.
181. Field Observation (1-2) I, II Cr/NC

Prerequisite: Social Welfare 80.
Field observation assignments in the social welfare area. Maximum credit four units. 182A-182B. Social Work Practice (3-3) I, II
Prerequisites: Social Welfare 100B and 180B Concurrent registration in Social Welfare 183A and 189A for 182A; concurrent registration in Social Welfare 183B and 189B for 182B The professional base, principles and interventive techniques of social work practice with individuals, families, groups and communities
183A-183B. Integrating Proseminar (2-2) I, II
Prerequisites: Social Welfare 100B and 180B. Concurrent registration in Social Welfare 182A and 189A for 183A concurrent registration in Social Welfare 182B and 189B for 183B The integration of social work theory, principles and practice techniques.
187. Methods of Social Welfare Research (3) I, II

Prerequisites: Sociology 60 and Social Welfare 189A.
Sources, nature and uses of social work theory and research. Application of the principles of scientific analysis to the study of social welfare institutions and the practice of social work 189A-189B. Field Experience in Social Welfare (3-6, 3-6) I, II
Prerequisites: Social Welfare 100B and 180B. Concurrent registration in Social Welfare 182A and 183A for 189A; concurrent registration in Social Welfare 182B and 183B for 189B Eight to sixteen hours per week of laboratory field assignments in selected social welfar activities.
197. Investigation and Report (3) I, II

Prerequisite: Consent of instructor
Analysis of special topics in social welfare.
199. Special Study (1-3) I, II Cr/NC

Individual study. Maximum credit six units.
Prerequisite: Consent of instructor.


## 354 / Social Work

230. Social Work Practice I (3)

Prerequisite: Concurrent registration in Social Work 250.
Principles of social work practice with individuals, families, groups and communities. Attention is given to social work objectives, principles and skills.
231. Social Work Practice II (3)

Prerequisites: Social Work 230 and concurrent registration in Social Work 251 ,
Principles of social work practice with individuals, families, groups and communities with emphasis on refinement of skills of social study and social problem analysis. Attention to interactional and small group processes in determination of goals and change.
232. Social Work Practice III (3)

Prerequisites: Social Work 231 and concurrent registration in Social Work 252
Social work intervention with families and groups toward personal, social, organizational and institutional change and problem solving. Emphasis on social, ethnic and economic interaction contexts.
233. Social Work Practice IV (3)

Prerequisites: Social Work 231 and concurrent requirement in field work
Designed to offer opportunity for integration and application of the student's knowledge of an array of approaches to practice. Specific content relevant to selected models of social probiems expe
234. Social Work Practice V (3)
234. Social Work Practice
Prerequisites: Social Work 231 and concurrent requirement in field work.

Arerequisites: Sociajorkeries of social change to improve the social environment and ameliorate social problems of individuals, families and groups. Model problems in social ameliorate social problems of individuals, familes and groups. Moder probiems
welfare planning; mobilization of resources; analysis of issues and resistances; designing programs and structures and reassessments.
235. Social Work Practice VI (3)

Prerequisites: Social Work 231 and concurrent requirement in field work
Exploration of collaborative social work roles with other professional roles in planned change. Differential applications of values, strategies and power in social welfare and host settings, by and on behalf of various population groupings.
236. Social Work Practice VII (4)

Prerequisite: Concurrent registration in Social Work 232 or 234.
Laboratory field instruction enabling the student to integrate social work theory, knowledge and concepts in developing interventive skills with individuals, families, groups, organizations and communities. Enrollment limited to students admitted to the M.S.S.W program.
237. Social Work Practice VIII (4)

Prerequisites: Social Work 236 and concurrent registration in Social Work 233 or 235.
Continuation of Social Work Practice VII with emphasis on refinements of skills in intervention with individuals, families, groups, organizations and communities.
238-S. Social Work Practice IX (6-8) S
Emphasis on the further development of skills with individuals, families, groups organizations and communities. Enrollment limited to students admitted to M.S.S.W. program.
250. Field Instruction I (4)

Prerequisite: Concurrent registration in Social Work 230
in relation to classroom lic or voluntary social work setting. Experiences are drawn upon in relation to classroom learning to emphasize application of social work objectives, 251. Field Instruction II (4)
251. Field Instruction Werequisites: Social Work 250 and concurrent registration in Social Work 231.

Continuation of field instruction initiated in Social Work 250. Opportunities are provided for the application of social study and social problem analysis to experience with interactional and small group processes.
252. Field Instruction III: Individuals, Families and Groups (4-5)

Prerequisites: Social Work 251 and concurrent registration in Social Work 232.
Field instruction in a social work setting providing a concentration on social work practice aimed at achieving change in or on behalf of individuals, families and groups. Practice under educational direction at an advanced level.
253. Field Instruction IV: Individuals, Families and Groups (4-5)

Prerequisite: Social Work 252.
Continuation of Field Instruction III at an advanced level. Emphasis is placed on the use

## 255. Field Instruction V: Organizations and Communities (4-5

Prerequisite: Social Work 251
Field instruction in a social work setting providing a concentration on social work practice aimed at achieving changes in social policies, organizations and communities. Practice under educational direction at an advanced level.
256. Field Instruction VI; Organizations and Communities (4-5)
Prerequisite: Social W;

Prerequisite: Social Work 255.
Continuation of Field Instruction V at an advanced level. Emphasis is placed on the use of diverse social work strategies and resources in social planning or community development 270. Seminar: Social Work Analysis (1-4)

Discussion of student experience in field instruction and its broader implications. Maximure
290A-290B. Social Work Research Methods and Analysis (2-2)
Definition and purpose of research in social collecting, organizing and interpreting social welfare and related data; steps involved in 291. Seminar (2-3)

Selected topics in social work and/or social welfare. Topics to be announced in the class schedule. Maximum credit six units applicable on a master's degree.
297A-297B. Research (3-3) Cr/NC
Prerequisite: Social Work 290A-290B.
Research in the field of social work and completion of a research project. Individual or group project.
298. Special Study (1-3) Cr/NC

Prerequisite: Consent of staff; to be arranged with Dean and instructor.
Individual study. Maximum credit six units.

## Sociology

## In the College of Arts and Letters

Faculty
Emeritus: Barnhart, Klapp
Professors. Chandraselch Daniels, DeLora JR El-Assal Gillette (Chairman), Johnson, Professors: Chandrasekhar, Daniels, DeLora, J.R., El-Assal, Gillette
Kirby, Milne, Mouratides, Somerville, Sorensen, Wendling, Winslow
Associate Professors: Buck, Chandler, DeLora, J.S., Emerick, Kennedy, Scheck, Schulze, Werner
Assistant Professors: Cottrell, Halpern, Ima, Kirkpatrick, Kolodij, Preston, Stephenson Lecturers: Bloomberg, Hohm, Pierce
Offered by the Department
Master of Arts degree in sociology
Major in sociology with the A.B. degree in liberal arts and sciences.
Minor in sociology.

## Sociology Major

With the A.B. Degree in Liberal Arts and Sciences
All candidates for a degree in liberal arts and sciences must complete the graduation requirements listed on page 60 of this catalog
Students majoring in sociology must complete a minor in another field.
Preparation for the major. Sociology 1,10 and 60. (Nine units.)
Major. A minimum of 24 upper division units in sociology to include Sociology 101, 122 and 140.

## Sociology Minor

The minor in sociology consists of 15 to 22 units in sociology, nine units of which must be in upper division courses.

## Lower Division Course

1. Introductory Sociology (3) I, II

This course is prerequisite to all upper division courses in sociology
This course is prerequisite to all upper sivision courses ind use of the concepts applied to sociological analysis; the effects of isolation and social contacts, interaction, processes, forces, controls, collective behavior and isolation and social contacts, inturaction, with credit in Sociology 102.

## 10. Contemporary Social Problems (3) I, II

Prerequisite: Sociology 1.
Prerequisite: Sociology problems recognizing the sociological factors involved. Emphasis on the scientific method of approach. An evaluation of various causes and solutions of problems. Not scientific method of approach. in Sociology 110 or Mexican-American Studies 10. 60. Elementary Social Statistics (3) I, II

Prerequisites: Sociology 1 and Mathematics 3.
Analysis and presentation of elementary materials in the fields of sociology and social work. Tabular and graphic presentation, analysis of frequency distribution, trends, simple Tabrelation samping and reliability techniques. Not open to students with credit for, or correlation, sampling and enrollment in, another course in statistics.
64. Sociological Analysis (3) I, II

Prerequisite: Sociology 1.
Development and use of fundamental procedures of sociological investigation.
99. Experimental Topics (2-4)

Refer to the catalog statement on Experimental Topics on page 106. Limit of nine units ree in courses under this number of which no more than three units may be applicable to general education requirements.

## Upper Division Courses

100. History of Social Thought (3) I, II

Prerequisite: Sociology 1.
Devels sociology as a distinct scientific iscipline. Major emphasis on European contributions.
101. Classical Sociological Theory (3) I, II

Prerequisite: Sociology 1.
Theories of the major early European and American sociologists, including Marx, Weber Durkheim, Pareto, Cooley, Mead and others.

## 103. Contemporary Sociology Theory (3) I, I

Prerequisite: Sociology 101
Types and trends of contemporary sociological theory. Selected theoretical works. 104. Social Change (3) I, II

Prerequisite: Social the interpersonal, institutional and societal levels in a comparative perspective. Detailed analysis of modernization
110. Social Disorganization (3) I, II
110. Social Disorganization
Prerequisite: Sociology 1.

Prerequisite: Sociology . Survey of many alleged abnal phenomena in society as seen in society today in various forms of individual, family, community and world disorganization, such as crime, prostitution, extreme alcoholism, migratory workers, divorce, revolution, war, etc.
111. Current Social Issues (3) I, II

Prerequisite: Sociology 1 .
Prerequisite: Sociology 1. provided for student initiative in determining course content and procedures.
112. Sociology of Conflict (3) I, II

Prerequisite: Sociology 1.
Conflict as a social process: background, forms and consequences at the interpersonal intergroup, class and international levels from a sociological frame of reference. Major theories of social conflict.
113. Criminology and Penology (3) I, II

Prerequisite: Sociology 1.
The extent and characteristics of crime; consideration of physical, mental, economic and sociological causes of crime; study of methods of penal discipline, prison labor, parole and probation; programs of prevention.
138. Sociology of Religion (3) I, II

Prerequisite: Sociology 1. Recommended: Sociology 101 and 146.
The role of religion in society as cult and institution, including primitive religion, modern sects and churches, ritual, secularization and religious movements.
Prerequisite: Sociology 1.
Prerequisite: Sociology 1 . factors affecting the educational process. Educational institutions and the community.
140. Social Psychology: Sociological Approaches (3) I, II

Prerequisites: Sociology 1 and Psychology 1.
The major problems and findings of social-psychological studies with reference to group behavior and group membership, the socialization of the individual, and processes of social int
41. Advanced Social Psychology: Sociological Approaches (3) I, II

Prerequisite: Sociology 140 or Psychology 145. Recommended for majors only
socialization of the indives and approaches to the study of group behavior and membership,
145. Sociology of Mass Communication (3) I, II

Prerequisite: Sociology 1. Recommended: Sociology 140 and 146.
Sociological analysis of the processes and effects of mass communications in different social systems, their functions and dysfunctions and their relationships to other social institutions. 146. Collective Behavior (3) I, II

Prerequisite: Sociology 140.
The basic processes of social behavior in masses and groups, including crowd behavior fads, fashions, crazes, panics, rumors; sects and cults; heroes and scapegoats; social movements; effects of mass communication.
147. Sociology of Social Movements (3) I, II

Prerequisite: Sociology 1. Recommended: Sociology 122 and 145
leading to development of movements in relationship to the larger society. Conditions leading to development of social movements, emergence of leadership, ideologies, strategies, recruitment of members and social consequences, case studies in depth.
148. Small Groups (3) I, II

Prerequisite. Sociology 140
such as industry, military, recreation of small groups; their role in society and institutions such as industry, military, recreation and education; recent studies and methods of research. 150. Population Problems (3) I, II

Prerequisite: Sociology 1
theories. Biological and geoot to age, sex and racial distribution. Population practices and theories. Biological and geographical aspects of population problems. International
population movements. 151. Research Methods.

P1. Research Methods in Demography (3) I, II
Prerequisites: Sociology 60 or Economics 2, and Sociology 150
Standard procedures in the measurement of fertility, mortality, natural increase, migration, population growth and manpower, and working activities. Appraisal of source 157 Urs
157. Urban Sociology (3) I, II

The structure and function of the modern city; types of neighborhoods; forms of recreation; social forces in a metropolitan area; types of urban personalities and groups 60. Qiactical field studies required
. Quantitative Methods in Social Research (3) I
Prerequisite: Sociology 60.
including analysis of variance; covarianetric techniques in the analysis of social research data 164. Methal

Prerethods of Social Research (3) I, II
Prerequisite: Sociology 60.
social conditions.
166. Honors Course (1-3) I, II

Refer to Honors Program.
197. Investigation and Report (3) I, II

Prerequisite: Fifteen units in sociology and consent of instructor
Analysis of special topics in sociology. Maximum credit six units.
270. Seminar in Population and Demography (3)

Prerequisites: Sociology 150 and 164.
Demographic theories, fertility, mortality, migration, construction and application of demographic indices, demographic prediction, world population trends, special topics. See class schedule for specific content. Maximum credit six units applicable on a master's degree.
275. Directed Readings in Population and Demography (3)

Prerequisites: Sociology 150 and 164.
Selected readings providing comprehensive coverage of the fields of population and demography.
297. Research (3) $\mathrm{Cr} / \mathrm{NC}$

Prerequisite: Sociology 164.
Independent investigation of special topics.
298. Special Study (1-3) Cr/NC
rerequisite: Consent of staff; to be arranged with department chairman and instructor. Individual study. Maximum credit six units.
299. Thesis (3) $\mathrm{Cr} / \mathrm{NC}$

Prerequisites: An officially appointed thesis committee and advancement to candidacy. Preparation of a project or thesis for the master's degree.

## Spanish

In the College of Arts and Letters
Faculty
Emeritus: Brown, Sender
Professors: Baker, Case, Head (Chairman), Lemus, Walsh
Associate Professors: Barrera, Santaló, Segade, Talamantes, Weeter
Assistant Professors: Christensen, Jiménez-Vera, O'Brien, Windsor, Young
Offered by the Department of Spanish and Portuguese Languages and Literatures Master of Arts degree in Spanish.
Major in Spanish with the A.B. degree in liberal arts and sciences.
Teaching major in foreign languages in the area of Spanish for the single subject teaching credential.
Minor in Spanish.

## Spanish Major

## With the A.B. Degree in Liberal Arts and Sciences

All candidates for a degree in liberal arts and sciences must complete the graduation requirements listed on page 60 of this catalog.
Students majoring in Spanish must complete a minor in another field approved by the departmental adviser in Spanish.

Preparation for the major. Spanish $1,2,3,4,10$, and 11. ( 20 units.)
Major. A minimum of 24 upper division units in Spanish to include Spanish 101A-101B, 102A-102B, and 12 units of upper division electives in Spanish, but not to exceed 3 units from Spanish 140,141 , and 142.

## Spanish Minor

The minor in Spanish consists of a minimum of 15 units in Spanish, six units of which must be in upper division courses.

## Spanish

For the Single Subject Teaching Credential in Foreign Languages
All candidates for a teaching credential must complete all requirements for the applicable specialization as outlined in the section of this catalog on the School of Education.
This major may be used by students in Teacher Education as an undergraduate major for the A.B. degree in liberal arts and sciences.
The requirements for the foreign languages major in the area of Spanish for the single subject teaching credential are being revised. For further information consult the
department. department.

## High School Equivalents

High school foreign language courses may be used for purposes of placement in college courses and may majors. These high school courses will not count as college credit toward graduation.
The first two years of high school Spanish may be counted as the equivalent of Spanish 1 three years the equivalent of Spanish 2; and four years the equivalent of Spanish 3. The las year-course taken by a student in the high school language sequence may be repeated in college for graduation credit, not to exceed four units of repeated foreign language work Students entering San Diego State University with five or six years of high school Spanish may enroll in Spanish 4; the department recommends, however, that they take Spanish 23

## 1. Elementary (4) I, II

## Lower Division Courses

Four lectures and one hour of laboratory
Pronunciation, oral practice, readings on Spanish culture and civilization, minimum essentials of grammar. Not open to students who have completed three years of high schoo Spanish.
2. Elementary (4) I, II

Four lectures and one hour of laboratory
Prerequisite: Spanish 1 or two years of high school Spanish
Continuation of Spanish 1. Not open to students who have completed four years of high school Spanish.
3. Intermediate (4) I, II

Prerequisite: Spanish 2 or three years of high school Spanish
A practical application of the fundamental principles of grammar. Reading in Spanish of cultural material, short stories, novels or plays; oral practice; outside reading with oral and written reports. Special sections available for the Spanish speaking.
4. Intermediate (4) I, II

Prerequistion of Spanish 3. Special sections available for the Spanish speaking.
10. Conversation (2) I II
10. Conversation (2) I, II

Practice in the spoken language; practical vocabulary; conversation on assigned topics; simple dialogues and plays.
11. Conversation (2) I, II

Prerequisite: Spanish 10 or
Continuation of Spanish 10 .
23. Introduction to Literature (3)
23. Introduction to Literature (3)

Prerequisites: Spanish 4 and 11 . and class discussions. Course conducted in Spanish.
99. Experimental Topies (2-4)
99. Experimental Topics (2-4) Refer to the catalog statement on Experimental this number of which no more than three units may be applicable to general education requirements.

## Upper Division Courses

101A-101B. Advanced Oral and Written Composition (3-3)
Prerequisites: Spanish 4 and 11.
Composition in Spanish, including idiom study and translation of literary passages.
02A-102B. Survey Course in Spanish Literature (3-3)
Prerequisite: Spanish 4
Important movements, authors and works in Spanish literature from the Middle Ages to the present.
104A-104B. Spanish-American Literature (3-3)
Prerequisites: Spanish 4 and 11 .
Reading from nd modern periods. Lectures, class reading, collateral reading and reports.
105A-105B. Modern Spanish Drama (3-3)
105A-105B. Modern Spanish Dr 11
The development of the drama of Spain from the beginning of the nineteenth century to the present time.

106A-106B. Mexican Literature (3-3)
Prerequisites: Spanish 4 and 11.
Aspects of Mexican culture. Semester I: A rapid survey of Mexican literature from the colonial period to the twentieth century. Semester II: The twentieth century, with emphasis on the contemporary Mexican novel and theater
107. Caribbean Area Countries Literature (3)

Prerequisites: Spanish 4 and 11.
Literature of Caribbean Islands, Central America, Colombia and Venezuela, from colonial period to present. Special emphasis on contemporary era.
108. Andean Countries Literature (3)

Prerequisite: Spanish 4 and 11
Literature of Ecuador, Peru, Bolivia and Chile from the period immediately preceding the Spanish conquest to today
109. River Plate Literature (3)

Prerequisites: Spanish 4 and 1
Literature of Argentina, Paraguay and Uruguay from colonial period to present
110. Nineteenth Century Spanish Novel and Short Story (3)

Prerequisites: Spanish 4 and 1
The development of the novel and short story in Spain in the nineteenth century.
111. Twentieth Century Spanish Novel and Short Story (3)

Trerequisites: Spanish 4 and 11 .
of the generation of the novel and short story in Spain in 1936, with emphasis on the novel of the generation of 1898 .
112. Contemporary Spanish Novel (3)

The development of the novel
and short story in Spain since 1936
130. Poetry of the Spanish Golden Age (3)

Prerequisites: Spanish 4 and 11
131. Prose of the Spanish Golden

Prerequisites: Spanish 4 and 11 .
Major prose writers of the Siglo de Oro
132. Drama of the Spanish Golden Age (3)

Prerequisites: Spanish 4 and 11
The major dramatists of the Siglo de Oro.
140. Spanish Civilization (3)

Prerequisites: Spanish 4 and 11 (except at the Imperial Valley Campus) Spanish culture of the past and present, with emphasis on literature, philosophy and the
arts. Not open to students with credit in Humanities 140 . arts. Not open to students with credit in Humanities 140.
141. Spanish-American Civilization (3)

Prerequisites: Spanish 4 and 11 (except at the Imperial Valley Campus)
Spanish-American cultures, with emphasis on literature, philosophy and the arts. Not open
to students with credit in Humanities 141 142. Mexican Civilization (3)

Prerequisites: Spanish 4 and 11.
The major currents and characteristics of Mexican culture, as expressed through the centuries in literature, philosophy and the arts. Not open to students with credit in Humanities 146.
144. Masterpieces of Spanish Literature (3)

Reading selections from major Spanish authors. Taught in English. (Formerly numbered Comparative Literature 144.)
149. Spanish Linguistics (3)

Prerequisites: Spanish 4 and 11
Structural, historical and applied Spanish linguistics.
150. Phonetics and Phonemics (3) II

Prerequisites: Spanish 4 and 11 with a grade of C or better
The sounds of Spanish and of the Spanish phonemic system, with special attention to the problems involved in the teaching of Spanish pronunciation to English-speaking students 166. Honors Course (1-3) I, II

Refer to Honors Program.
170. Spanish-American Poetry (3)

Spanish-American poetry of the 19th and 20th centuries.
171. Spanish-American Short Story (3)

Prerequisites: Spanish 4 and 11
Principal Spanish-American short story writers.
172. Spanish-American Theatre (3)

Prerequisites: Spanish 4 and 11.
Principal Spanish-American dramatists and movements.
180. Modern Spanish Poetry (3)

Prerequisites: Spansh 4 and
Spanish poetry of the 19th and 20th centuries
185. Selected Studies in Spanish (3)

Topics in Spanish or Spanish-American language, literature, culture and linguistics. Maximum credit six units.

## 190. Advanced Grammar (3)

Prerequisites: Spanish 101A and 101B
Significant systematic features of modern Spanish grammar with analysis of passages from literature. Recommended for credential applicants.
199. Special Study (1-3) I, II

Indive are currently enrolled in or who already have credit for all upper division courses in Spanish available in any given semester
Prerequisite: Consent of instructor.

## Graduate Courses

All graduate courses in the Department of Spanish and Portuguese have a prerequisite of 12 upper division units in Spanish, or consent of instructor.
201. History of the Spanish Language (3)
or encurrent enrollment in Spanish 149 or 150.
The development of the Spanish language in Spain and Spanish America, with particular attention to the phonology, morphology and syntax of medieval Spanish.
202. Cervantes (3)

The principal prose works of Cervantes. The Novelas ejemplares and Don Quixote. 203. Lope de Vega and Calderón (3)

The works of Lope de Vega and Calderón.
204. The Spanish-American Novel (3)

The Spanish-American
205. The Gaucho Epic (3)

The Poesía gauchesca, with particular emphasis on Martín Fierro, Fausto, and Santos Vega. 206. Modernism (3)

The Modernista movement in Spanish America, with special attention to representative poets.
207. Medieval Spanish Literature (3)

Prerequisite: Spanish 201.
The literature of Spain from the earliest extant works to the Celestina.
08. The Modern Spanish Essay (3)

The thinkers, essayists and philosophers of Spain from the generation of 1898 to the present.
209. The Spanish-American Essay (3)

Principal Spanish-American essayists of the 19th and 20th centuries
10. Contemporary Spanish-American Prose Fiction (3)

The principal writers of prose fiction in Spanish America from the mid-thirties to today. 20. Seminar in Spanish Golden Age Literature (3)
of the Spanish Golden Age. Maximum redit six units applicable on
230. Seminar in the 19th Century Spanish Literature (3) 19th century in Spain. Maximum A representative author, a genre or's degree.
credit six units applicable on
240. Seminar in 20th Century Spanish Literature (3) 20th century in Spain. Maximum A representative author, a genrester's degree.
credit six units applicable on a
250. Seminar in Spanish-Americancere an a A genre or m
255. Seminar in Spanish-American Culture and Thought (3)

Works of representative authors of Spanish America. Maximum credit six units applicable on a master's degree.
270. Applied Spanish Linguistics for Teachers (3)

Prerequisite: Spanish 149 or 150 .
The application of linguistic theory to the teaching of Spanish at the secondary and college levels.
290. Research and Criticism (3)

Purposes and methods of research in the fields of the language and literature, including bibliography, literary terms and textual criticism.
294. Comprehensive Reading and Survey Course (3)

Prerequisite: Consent of graduate adviser and department chairman
A study of important movements, authors and works in Spanish Literature. Designed to supplement the reading done in previous courses, in preparation for the comprehensive examination in literature for candidates for the Master of Arts degree
298. Special Study (1-3) $\mathrm{Cr} / \mathrm{NC}$

Individual study Maximum of to be arranged with department chairman and instructor 009. Thesis (3) Credit six units
299. Thesis (3) $\mathrm{Cr} / \mathrm{NC}$

Prerequisites: An officially appointed thesis committee and advancement to candidacy.
Preparation of a project or thesis for the master's degre.
Preparation of a project or thesis for the master's degree

## Speech Communication <br> In the College of Professional Studies

Faculty
Emeritus: Ackley
Professors: Adams, Benjamin (Chairman), Mills, Samovar
Associate Professor: Sanders
Assistant Professors: Hunsaker, King, Moore, Weitzel
Lecturer: Gaske
Offered by the Departmen
Master of Arts degree in speech communication
Major in speech communication with the A.B. degree in applied arts and sciences. Single subject teaching credential in English in the area of speech communication. in speech communication.

## Speech Communication Major

## With the A.B. Degree in Applied Arts and Sciences

Alcandidates for a degree in applied arts and sciences must complete the graduation A minor is listed on page 60 of this catalog
minor is not required with this major
Meparation for the major. Speech Communication 4, 5, 11A, 35 and 60. (15 units.)
Major. A minimum of 27 upper division units to include Speech Communication 135, 150 and 192B. Twelve units selected from Speech Communication 100, 101, 108, 109, 140, 152, 154 $161,162,166,180,189,198,199$; or twelve units selected from Speech Communication 100, Communication $100,108,109,130,140,161,169$; or twelve units selected from Speech electives from departmental offerings.

## Speech Communication Minor

The minor in speech communication consists of a minimum of 23 units in speech of upper division electives in speech communication $4,11 \mathrm{~A}$ or 11B, 35,60 , and twelve units

## Speech Communication

For the Single Subject Teaching Credential in English
All candidates for a teaching credential must complete all requirements for the applicable specialization as outlined in the section of this catalog on the School of Education.
This major may be used by the students in Teacher Education as an undergraduate major for the A.B. degree.
The requirements for the single subject teaching credential in English which includes the area of speech communication are being revised. For further information consult the Speech Communication Department.
The Speech Communication Department conducts a number of activities such as the
Forensics Program and the Readers Theater Program as performance laboratories. These Forensics Program and the Readers Theater Program as performance laboratories. These activities are an extension of classroom instruction, and credit may be allowed upon approval by the instructor in charge.
3. Oral Communication (2-3) I, II

Training in fundamental processes of oral expression; method of obtaining and organizing material; outlining; principles of attention and delivery; practice in construction and delivery of various forms of speeches. Speech Communication 3 or 4 recommended in general 2it

## 4. Intermediate Public Speaking (3) I, II

Practice in extemporaneous speaking on subjects of current interest, both national and Pres and delivery. Seeech Communication 3 or 4 recommended in general education. Not open to students with credit for Mexican-American Studies 2A.
5. Introduction to Speech Communication (3) I, II

Investigation of the status of the discipline and nalysis of interrelationships among varied pecialties within the field. Intended for students who are either considering or who are committed to a speech communication major or minor.
11A. Fundamentals of Interpretation (3) I, II
Literature and principles of its oral presentation by the interpreter.
11B. Intermediate Interpretation (3)
Communication 11A
Theory and practice of oral interpretation with emphasis on vocal performance, physical erformance, and other aspects of delivery. Practice through recording and live presentation readings, group speaking, and readers theater. Outside activity required.
35. Principles of Communication (3) I, II

Identification, description, and study of fundamental communication principles such as definitions and models, coding, meaning, organization. Emphasis on applying principles to personal, historical, literary and political human interactions. (Formerly numbered and entitled Speech Communication 62, Interpersonal Communication.)
60. Argumentation and Debate (3)

Obtaining and organizing of evidence and the construction and use of the brief; study and discussion of current issues; the presentation of formal and informal debates. Participation in intercollegiate debate optional.
61. Intercollegiate Debate (1) I, II

Two field trips required.
Three hours of activity and two coaching hours to be assigned. Credit for participation in intercollegiate program. Maximum credit four units for Speech Communication 61 and 161. 70. Group Discussion (3) I, II

Role of group discussion in a democratic society. Principles and methods of group discussion in problem-solving and learning situations. Practice in dealing with questions of policy and controversial issues. Development of skills in discussion preparation, participation and leadership.
99. Experimental Topics (2-4)

Refer to the catalog statement on Experimental Topics on page 106. Limit of nine units mplicale to a degree in courses under this number of which no more than three applicable to a bacherable to general education requirements.

Upper Division Courses
100. Contemporary Forensics Problems (1-3) I, II
mmunication 60
Prerequisite: Speech Communication 60 in political, economic and social problems Identification of significant argumed States. Use of case studies to emphasize research confronting Twentieth leading to comprehensive analysis. Oral performance stressed.

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101. Management of Speech Activities (1) I, II Two hours of activity
Planning, preparation, management and supervision of speech tournaments and other interscholastic activities under the supervision of the speech communication staff. Maximum credit two units.
102. Organizational Communication (3) I, II

Prerequisites: Six units selected from Speech Communication 3, 4, 135, or 70 and 191. The organization as a communication system; role of the organization in persuasive campaigns; communication strategies and
108. Advanced Interpretation (3) I, II

Three lecture-demonstrations per week and 32 hours of laboratory per semester.
rerequisite: Speech Communication 11A
Analysis of techniques of literary composition as guides to oral interpretation. Achievements of the creative artists as they affect the interpretive artist.
109. Workshop in Speech (1-3)

Study of some problems in speech communication. Maximum credit six units
130. Semantics (3) I, II

Recognition of various types of linguistic meaning; logical distinctions in discourse; distinction between real and verbal disagreement; recognition and correction of semantic allacies.
135. Theories of Human Communication (3) I, II

Special emphasis on various communication theories and models; the relationship of mental variables such as perception, roles and status, behavior change, language and motivation to the entire communication process.
137. Empirical Study in Speech Communication (3) I, II

Prerequisite: Six units of speech communication. Recommended: Speech Communicaion 35.
Philosophy of social science and application to current research in speech communication. Theories and constructs related to communication: analysis of current research literature. 140. Freedom and Responsibilities of Speech (3) I, II

Prerequisite: Speech Communication 60.
In-depth study of the major legal, ethical and political issues concerning communication and free speech in a democratic society.
150. Rhetorical Theory and Criticism to 400 A.D. (3) I, II

An analysis of rhetorical theory and criticism with special attention to Plato, Aristotle, Isocrates, Quintillian, and Cicero. The development of theory and systems of criticism culminating in the application of principles to public address.
152. Rhetorical Theory and Criticism 400 A.D. to 1900 (3) I, II

Prerequisite: Speech Communication 150.
An analysis of rhetorical theory and criticism with special attention to Longinus, Vives Ramus, Cox, Bacon, Campbell, Whately, Blair, and James. The development of theory and ystems of criticism culminating in the application of principles to public discourse
154. Contemporary Rhetorical Theory and Criticism (3) I, II

Prerequisite: Speech Communication 150.
An analysis of rhetorical theory and criticism in the twentieth century with special attention to Arnold, Bitzer, Burke, Hochmuth, and Winans. A unified body of principles for rhetorical theory and criticism will be derived and applied to contemporary discourse
161. Intercollegiate Debate
Two field trips required.

Three hours of activity and two coaching hours to be assigned. Credit for participation in intercollegiate program. Maximum credit four units for Speech Communication 61 and 161 . 162. Advanced Argumentation (3) I

The approaches to argument and the patterns and problems in argument. Consideration of implications for society. Written and oral reports.
166. Honors Course (1-3) I, II

Refer to Honors Program
175. Intercultural Communication (3) I, II

Study of communication with emphasis on the influence of cultural background perception, social organization, language and nonverbal messages in the cross-cultural 180 .
80. American Public Address (3) I, II

Public discourse from the colonial period to the present.
189. Ethics of Speech Communication (3)

Prerequisite: Six upper division units in philosophy or speech communication
Classical and modern ethical concepts applied to oral persuasion.
191. Group Communication (3) I, II

Prerequisite: Speech Communication 70
The theoretical processes of small group communication. Emphasis on the theory of group formation, interaction, procedures and leadership.
192A. Advanced Public Speaking (3) I
Trerequisite: Speech Communication 4. 192B. Persuasion (3) I, II

Prerequisite: Speech Communication 4.
Persuasion with emphasis on psychological principles. Research project on a significant problem. Oral performance required. 194. History of Public Address (3) II

Prerequisite: Speech Communication 4.
Speakers and speaking from Ancient Greece to the present. Functions of public speaking in the growth and development of ideas, ideals and institutions.
198. Selected Topics in Speech Communication (1-3) I, I

Prerequisite: Twelve units in speech communication.
A specialized study of selected topics from the areas of speech communication. May be repeated with new content. Maximum credit six units.
199. Special Study (1-3) I, II

Individual study. Maximum credit six units.
Prerequisite: Consent of instructor.

## Graduate Course

200. Research and Bibliography (3)

Basic reference works, scholarly and critical journals; introduction to bibliographical techniques; exercises and problems in methods and exposition of research as it relates to speech communication. Recommended for first semester of graduate work, and prerequisite to advancement to candidacy.
208. Seminar in Oral Interpretation (3)

Prerequisite: Speech Communication 108
Aesthetic discipline applied to oral interpretation of various forms of literature. Analysis of thought and emotional content, and aesthetic form. Investigation of advanced problems of delivery. May be repeated with new content. Maximum credit six units.
230. Seminar in the Analysis of Language (3)

Prerequisite: Speech Communication which may be integrated into the larger bodies of Special problems in language theory w
235. Seminar in Communication Theory (3)

Prerequisite: Speech Communication 135
Theories of communication; communication models, codes, perception and effects.
250. Seminar in Rhetorical Theory (3)
250. Seading figures in rhetorical theory from Plato to contemporary theorists. Special Leading figures in rhetorical of theory to public address.
251. Seminar in Rhetorical Criticism (3)
25. Seminar in Rhetorical Critism Special attention to measuring the effectiveness of a given piece of discourse in terms of actuality and potentiality.
262. Seminar in Argumentation (3)

Prerequisite: Speech Communication 162 . Significant topics the brief with pater
280. Seminar in Public Address, 1600-1850 (3)
280. Seminar in Public Address, $1600-1850$ (3) American speakers and the solutions they Examination of the problems confronting Americans used to solve major crises in American history.
281. Seminar in American Public Address, 1850 to Present (3)
281. Seminar in American Public Address, 1850 to Present $(3)$ and the solutions they Examination of the problems confronting Americal means used to solve major crises in American history.
282. Seminar: Contemporary American Public Address (3) Prerequisite: Speech Communication 192A or 192B.
290: Experimental Procedures in Speech Communication (3)
Prerequisites: Credit or concurrent registration in Speech Communication 192B and 200 Examination and evaluation of appropriate experimental procedures and traditional methods; special problems in research design.
291. Seminar in Group Discussion Theory (3)

Prerequisite: Speech Communication 191.
A study of descriptive and experimental literature on group discussion covering such topics as interaction, leadership, and means of evaluation.
292. Seminar in Persuasion (3) I, II

Prerequisite: Speech Communication 192B
Contemporary theories and models of persuasion, methods of assessing persuasive effect, and analysis of research literature.
293. Seminar: Greek and Roman Public Address (3)

Prerequisites: Speech Communication 150, and 192A or 192B.
294. Seminar: 18th Century British Public Address (3)

Prerequisite: Speech Communication 192A or 192B.
298. Special Study (1-3) Cr/NC

Individual study. Maximum credit six units.
Prerequisite: Consent of staff; to be arranged with department chairman and instructor 299. Thesis or Project (3) $\mathrm{Cr} / \mathrm{NC}$

Prerequisites: An officially appointed thesis committee and advancement to candidacy
Preparation of a project or thesis for the master's degree.

## Speech Pathology and Audiology

In the College of Professional Studies
The clinical services area is accredited by the American Speech and Hearing Association. Faculty

Emeritus: Earnest, Pfaff
Professors: Kopp (Chairman), Nichols, Riedman
Associate Professors: Dimmick, Thile
Assistant Professors:Allen, Sanchez, Wood
Lecturers: Ellis, Reed, Shamasko
Offered by the Department
Master of Arts degree in speech pathology and audiology.
Major in speech pathology and audiology with the A.B. degree in applied arts and sciences
Minor in speech pathology and audiology.
Restricted Credential, Speech and Hearing Specialist (Plan II).

## Speech Pathology and Audiology Major

With the A.B. Degree in Applied Arts and Sciences.
All candidates for a degree in applied arts and sciences must complete the graduation requirements listed on page 60 of this catalog.

A minor is not required with the major.
Preparation for the major. Mathematics 3 (or qualification on the mathematic placement examination); Physies 5; Psychology 1,50, and 70; Speech Communication 3 or 4; Speech Pathology and Audiology 4,5, and 6. (26-27 units.)

Major. A minimum of 24 upper division units in speech pathology and audiology selected with the approval of the adviser. Those with an emphasis in the area of deaf education must Education 167,172, and 179 to complete their major.

## Speech Pathology and Audiology Minor

The minor in speech pathology and audiology consists of a minimum of 18 units in speech pathology and audiology, ten units of which must be in upper division courses. The following are required: Speech Pathology and Audiology 4, 5, 6, 121, 140, 142; and three units selected from $120,122,124$, or 151 .

## Restricted Credential: Speech and Hearing Specialist

This is a five-year program leading to a credential which authorizes service in all grades in the area specified. It requires the same lower division courses as are required in the preparation for the major in speech pathology and audiology, a bachelor's degree, and completion of the following courses: Education 101 (or 202) and 167; Psychology 106; Speech Pathology and Audiology 120, 121, 122, 123, 124, 126, 127, 128, 129, 140, 145, 151; and 15 units, $142,143,145,146,147,150,152,153,190,198,201,202,203,204,205,206,226,228$, and 254 . Two courses may be selected from 156, 157, 240, 244, 245, 246, 249, 256, 257. courses may be selected from 156, 157, $240,244,245,246$,
Lower Division Courses
4. Voice and Articulation (3) I, II

Vocal and articulatory dynamics as bases of standard and nonstandard oral language patterns. Practice in recognition and recall of such patterns.
5. Survey of Audiology (2) I

Audion in conservation and research. Fifteen hours of observation required
6. Language, Speech and Hearing Disorders (3) I, II

Normal growth and development and its relationship to language, speech and hearing development and disorders, covering all areas of exceptionality. Fifteen hours of observation or project required.
7. Management of Clinical Activities (1) I, II hearing clinic. Maximum credit two units (Formerly numbered Speech Pathology and Audiology 101.)
8. Oral Communication Laboratory (1) I, II

Two hours of laboratory.
Individual laboratory training on specific speech problems. Student chosen through testing by Department of Speech Pathology and Audiology. (Formerly numbered Speech Pathology and Audiology 3.)
99. Experimental Topics (2-4)

Refer to the catalog statement on Experimental Topics on page 106. Limit of nine units applicable to a bachelor's degree in courses under this number of which no more than three units may be applicable to general education requirements.

Upper Division Courses
105. Language and Speech Development and Disorders (3) 1, It and remediation of Normal development of speech and language; prevention and reme obsersication disorders commonly found in the classroom. Five hours of observation required per semester. For students not majoring in speech pathology and audiology
120. Phonetics (3) I, II

Auditory and kinesthetic analysis of the sounds of the English language. Problems of foreign and bilingual dialect.
121. Anatomy, Physiology and Pathology of Speech (3) I, II

Prerequisites: Speech Pathology and Audiology 6 and 123
Prerequisith sparvey of aphasia, cerebral palsy, cleft Anatomy, physiology and patice disorders, including study of multiply handicapped child. Twenty hours of observation required.
122. Functional Communication Disorders (3) I

Prerequisite: Speech Pathology and Audiology 121.
Speech disorders of emotional etiology, including stuttering. Genetic and cultural aspects of speech and language; phenomena of human communication, including theories of of earning and behavior Relation between disorders of personality and difficulties in communication.
123. Mechanics of Speech Production (3) I, II

Two lectures and three hours of laboratory
Prerequisite: Psychology 50 or Zoology 8 . Anatomy and physiology of the charts, models, histological materials and cadavers.

## experiences. Demonstrations using (3) I

124. Methods of Speech Therapy (3) I Audiology 121

Prerequisite: Speech Pathology and to techniques in treatment of speech and Application of theris language disord

## 370 / Speech Pathology and Audiology

126. Clinical Practice in Speech Pathology (1-3) I, II, Two hours for each unit of credit
Prerequisites: Speech Pathology and Audiology 120, 124, and three upper division units in speech pathology and audiology.

Supervised practice with representative speech problems. Maximum combined credit ology and Aul
127. Diagnostic Methods in Speech Pathology (3) I, II
127. Diagnostic Methods in Speech Pathology (3) I, II Prerequisites: Speech Pathology and Audiology 120,
registration in Speech Pathology and Audiology 126.
registration in and procedures in the assessment and prognosis of communication disorders to include delayed speech and mental retardation. Case histories, testing, interviewing, and clinical reporting. Child, parent, and teacher counseling.
128. Diagnostic Practicum in Speech Pathology (3)

Prerequisite: Speech Pathology and Audiology 127
Supervised clinical practice in diagnostic methods. Experience in multidisciplinary assessment. Practicum minimum of six hours.
129. Speech Therapy in the Public Schools (3) I

Prerequisites: Speech Pathology and Audiology 124 and 127. Minimum of 50 hours of supervised clinical practicum.
Goals, materials and procedures for organizing and administering speech, language and hearing programs in the schools. Fifteen hours of observation and 15 hours of screening required. Should be taken the semester before Speech Pathology and Audiology 133.
130-S. Family Communication Dynamics (3) S
Prerequisites: Speech Pathology and Audiology 122 and 126
The communication environment in the home. Parent-child interaction in relation to the origin and alleviation of functional and organic speech disorders.
131. Language Structure (3)

Prerequisite: Speech Pathology and Audiology 6
Systematic study of the design features of language as they relate to communication behavior. The primary focus is the role of language structure in disordered communication.
132. Assessment of Language Disorders (3) I, II

Prerequisite: Speech Pathology and Audiology 131 .
133. Clinical Practice in Public Schools (4) I, II Cr/NC

Prerequisites: Speech Pathology and Audiology 129 and four units of practica
Prerequisites: Speech Pathology and Audiology 129 and four units of practica. pathology. Applies only toward Restricted Credential, Speech and Hearing specialist.
140. Audiometry: Principles (3) I, S
40. Audiometry: Principles (3) I, S
Prerequisite: Psychology 50, Speech Pathology and Audiology 5.

Prerequisite: Psychology som Anatomy and physiology of the human ear, theories of hearing, physics of sound, medical aspects, pathology and surgery of the ear, survey of current audiometric techniques.
141. Audiometry: Application (3) II
41. Audiometry: Application (3) II
Two lectures and two hours of laboratory

Prerequisite: Speech Pathology and Audiology 140
Tuning fork assessment, speech testing, masking, tests for nonorganic and for sensorineural hearing loss, industrial audiometry and hearing aid evaluation.
142. Techniques of Audiometry (1-3) I, II

Three hours of laboratory per unit
Prerequisite: Credit or concurrent registration in Speech Pathology and Audiology 140. Provides the laboratory experience necessary for the California School Audiometrist Certificate when taken concurrently with 140 . Duplicates classic auditory experiments when taken in conjunction with 143 or 244 . Maximum credit three units.
143. Hearing Amplification (1-3) II

Prerequisites: Speech Pathology and Audiology 141
Specific application of amplification for rehabilitation of the impaired hearing mechanism; devices, methods for their evaluation, historical perspective and practical considerations.
145. Clinical Practice in Audiologic Assessment (1-3) I, II, S

Prerequisite: Speech Pathology and Audiology 141.
Supervised procedures with pure tone, speech, and special audiologic testing. Maximum combined credit eight units for 126, 145, and 146. One unit represents 26 hours of direct clinical practice
146. Clinical Practice with Hard of Hearing (1-3) I, II, S

Prerequisite: Speech Pathology and Audiology
Supervised practice with hard of hearing clients at San Diego State University. Maximum credit eight units for 126,145 , and 146 . One unit represents 26 hours of direct clinical practice. 147. Hearing Conservation (3) I

Prerequisite: Speech Pathology and Audiology 141.
Noise measurement, analysis and reduction and its effects on hearing and communication. Damage risk criteria and methods of hearing protection.

## 150. Education of Deaf Children (3) I

Educational programs, services and resources for hearing impaired; historical background, philosophy, sociological and psychological problems.
151. Speech Reading and Auditory Training (3) I, II

Prerequisites: Speech Pathology and Audiology 120 and 140
Theory and methods of speech reading; auditory training techniques including survey of amplification systems. Twenty-six hours observation in programs for deaf, severely hard of hearing.
152. Speech for the Hearing Impaired (3) II
rerequisites: Speech Pathology and Audiology 123, 131, and 151
Theory and practice of speech habilitation of hearing impaired. Includes evaluation of current research and application in developing cognitive and motor processing.

## 153. Language for the Hearing Impaired (3) I

Srerequisites: Speech and research in language development as applied to hearing impaired individuals.
156. Field Work with the Deaf (1-3) I, II

Two hours for each unit of credit.
rerequisites: Speech Pathology and Audiology 152 and speech therapy and language uilding, with individual cases. Maximum credit six units.

## 157. Clinical Practice with the Deaf (1-2) I, II

Prerequisites: Speech Pathology and Audiology 152 and 153
Supervised therapy with representative deaf problems in the San Diego State University Speech and Hearing Clinic. Maximum combined credit six units for 156 and 157.
158. Manual Communication for the Hearing Impaired (2) I, II Cr/NC

Prerequisites: Demonstrated professional need and consent of instructor.
Structure, vocabulary and syntax of manual communication including the development of Structure, vocabulary and syntax of mation and in the use of manual communication as a method of teaching the hearing impaired.

## 166. Honors Course (1-3) I, II

Refer to Honors Program.
190. Workshop in Speech Pathology and Audiology (1-3) I, II

Study of some problem in speech pathology or audiology. Maximum credit six units.
198. Selected Topics in Speech Pathology and Audiology (1-3) I, II
198. Prerequisite: Twelve units in speech pathology and audiology

Prerequisite: Twelve units in speecs from the area of speech pathology and audiology Maximum credit six units.
199. Special Study (1-3) I, II

Individual study. Maximum credit six units.
Prerequisite: Consent of instructor.
Graduate Courses
200. Research and Bibliography (3) and exposition of research in the fields of speech Bibliographic techniques in methods and exposition of research of graduate work, and prerequisite to advancement to candidacy.
201. Vocal Science (3)
201.

Prerequisite: Speech Pathology and Audiology 120 . Relationship of basic principles of sound to the speech mechanism. Analion.

## 202. Problems of Aphasia (3)

202. Problerequisite: Speech Pathology and Audiology 121

Prerequisite: Speech Pathology and Auriagnostic tools, theories of aphasia, and therapy for persons with disorders of symbolization (adult and congenital aphasia). It is recommended the student take one unit of Speech Pathology and Audiology 226 concurrently with this course.

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203. Problems of Cerebral Palsy (3)

Prerequisities: Speech Pathology and Audiology 123 and 124
Evaluation, theories of treatment and therapy for persons with speech disorders in cerebral palsy. It is recommended the student take one unit of Speech Pathology and Audiology 226 concurrently with this course.
204. Problems in Cleft Palate and Orofacial Anomalies (3)

Prerequisites: Speech Pathology and Audiology 123, 124, and 140. Minimum of 75 hours of
supervised chinical practicum.
Etiological considerations, evaluation and remediation of individuals with orofacial anomalies and cleft palate. Concurrent registration in Speech Pathology and Audiology 226 is recommended.
205. Problems of Stuttering (3)

Prerequisite: Speech Pathology and Audiology 122.
Differential diagnosis of stuttering, individual and group therapy for children and adults with dysfluency problems. It is recommended the student take one unit of Speech Pathology and Audiology 226 concurrently with this course.
206. Problems of Voice Pathology (3)

Prerequisites: Speech Pathology and Audiology 123 and 124.
problems. Differential diagnosis of vocal anomalies, theories and therapy for vocal problems. It is recommended the student take one with this course.
226. Advanced Clinical Practice in Speech Pathology (1-2)

Two hours for each unit of credit
rerequisite: Speech Pathology and Audiology 124.
Supervised work with representative advanced speech cases such as stuttering, aphasia, laryngectomies, etc. Maximum credit four units. Maximum credit four units of 226, 245, and or 246 applicable on a master's degree.
228. Advanced Diagnostic Methods in Speech Therapy (3)

Prerequisite: Speech Pathology and Audiology 128 .
Diagnosis of individuals with complicated speech problems as brain injury, congenital aphasia, adult aphasia, cerebral palsy, hearing loss, laryngectomy, mental retardation, stuttering and voice problems.
240. Medical Audiology (3)

Prerequisites: Speech Pathology and Audiology 145 and 244.
Problems of diagnosis, referral and report writing. Testing in a medical setting and medically significant hearing pathologies.
244. Audiology (3)

Psychophysical concepts underlying clinical audiology. Relationship of audiologic test results to the conditions under which they were obtained.
245. Advanced Clinical Practice in Audiologic Assessment (1-2)

Two hours for each unit of credit.
Prerequisite: Speech Pathology and Audiology 244.
Advanced casework in hearing evaluation. Maximum credit four units. Maximum credit four units of Speech Pathology and Audiology 226 and 245 applicable on a master's degree. 246. Advanced Clinical Practice with Hard of Hearing (1-2)

Two hours for each unit of credit.
Prerequisite: Speech Pathology and Audiology 151.
Pathology and Audiology 226,245 , and 246 applicable on a mared credit four units of Speech Pathology and Audiology 226, 245, and 246 applicable on a master's degree.
249. Seminar in Audiology (3)

Prerequisite: Speech Pathology and Audiology 244.
Major research in clinical audiology. Audiologic techniques used in differential diagnosis, Maximum credit six units applicable on a master's degree. (Formerly numbered Speech Pathology and Audiology 250.)
254. Physiological Phonetics (3)

Prerequisite: Speech Pathology and Audiology 152.
Physiology underlying the production of continuous speech, including transitional movements, based on a syllabic concept. (Formerly numbered Speech Pathology and
Audiology 154.)
256. Advanced Field Work with the Deaf (1-3)

Two hours for each unit of credit.
Prerequisites: Speech Pathology and Audiology 152 and 153.
Maximum Super clinic practicum at an advanced level with representative deaf cases. master's degree. master's degree.
257. Differential Diagnosis of the Hearing Impaired (3)

Prerequisite: Speech Pathology and Audiology 6, 127, 150, or 151
Diagnosis of multiply-handicapped, hearing-impaired children, including clinical trends. M; assessment methods; materials and equipment; prognosis; current philosophies and on a maximum credit six units of Speech Pathology and Audiology 256 and 257 applicable 258. Serser degree. Twenty-six hours of observation are included.

Preminar in Deaf Education (3) II
Prerequisites: Speech Pathology and Audiology 150, 156; Education 179.
297. Research (2) Cr/NC

Prerequisite: Advancement to candidacy and consent of the graduate adviser Research in speech pathology, deaf education or audiology. Maximum credit two units applicable on a master's degree.
298. Special Study (1-3) Cr/NC

Individual study. Maximum credit six units.
Prerequisite: Consent of staff; to be arranged with department chairman and instructor 299. Thesis or Project (3) Cr/NC

Prerequisites: An officially appointed thesis committee and advancement to candidacy.
Preparation of a project or thesis for the master's degree.

## Study Skills

Administered by the Dean of Student Affairs

## Faculty

Assistant Professor: Crafts (Acting Chairman), Denman
Lecturers: Dirks, Hallahan, McFall, Smith
Offered by the Study Skills Center
Courses in Study Skills.
Major or minor work in Study Skills is not offered

## Lower Division Courses

R. Reading Laboratory (0) I, II $\mathbf{C r} / \mathrm{NC}$
R. Reading Laboratory (0) I, II $\mathbf{C r} / \mathbf{N C}$ A semitutorial service for students wishing to improve reading ability or
S. Spelling ( 0 ) I, II Cr/NC
S. Spelling (0) I, II $\mathbf{C r} / \mathbf{N C}$ semitutorial service for students wishing to improve their spelling through an intensive review of principles and practice. Open to students at any level of college work.
W. Writing Laboratory (0) I, II Cr/NC
W. Writing Laboratory ( $\mathbf{0}$ ) I, II $\mathbf{C r} / \mathbf{N C}$. advanced. Open to students at any level of college work.
99. Experimental Topics (0-4)

Refer to the catalog statement on Experimental Topics on page 106. Limit of nine units applical units may be applicable to general education requirements.

## Telecommunications and Film

In the College of Professional Studies

## Faculty

Professors: Jones, Lee, Madsen
Associate Professors: Anderson, Heighton, Jameson (Chairman), Johnson, Martin, Wylie Assistant Professors: Meador, Misiorowski
Offered by the Department
Master of Arts degree in radio-television.
Major in radio-television, with the A.B. degree in applied arts and sciences.
Major in radio-television, with the B.S. degree in applied arts and sciences.
Major in drama, with emphasis in design for television. See Drama
Minor in radio-television.

## Radio-Television Major

## With the A.B. Degree in Applied Arts and Science

All candidates for a degree in applied arts and sciences must complete the graduation The A.B. degree is designed for stalog
as they develop competency in, and und interested in developing a more liberal education degree permits flexible programs utilizing tanding of, radio, television and film. The A.B prepare students in such broad areas as design for television out of the department which will heory, broadcast advertising, instructional radio and television, and the likemmunications A minor is required with this major.

Preparation for the major. Telecommunications and Film 1, 2A-2B, 10, 30, 67 and 83. (23
units.) nits.)

Major. A minimum of 24 upper division units in telecommunications and film to include
Telecommunications and Film 101 or 105,162 , and 18 units of electives selected with the approval of the department. No more than 48 units in units of electives selected with the counted toward the 124 units required for graduation

## Radio-Television Major

With the B.S. Degree in Applied Arts and Sciences
All candidates for a degree in applied arts and sciences must complete the graduation requirements listed on page 60 of this catalog
or for B.S. degree is designed to prepare students for professions in radio, television and film A minor is not

Preparation for the major. Telecommunications and Film 1, 2A-2B, 10, 30, 67 and 83 . (23 unts.)

Major. A minimum of 36 upper division units to include Telecommunitation and sequence; five to nine units of elective a minimum of six units in an allied professional quence; five to nine units of electives as required.

## Core Professional Sequences.

TV Production: Telecommunications and Film 101 or 105, 110, 156, 180, 183, 184. (21 units. 18 units.) Film: Telecommunications and Film 110, 150, 156, 160 or 164, 168A-168B, 180. (22 units.)

Allied Professional Sequences. (Courses taken in Core Professional Sequences cannot be Advertising. The Allied Professional Sequence.) Journalism 153, 156, 180, and Psychology 120. 103, 104, Business Administration 150, 153 Art: Art 107, 114A, 114, and Psychology 120.
Communication: Speech Comm Industrial Arts 115.
Criticism: Humanities 138, Music 151, Philos, Journalism 117, 121 and 162.
Speech Communication 154. Music 151, Philosophy 142, Comparative Literature 152, and
Education: Telecommunic
Industrial Arts: Industrial Arts 161, 162, 163. Information Systems: Business Administrati.
International Media: Telecommunicatistration 184, 185, 186 and 188.
Law and Government: Telecommunications and Film 108, 163, and Journalism 118
Science 116, 130, 138, 139A-139B.
Management: Telecommunications and Film 101, Business Administration 132, 140, 143
and 145. and 145. and Psychology 120 speech Communication 135, Sociology 145, 146, Journalism 121, 162 and Psychology 122
News: Telecommunications and Film 105, 112, and Journalism 102, 124 and 125. Communication 108. Playwriting: Telecommunications and Film 110, Drama 120, 122, English 136 and 171. Scene Design: Telecommunications and Film 150, 156, 177, Sociology 160 and 164.

## Radio-Television Minor

The minor in radio-television consists of a minimum of 15 units in telecommunications and courses.

1. Backgrounds in Broadcasting (3) I, II

Theory and operation of the broadcasting industry to include the history and regulation the organization of comm, socal iA
Two lectures and six hours of actuction (4-4) I, II
Prerequisite: Limited to Telecommuni
Technical practices and Testhetic consications and Film majors.
Technical practices and aesthetic considerations of visual and sound productions. Contro room, studio and auxiliary equipment.
0. Broadcast Writing (3) I, I

Two lectures and more than three hours scheduled activities.
Theory and practice in writing materials for oral presentation. Problems of timing and pacing, conversational expression and word color.
30. Radio Production (3) I, II

Two lectures and more than three hours of activity
Prerequisite: Telecommunications and Film 2A-2B.
Theory of radio production augmented by practice in program planning and production for KPBS-FM.
67. Cinema as Art and Communication (3) I, II

Prerequisite: Sophomore standing.
An appreciative survey of cinema, with emphasis on the feature film and the documentary Historical and stylistic influences on the aesthetic values and social implications of cinema. led by screen examples.
83. Television Production and Directing (3) I, II

Two lectures and more than three hours of activity.
Prerequisites: Telecommunications and Film 2A-2B and 10, with average grade of 2.0 or better.
Theory and practice in the skills and knowledge of television production. Includes basic program types, responsibilities of director, and director's relationships to production staff. 99. Experimental Topics (2-4)

Refer to the catalog statement on Experimental Topics on page 106. Limit of nine units applicable to units may be applicable to general education requirements.

## 101. Broadcast Management (3) I, II

Prerequisites: Telecommunications and Film 1,30 and 83.
Administration and organization of radio and television, including radio and television as advertising media, broadcasting research, station organization, promotion and sales, and current developments in radio and television as mass media.
103. Broadcast Advertising (3) I

Prerequisites: Two courses in broadcasting or journalism.
Theory, procedures, and the role of broadcast advertising, including marketing and media research, campaign planning, media strategy, time purchasing, and evaluation.
104. Broadcast Commercial Practices (3) II

Prerequisites: Telecommunications and Film 30, 83, 103 and permission of instructor. strategy and production techniques; use of restising and promotion campaigns; creative strategy and production techniques; use of research; campaign evaluation.
105. Regulation of Broadcasting (3) I, II

Prerequisite: Telecommunications and Film 1.
Responsibilities of broadcasters as prescribed by law, governmental policies and
108. International Broadcasting (3) II

Prerequisite: Telecommunications and Film 101 or 105
Comparative study of broadcasting in various world areas; economic, social and political determinants of
109. Theory and Criticism of Broadeasting and Film (3) II

Analysis of social, political, economic and aesthetic criticism of broadcasting and film. The function of radio, television and film in the mass communication process. Not open to 110. Script Writing for Broadeajors.

Prerequisite: Telecommunications and Film (3) I, II
Prerequisite: Telecommunications and Film 83.
Development of a single program and series ideas. Scripting of dramatic original and umentary.
112. Radio and Television News Writing and Editing (3) I, II
(Same course as Journalism 104.)
Gathering, writing and editing news in special forms required by radio and television.
130. Radio Programming (3) II

Two lectures and more than three hours of scheduled activity
Prerequisites: Telecommunications and Film 1 and 30.
Formats, policies, production practices and research in modern programming. Student work is broadcast on KPBS-FM.
140. Broadcast and Film Performance (3) I

Two lectures and more than three hours of activity.
Prerequisites: Drama 10 or Speech Communication 11A, and Drama 30
Preparation and delivery of materials before the microphone and camera. Practical experience in University-sponsored productions. (Formerly numbered Telecommunication and Film 90. .)
150. Lighting for Television and Film (3) I, I

Two lectures and three hours of laboratory.
Theory and application of such aspects as color, temperature, light sources and film emulsions, filters and design of values and colors, and factors of electronic transmission. Practical experience in University-sponsored productions.
156. Advanced Lighting and Staging for Television and Film (4) I, II

One lecture and more than nine hours of activity.
Prerequisite: Telecommunications and Film 2A-2B
Prerequisite: Telecommunications and Film 2A-2B.
Production elements of television and film, to include lighting and staging techniques, art and graphics, scene design and scene decoration. Practical experience in ico Film Classics (3) I, II
160. Film Classics (3) I, II

Two lectures and three hours of activity.
Prerequisite: Upper division standing.
Viewing and analysis of those American and foreign theatrical films, particularly of the sound era, which represent milestones in the development of the cinema. May be repeated
with new content. Maximum credit six units.
161. Film Applications in Super 8 mm (3) I, II
61. Film Applications in Super- 8 mm (3) I, II

Explorations of visualized motion through production of super -8 mm motion pictures and and education. Not acceptable for credit in the Telecomrly as it applies to the student of art and education. Not acceptable for credit in the Telecommunications and Film major.

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195. Workshop in Broadeasting (1-3) I, II

Study of some problem in radio, television or film. Maximum credit six units.
198. Selected Topics in Telecommunications and Film (1-3) I, II

Prerequisite: Twelve units in Telecommunications and Film.
Speciat with new content Maximum credit six units.
199. Special Study (1-3) I, II

Individual study (1-3) I, II
ndividual study. Maximum credit six units.
Prerequisite: Consent of instructor.
Graduate Courses
200. Research and Bibliography (3)

Basic reference works, scholarly and critical journals; bibliographical techniques; exercises and problems in methods and exposition of research as it relates to the various areas of telecommunications and film. Recommended for first semester of graduate work, and 201. Seminar in Broadeast Management (3)

Prerequisite: The equivalent of an undergraduate major in telecommunications and film The legal and regulatory milieu of broadcasting from the perspective of station management.
202. Seminar in Broadcast Advertising Problems (3)

Prerequisite: The equivalent of an undergraduate major in telecommunications and film. Prerequisite: The equivalent of an undergraduate major in telecommunications and film.
Analysis of the social, economic and cultural context of advertising in commercial broadcasting; criticism and evaluation of the function of the advertiser; survey of broadcas advertising theory and research.
203. Seminar in History of Broadcasting (3)

Prerequisite: The equivalent of an undergraduate major in telecommunications and film. The development of broadcasting in its social, legislative and economic settings, with emphasis on broadcasting in the U.S.
205. Mass Communications Research (3)

Prerequisite: Telecommunications and Film 200
Design and execution of a media research project; audience and message analysis; experimental design and survey research methodology.
207. Seminar in Broadcast Law and Regulations (3) I

Prerequisite: Telecommunications and Film 105.
Analysis of legal concepts and issues as applied to commercial and noncommercial broadcasting; relationship of local, state and federal government to broadcast media,
210. Seminar in Writing for Broadcast and Film (3)

Prerequisites: Telecommunications and Film 110, 162 and 163.
Dramatic structures as they apply to broadcasting and cinema. Writing a full-length script or scenario
212. Criticism of Broadcasting and Cinema (3)

Prerequisite: The equivalent of an undergraduate major in telecommunications and film Standards for objective appraisal of the ethical and artistic aspects of radio, television and film programs.
268. Directing the Dramatic Film (3)

Prerequisites: Telecommunications and Film 168B, 180 and consent of instructor
Analysis of techniques and stylistic contributions of major directors as seen in their films Production of a short dramatic film embodying concepts so learned.
270. Seminar in Educational Telecommunications (3)

Prerequisite: The equivalent of an undergraduate major in telecommunications and film or educational technology.
Educational uses of electronic media. Use of telecommunications in classrooms and school systems. Relationship of noncommercial radio and television (public broadeasting) to commercial broadcast media and education
272. Seminar in Mass Communication Theory (3)

Prerequisite: Speech Communication 135.
Analysis of theoretical models of mass communication. Application of operational models for the diffusion of information, and the adoption of innovation, to problems in the mass media
273. Mass Communications Message Design (3)

Prerequisite: Speech Communication 135
Selection and organization of message design elements in the mass communications media Analysis of different effects of various types of mass communications formats, presentations
and systems on individuals and groups.
275. Teaching Broadcasting and Film (3)

Broadcast and film curriculum development. Methods of teaching both theory and laboratory courses in broadcasting and film. Analysis of organizations for administering broadcast and film curricula in colleges and universities with public TV stations and/or
on-campus instructional TV systems. on-campus instructional TV systems.
284. Seminar in Programing and Production (3)

Theory and analysis of programing andergraduate major in telecommunications and film. 298. Spory and analysis of programing and production of broadcasting. 298. Special Study (1-3) Cr/NC

Prerequisite: Consent of credit six units.
Prerequisite: Consent of staff; to be arranged with department chairman and instructor 299. Thesis or Project (3) Cr/NC

Prerequisites: An officially appointed thesis committee and advancement to candidacy.
Preparation of a project or thesis for the master's degree.

## Women's Studies

Administered by the Dean of the College of Arts and Letters
Offered by Women's Studies
Courses in Women's Studies.
Major or minor work is not offered.

## Lower Division Courses

10. Introduction to Women's Studies (3)

Effects of formal and informal social, economic and political institutions on women from infancy to old age.
99. Experimental Topics (2-4)

Refer to the catalog statement on Experimental Topics on page 106. Limit of nine units applicable to a bachelor's degree in courses under this number of which no more than three units may be applicable to general education requirements.

Upper Division Courses
100. Women in Comparative Cultures (3) I, II

Women's life styles (value systems, self-image, and world view) from least to most differentiated societies. Impact of women's autonomy and influence on different family models, kinship systems and economic patterns. Women's roles and behavior in cooperative versus individualistic societies.
120. Self-actualization of Women (3) I, II

Self-actualization psychology, emphasizing individual uniqueness and the maximization of human potential; theories of human behavior as they are applied to women; development of women's self-concept in American society.
125. Psychological Aspects of Women (3) I, II

Prerequisite: Women's Studies 120.
Prevalent theories of the psychological aspects of women in light of recent developments in the theory of sexuality, readings from Women's Liberation and experiences as women Development of new methods of research and therapy which will aid women.
130A-130B. Contemporary Issues in the Liberation of Women (3-3) I, II
Prerequisite: One course in women's studies.
The movemen Semester I: The development and continuing of the Women's Movement evolution Racism
140. Women in History (3) I, II

A survey of the social, cultural, economic and intellectual history of women; origins of women's roles.
141A-141B. Women in American History (3-3) A survey of the social, cultural, economic, political an
150A-150B. Women in Literature (3-3) I, II
SoA-150B. What Semeritit literary artists.
151. Women in the Arts (3) I

Images of women in the arts. Discussion on how these images reinforce ideas such as male dominance, the nuclear family, monogamy, and female stereotypes.
160. Human Sexuality (3) I, II

Biological criteria in sex role determination; the relationship of sexual mores and customs to a person's self-concept of sexuality; the relevance of current scientific investigations of the psychophysiology of human sexual response.
170. Women and the Law (3) I, II

Prerequisite: One course in women's studies.
Prerequisite: One course in womens studies. ownership, criminal justice, abortion, rape and prostitution.
180. Status of Women Under Various Economic and Political Systems (3) I, II

Historical and contemporary institutional factors influencing the social and political status of women under various economic systems; economic implications of alternatives to expected patterns of women's behavior and institutional arrangements.
190. Women and Education (3) I, II

The educational process and female role socialization; research into personnel policies and curriculum. New learning methods and environments, e.g., women's studies programs, child care centers, and "free" schools.

## 198. Field Experience (3) I, II

Prerequisite: One course in women's studies.
Exploration and analysis of sex discrimination in public and private agencies in the San Diego area as they relate to women through supervised experience and observation; understanding principles and utilizing skills in organizing and effecting change. Maximum credit six units.

## Zoology <br> In the College of Sciences

Faculty
Emeritus: Crouch, Harwood, Kaston
Professors: Atkins, Bohnsack, Carpenter (Chairman), Cohn, Dexter, Estes, Etheridge, Professors: Atkins, Bohnsack, Carpenter (Chairman), Cohn,
Huffman, Hunsaker, McLean, Monroe, Norland, Olson, Wilson

Associate Professors: Catlett, Chen, Collier, Cooper, Lillegraven, Plymale
Assistant Professor: Krekorian
Lecturer: Avila
Offered by the Department
Master of Arts degree in biology with an emphasis in zoology.
Master of Science degree in biology with an emphasis in zoology
Major in zoology with the A.B. degree in liberal arts and sciences.
Major in zoology with the B.S. degree in applied arts and sciences.
Single subject teaching credential in life sciences in the area of zoology.
Minor in zoology.

## Zoology Major

With the A.B. Degree in Liberal Arts and Sciences
All candidates for a degree in liberal arts and sciences must complete the graduation requirements listed on page 60 of this catalog. To satisfy the requirement in foreign languages, it is strongly recommended that students select French, German or Russian. A minor is not required with this major.
Preparation for the major. Biology 1, 2 and 15; Zoology 50, and 60 or 106; Chemistry Preparation for the mapor. Biology 1, 2 and 15; Zoology 50, and 60 or 106; Chemistry
1A-1B, and 11 or 12; Physics 1A-1B or 2A-2B; Mathematics 21 or 40 . (38-42 units.) $1 \mathrm{~A}-1 \mathrm{~B}$, and
Recommended: Mathematics 22 or 50 , and Physics $3 \mathrm{~A}-3 \mathrm{~B}$ if $2 \mathrm{~A}-2 \mathrm{~B}$ is taken.
Major. A minimum of 24 upper division units to include Biology 101 or Zoology 140 Biology 110 and 155 ; Botany 100 or 101 or 102 or 103; plus at least two upper division zoology
courses with a laboratory.

## Zoology Major

With the B.S. Degree in Applied Arts and Sciences
All candidates for a degree in applied arts and sciences must complete the graduation
A minor is not required with of this catalog.
Pminor is not required with this major
Preparation for the major. Biology 1, 2 and 15; Zoology 50, and 60 or 106; Chemistry $1 \mathrm{~A}-1 \mathrm{~B}$, and 11 or 12; Physics 1A-1B or 2A-2B; Mathematice 21 or 40 . $38-42$ units Recommended: Mathematics 22 or 50, and Physics $3 \mathrm{~A}-3 \mathrm{~B}$ it 2 A . 21 or 40 . ( $38-42$ units.)
Major A minimum of 36 upper divisio
microbiology and zoology, to include the following. 28 of which must be in biology, botany, and 155; Botany 100 or 101 or 102 or 103, plus at least two upper division zoology courses with a laboratory. Units to complete the major must be selected with the approval of the adviser; up to eight upper division units can be in chemistry, geology, mathematics, physics or other area relevant to the student's interests and approved by an adviser.

## Zoology Minor

The minor in zoology consists of a minimum of 15 units in biological sciences, six units of which must be in upper division courses. Approval of zoology adviser is required.

## Zoology

For the Single Subject Teaching Credential in Life Sciences
All candidates for a teaching credential must complete all requirements for the applicable specialization as outlined in the section of this catalog on the School of Education.
The requirements for the single subject teaching credential in life sciences in the area of teaching progras. teaching programs.

## Lower Division Courses

8. Human Anatomy (4) I, II

Two lectures and six hours of laboratory
Prerequisite: An introductory course in high school or college biology or zoology. Systems of the human body and their interrelationships.
50. Invertebrate Zoology (4) I, II

Two lectures and six hours of laboratory.
Prerequisites: Biology 1 and 2.
Structure, function, relationships and significance of invertebrate animals as shown through a study of selected invertebrate types.
60. Vertebrate Zoology (4) I, II

Two lectures and six hours of laboratory.
Prerequisites: Biology 1 and 2 .
An introductory course in the biology of the vertebrates with emphasis on the vertebrate organism as a whole: anatomy, physiology, development and evolution
99. Experimental Topics (2-4)

Refer to the catalog statement on Experimental Topics on page 106. Limit of nine units applicable to a bachelor's degree in courses under this number of which no more than three units may be applicable to general education requirements.
102. Invertebrate Embryology (3)

Upper Division Courses
Two lectures and three hours of laboratory.
Prerequisite. Zoology 50
Description and experimental analysis of the development of invertebrates.
103. Embryology (4) I, II

Two lectures and six hours of laboratory
Studies in comparative gametogenesis, morphogenesis, and reproductive physiology.
106. Comparative Anatomy of the Vertebrates (4) I, II
106. Comparative Anatomy of the Vertebrates
Two lectures and six hours of laboratory.

Two lectures and six hours 2
Prerequisites.
108. Histology (4) I, II

Two lectures and six hours of laboratory
Prerequisites: Biology 1 and 2. Recommended: Zoology 8 or 60 or Microbiology 101. The microscopic structures and differentiation of tissues and organs of the vertebrates, specially mammals.
112. Marine Invertebrate Zoology (4) I, II

Two lectures and six hours of laboratory. Application for collecting permit must be made t least six weeks before class begins at Bureau of Marine Sciences (AS-111).
Ecology, morphology, behavior and physiology of marine invertebrates. Frequent field trips to local marine environments.
114. Natural History of the Vertebrates (3) I, II

Two lectures and three hours of laboratory.
Prerequisite: One semester of college biology.
Natural history, distribution and classification of vertebrate animals; emphasis on local forms. Not open to zoology majors.
115. Ichthyology (4) I, II

Two lectures and six hours of laboratory.
Prerequisite: Zoology 60 or 106.
Identification, systematics, evolution, structure, physiology, behavior and ecology of fishes
116. Herpetology (4) I

Two lectures and six hours of laboratory.
Prerequisites: Consent of instructor.
The origin, evolution, distribution and systematics of amphibians and reptiles of the world
117. Ornithology (4) II

Two lectures, six hours of laboratory or field excursions, and a field project.
Prerequisites: Biology 1 and 2 and consent of instructor.
The study and identification of birds, especially those of the Pacific Coast and the San Diego region.
118. Mammalogy (4) I

Two lectures and six hours of laboratory.
Prerequisite: Zoology 60 or 106
The evolution, systematics, distribution and ecology of mammals of the world
119-S. Field Zoology (4) S
Two lectures and six hours of laboratory
Prerequisite: A course in college biological science
Observational methods; collecting techniques; identification, ecology and behavior of southern California animals. Primarily for students not majoring in the biological sciences
120. Insects and Human Welfare (3-4) II

Prerequisites: Biology 1 and 2.
The role of insects in global ecosystems with emphasis on medical and economic aspects, adaptation of insects for these roles, and analysis of current problems and tactics in pest management. Four all-day field trips will be taken by students wishing the fourth unit of credit. Not open to zoology majors.
121. General Entomology (4) I II

Two lectures and six hours of laboratory
Prerequisites: Biology 1 and 2
Structure, physiology, natural history and classification of insects
122. Special Topics in Entomology (3)

Two lectures and three hours of laboratory
Prerequisite: Zoology 121.
Treatment of some aspect of entomology, such as biological control, microbial control or forest entomology, not covered in regularly scheduled courses. Maximum credit nine units. Maximum credit six units applicable on a master's degree.
123. Immature Insects (3) II

Two lectures and three hours of laboratory.
Prerequisite: Zoology 121.
Collection, preservation, identification and biological study of the immature stages of the different insect orders. Course designed to meet the needs of students specializing in invertebrate zoology, agricultural and medical entomology, parasitology, and systematics 124. Insect Ecology (4) II

Two lectures and six hours of laboratory
Prerequisites: Biology 110, and Botany 100 or 103. Recommended: Zoology 50 or 121 Ecological principles as applied to insects, including consideration of crop ecosystems in relation to insect and mite outbreaks.
125. Economic Entomology (4) II

Two lectures and six hours of laboratory.
Prerequisites: Zoology 50 or 121 (preferred), and Botany 103. Recommended: This course be followed by Zoology 127.
determination and for students of agriculture and horticulture. Emphasis is placed on determination and control of insects affecting plants. Quarantine measures are also studied. 126. Medical Entomology (3) I

Two lectures and three hours of laboratory.
Prerequisite: Zoology 50, 60 or 121 (preferred), or Microbiology 101.
127. Insect Control (2) I
127. Insect Control (2) I

Prerequisites: Zoology 121, Botany 100 or 103. Recommended: Zoology 125 or 126. biological and legislative control.
128. Parasitology (4) I, II

Two lectures and six hours of laboratory
Study of anime Zoology 50 or Microbiology 101
dentification of important warasites special reference to those of man. Laboratory including 129. Prication of important parasites of man, and collection and preservation of local forms. 129. Principles of Pest Management (3) I

Two lectures and three hours of laboratory
Prerequisites: Botany 100 or 103 or 162; Zoology 121 and 124. Recommended: Zoology 125 pest populations at le and synthesis of ailable techniques known to reduce and maintain ensed on firm ecological principles. (Forcally important injury in forestry and agriculture, 30. Ad (Formerly numbered Zoology 127.)

One lecture and six hours of laboratory.
Prerequisite: Zoology 50.
Selected topics in advanced invertebrate zoology. May be repeated with new content Maximum credit six units.
131. Insect Physiology (4) I

Two lectures and six hours of laboratory
Prerequisites: Zoology 121 and Chemistry 11 or 12
Description, theory and experimental analysis of all major physiological processes in insects.
135. Scientific Illustration (3)

Two lectures and three hours of laboratory; field trips.
Preparation of illustrative materials, inked drawings, charts, lettering, models, still and movie photography, and photomicrography.

## 140. Physiological Zoology (4) I, II

Three lectures and three hours of laboratory.
Prerequisites: Zoology 60 or 106, and Chemistry 12
A comparative and evolutionary study of the functions of organ systems and their significance
145A-145B. Experimental Animal Surgery (2-2) I, II
One lecture and three hours of laboratory.
Prerequisites: A course in vertebrate anatomy a course in animal physiology and consent Fundamental principles of animal care to 145B.
care, disease prevention and aseptic surgery.
150. Marine Biology (3) I, II

Two lectures and three hours of laboratory.
Prerequisite: Biology 1 . An introduction organisms and their environment. Not open to students with credit for Zoology 50 or Biology 110.
155. Principles of Taxonomy, Systematics and Phylogeny (4) II

Two lectures and six hours of laboratory
Prerequisite: Any one of the following: Zoology 50, 60, 106, Botany 101, 102, 103 Basis for the classification of organisms. Modern concepts and their application in zoology Specific problems in laboratory and field.
160. Lower Vertebrate Paleontology (4) II

Two lectures and six hours of laboratory.
Prerequisite: Zoology 106.
Advanced studies in the evolution of nonmammalian vertebrates, including relations to Advanced studies in the evolution of nonmammalian vertebrates, including relat history and topics in paleoecology and functional morphology. Field and laboratory techniques and exercises in identification are included.

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161. Mammalian Paleontology (4) II

Two lectures and six hours of laboratory.
Prerequisite: Zoology 106.
Advanced studies in the evolution of mammals, including relations to earth history and topics in paleoecology and functional morphology. Field and laboratory techniques and exercises in identification are included. Zoology 161 need not follow in sequence with Zoology 160.
166. Honors Course (1-3) I, II

Refer to Honors Program.
170. Animal Behavior (4) I, II

Two lectures and six hours of laboratory.
Prerequisites: Zoology 50 and 60 or Psychology 40,50 and consent of instructor
Biological bases of animal behavior with emphasis on the ethological approach, including the evolution and adaptive significance of behavior.
190. Senior Investigation and Report in Invertebrate Zoology (2)

Prerequisite: Consent of instructor.
Investigation and reports on the current literature of invertebrate zoology.
191. Senior Investigation and Report in Vertebrate Zoology (2)

Prerequisite: Consent of instructor.
Investigation and reports on the current literature of vertebrate zoology.
198. Methods of Investigation (2) I, II

One discussion and three additional hours to be arranged
Prerequisite: Consent of instructor.
Selection and design of individual research in zoology; oral and written reports. Maximum credit four units for Zoology 198 or a combination of this course with Biology or Microbiology 198.
199. Special Study (1-3) I, II

Individual study Maximum credit six units.
Prerequisites: Fifteen units in biological sciences with a grade of A or B and consent of instructor.

## Graduate Courses

200. Seminar (2 or 3)
in advanc
An intensive study in advanced zoology, topic to be announced in the class schedule Maximum credit six units applicable on a master's degree.
201. Seminar in Marine Zoology (2)

Prerequisite: Biology 110
Recent developments in marine zoology. Maximum credit four units applicable on a master's degree
206. Seminar in Vertebrate Morphology (2)

Prerequisite: Biology 106
Current problems in the descriptive, functional and evolutionary anatomy of vertebrates Maximum credit four units applicable on a master's degree
209. Seminar in the Biology of Cold-blooded Vertebrates (2)

Prerequisite: Zoology 60 or 106.
Biology of ectothermic animals. Maximum credit four units applicable on a master's degree
210. Seminar in the Biology of Warm-blooded Vertebrates (2)

Prerequisite: Zoology 60 or 106 .
Biology of endothermic animals. Maximum credit four units applicable on a master's degree.
211. Animal Energetics (3)

Three lectures.
Prerequisite: An upper division course in physiology. Recommended: A course in calculus and one in biochemistry.
Energy transformation in animals to include the physiology of starvation, animal energetic efficiency, nutrition, and temperature regulation
212. Advanced Marine Invertebrate Zoology (3)

One lecture and six hours of laboratory
rerequis apios in 112 .
marine invertebrate zoology. Maximum credit six units applicable on a master's degree.

215. Advanced Vertebrate Zoology (2)

Prerequisites: Consent of the instructor and one of the following: Zoology 115, 116, 117, 118 depending on the specific topic announced in the class schedule
Advanced treatment of ichthyology, herpetology, ornithology or mammalogy. May be repeated with new content. Maximum credit six units applicable on a master's degree 222. Advanced Entomology (3)

Two lectures and three hours of laboratory.
Prerequisite: Zoology 121, Biology 110, Botany 100 or 103
Advanced treatment of some phase of entomology such as physiology, morphology, toxicology or systematics. Topic to be announced in the class schedule. May be repeated with new content. Maximum credit six units applicable on a master's degree.
290. Bibliography (1)

The use of basic reference books, journals, pertinent bibliographies preparatory to the writing of a master's thesis.
291. Research Techniques (3)

Prerequisite: Consent of graduate adviser.
Analysis of research techniques in zoology.
297. Research (1-3) $\mathrm{Cr} / \mathrm{NC}$

Research in one of the fields of zoology.
Maximum credit six units applicable on a master's degree.
298. Special Study (1-3) $\mathrm{Cr} / \mathrm{NC}$

Prerequisite: Consent of staff; to be arranged with department chairman and instructor. Individual study. Maximum credit six units.

## 299. Thesis or Project (3) $\mathrm{Cr} / \mathrm{NC}$

Prerequisites: An officially appointed thesis committee and advancement to candidacy. Preparation of a project or thesis for the master's degree.

Addenda

Faculty Directory Index

## Faculty and Officers of Administration 1973-1974

GOLDING, BRAGE (1972), President, Professor of Chemistry and Engineering
B.S., Ch.E., Ph.D., Purdue University.
ABBOTT, MITCHEL T. (rsit), Professor of Chemistry
B.Sc., Ph.D., University of California, Los Angeles.
B.Sc., Ph.D., Universit of Cainornia, Los Angeles.
ABBOTT, PATRICK L. (atis), Assistant Professor of Geology
Biego State University; M.A., Ph.D., University of Texas.

ACKERLY, ROBERT S., JR. (1963), Assistant to the Vice President for Academic Affairs ACKERLY, ROBERT S., JR. (1963), Assistant to to the Vice President for Academic Af
B.A., College of Woster; A.M., Colgate University; Ed.D., Indiana University. ADAMS, EILEEN (Mrs. H. L.) (1949), Senior Assistant Librarian
ADAMS, ELSIE B. (Mrs. G. R.) (1971), Assistant Professor of English
B.S., M.A., Ph.D., University of Okahoma.

ADAMS, WILLIAM J. (1955), Professor of Speech Communication
B.S., McMurry College; M.A., Northwestern University; Ph.D.
AJEMIAN, MAMES (1970) Assistant Professor of Social Work U, Stanford University AJEMIAN, JAMES A. (1970), Assistant Professor of Social Work
B.A., Harvard College; M.S., Columbia University; Ph.D.,
ity of Michigan.
A.
B. ., University of Missociate. Professor of Marketing
M.B.A.A. (Marketing), Northwestern University;
(Economics), Ph.D., University of Cicago.
M.B.A. (Economics), Ph.D., University of Chicago.

ALEXANDEER, JAMES B. (1966), Associate Professor of Botany
A.B., San Diego State University; M.S., Ph.D., University of California.
ALF, EDWARD F., JR. (1963), Professor of Psychology ${ }_{\text {A.B., San Diego State University; Ph.D., University of Washington. }}$
ALLEN, ELIZABETH J. (1977), Assistant Professor of Speech, Pathology and Audiology
B.A. Seattle Pacific College; M.A., Ph.D., Louisiana State University.
ALMOND, FRANK W. (i968), Associate Professor of Music Unic A.B. M.A. San Diego State University; Ph.D., Mlorida State University.
ALTAMMUR, NICHOLAS C. (1967), Assistant Professor of Secondary Education
B.S., Ithaca College; M.Ed., University of Arizona; Ph.D., Arizona State Unive
AMBLE, KJELL ( 1962 ), PPofessor of Drama
B.A., Denison University; M.A., Ph.D., Northwestern University.
ANDERES, EUGENE A. (1968), Associate Professor of Microbiology
A.B., M.S., San Diego State University; Ph.D., Oregon State University.
ANDERSON, ALLAN W. (1962), Professor of Religious Studies
B.A., Washington Missionary College; M.A., Trinity College;
B.A., Washington Missionary College; M.A., Trinity College; Ph.D., Columbia University.

ANDERSON, ARTHUR J. O. (1961), Professor of Anthropology A.B., San Diego State University; M.A., Claremont Colleges; Ph.D., University of Southern California.
ANDERSON, DWIGHT G. (1969), Assistant Professor of Political Science
B.A., University of Montana; M.A., Ph.D., University of California, Berkeley.
ANDERSON, ERNEST F. (1971), (Under contract 1969.70), Associate Proressor of Social Work
B.A., California State University, Los Angeles; M.S.W., San Diego State University.
ANDERSON, EVANS L (1954), Professor of Elementary Education
niversity of Minnesota; Ed.D., University of Denve
ANDERSON, GRAYDON K. (1949), Professor of Economics
A.B., Willamette University; Ph.D., University of Wisconsin
ANDERSON, HAYES L. (1966), Associate Professor of Telecommunications and Film
B.A., Oregon State University; M.A., Ph.D. Michigan State University ANDERSON, NANCY (1972), Psychometrist
A.B., M.S., San Diego State University.
ANDERSON, PAUL S. (1955), Professor of Elementary Education
A.B., Colorado State College; M.S., Ph.D., University of Wisconsin
ANDERSN, PAUL V. (1954), Professor of Music
B.M. North Texas State College; M.M., Univ
ANDERSON, W. CARLISLE (1955), Professor of Industrial Studies
B.S., Nebraska State Teachers College; M.A., Ph.D., University of Minnesota.
ANDERSON, ZOE E. (1965), Associate Professor of Family Studies and Consumer Sciences
B.S., Ilinois Institute of Technology; M.S., Ph.D., University of Illinois.
ANDRAIN, CHARLES F. (1964), Professor of Political Science
B.A., Whittier College; M.A., Ph.D., University of California
ANDRUS, RUTH (1962), Professor of Physical Education
B.S., Utah State University; M.S., University of Ore
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ANGIONE, RONALD J. (1969), Associate Professor of Astronomy
ANINGER, THOMAAS (1966), Assistant Professor of English
B.A., M.A., Ph.D., University of California, Los Angeles.
ANNAS, ALICIA M. (1970), Assistant Professor of Drama
ANTHONY, SALLY M. (Mrs) (1965), Professor of Secondary Education
A., University of California, Los Angeles; Ed.M., Ed.D., Rutgers University

APPLEBY, ANDREW B. (1973), Assistant Profesoro of History
B.A., Ph.D., University of California,
Los Angeles
B.A., Ph.D., University of California, Los Angeles

APPLEBY, JOYCE O. (1967), Professor of History
B.A., Stanford University; M.A., University of California, Santa Barbara; Ph D, Clat
ARCHER, ELLIS C. (1956), Professor of Information Systems
B.S., Northwestern State College; M.S., University of Kansas; Ed.D., Stanford University
ARCINIEGA, TOMÁS A. (1973), Dean, School of Education; Professor of Educational Administratio
ATCHISON THOMAS I (1965) Proser. M., M.D., University or Now Mexico
ATCHISON, THOMAS J. (1965), Professor of Management ATHERTON, LAWRENCE L. (1973). Assistant Professor of Educational Technology and Librarianship
B.S., M.Ed., Ohio University; Ph.D., Michigan State University. ATKINS, MICHM, Ohio University; M.D., Michigan State University.
ATKINS, MICHAEL D. (1970), Professor of Zoology
B.A., M.Sc., University of British Columbia; Ph.D
Oregon State University
AUSTIN, JOAN F. (197), Assistant Professor of Art M. Califonia State University, Long Beach; M.F.A., Cranbrook Academy of Art.
AVILA, VERNON L. (1973), Lecturer in Zoology Arizona University; Ph.D., University of Colorado
AWBREY, FRANK T. (1964), Associate Professor of Bionogy
B.A., University of California, Riverside; M.A., Ph.D., University of Texas.
AYALA, REYNALDO (1999), Associate Professor of Geography, Imperial Valley
B.A., University of Minnesota; M.A. Ph.D., Southern flinois Oniversity.
AYANIAN, ROBERT L. (1972), Lecturer in Economics
B.S., Clarkson College; M.S., University of Wisconsin.
BAASE, SARA (Mrs.) (1977), Assistant Professor of Mathematics
B.A., New Yorke University; M.A., Ph.D., University of California, Berkeley.
BABILOT, GEORGE (1956), Professor of Economics
A.B., Hastings College; M.A., University of Nebraska; Ph.D., University of Oregon.
BAER, ADELA S. ( 1962 ), Professor of Biology
B.S., University of Illinois; Ph.D., University of California.
BAILEY, ALLAN R. (1968), Associate Professor of Accounting
B.S., San Diego State University; M.B.A., Ph.D., University of California, Los Angeles.
BAILEY, GERALD D. (1964), Professor of Industrial Studies
B.A., M.A., Central Washington State College; Ed.D., University of Missouri.
BAILY, KAMILLA U. (Mrs.) (1966), Associate Professor of Social Work B.A., M.S.W., University
and Bryn Mawr College.

BAKER, CLIFFORD H. (1937), Professor of Spanish BAKER, DOUGLAS L. (1954), Professor of Elementary Education
A.B., Lynchburg College; M.S., Ed.D., University of Southern California. BAKER, JAMES R. . (1956, except $1961-62$ ), Professor of English
B.A., M.A., Ph.D., University of Dever.
B.A., M.A., Ph.D., University of Denver

BAKER, KEEFE L. ( 1965 ), Professor of Art
B.F.A., University of Colorado; M. F.A., State University of Iowa. BAKER, WILLIAM S. (1973), M.D. Health Services
B.S., University of Detroit; M.D., Detroit University.
BAKHRU, KESHOOLAL (1972), Assistant Professor of Electrical Engineering
B.S... M.SC., Benayas Hindu University, India; M.S.E.E., Columbia University;
B.Sc., M.Sc., Benayas Hindu University,
Ph.D., Polytechnic Institute of Brookly.

BALDWIN, ELMER D. (1963), Associate Dean; Professor of Education, Imperial Valley
B.A., College of the Pacific; M.A., University of Connecticut; Ed.D., Washington State University.
B.A., College of the Pacific; M.A., University of Conne
BALLANTINE, FRANCIS A. (1949), Professor of Education

ALLA. Michigan State Normal College; A M, Ph.D., University of Michigan.
BARBER, WILLIAM F. 1959 , Professor of Marketing
B.B.A., M.B.A., Ph.D., University of Washington.
BARCKLEY, ROBERT E. (1955), Professor of Economics
B.S., University of North Dakota; M.A., Columbia University; Ph.D., University of Illinois
BARCLAY, A. BERNICE (Mrs.) (1982), Associate Librarian
BARNES, AL.FRED C., JR. (1968), Associate Professor of Health Science and Safety
S.D., Indiana University.

BARNETT, CAROL A. (1971), Assistant Professor of Biology
B.A., Hendrix College; M.S., University of Arkansas Medical Center; Ph.D., University of Texas BARONE, JOAN F. (19100), Associate Professor of Physical Education BARRY, JOHN J. (1969), Assistant Professor of English
B.A., College of William and Mary; M.B.A., Harvard University; Ph.D. candidate, University of Colorado. BARTHOLOMEW, FRANCIS M., JR. (1967), Assistant Professor of History
B.A. University of California; M.A., Ph.D., Princeton University.

BARTON, MARCIE A. (Miss) (1973), Assistant Professor of Nursing
B. B., M.S., University of Cal

BAUER, EDWARD G. (1956), Professor of Mechanical Engineering
B.S., U.S. Naval Academy; M.S. and addditional graduate study, University of California

BAXTER, ROBERTL L. (1962), Professor of Art
BAXTER, WILLIAM L. (1963), Professor of Microbiology
A.B., Ph.D., University of California, Los Angeles.
BEASLEY., JOHN M. (1972), Assistant Professor of Health Science and Safety
,
BEATTY, JAMES (1973), Assistant Professor of Management
B.A., Franklin Colege; M.S., Indiana State University; Ph.D., University of North Colorado.
BECKER, GEORGE J. (1969), Associate Professor of Elementary, Education
B.A, St. Peter's College; M.A., Fordham University; Ph.D, New School for Social Research.
BECKER, GERALD A. (195s), Professor of Mathematics
B.A, M.S., Ph... State University of lowa.
BECKLUND, LESTER A. (1967), Associate Professor of Secondary Education
BEDORE R.,.,
BEDORE, MOBERT L. (1959) Professor or Mechanical Engineering Mechanical Engineer.
BEE, CLIFFORD P. (1969), Associate Professor of Secondary Education B.A, M.A. Western Michigan University Ph.D., Michigan State University.
BELASCO, AMES A. (1971), Professor of Management
B. ., Cornell University; M. B.A, Hofstra University; Ph.D. Cornell University.
BELCHER, DAVID W. (1957), Professor of Management
B.B.A, M.A., Ph.D., University of Minnesota.
BELLINGHERERE, JOSEPH., (1973), Assistant Professor of Drama
B.A. University of Nebraska; M.A. Humboldt State University; Ph.D., Florida State University, BENDER , STEPHEN I I (1970), Associate Profesoro of Health Science and Safety
B.S., Brockport State University; M. S ., H. $\mathrm{H} . \mathrm{D}$, Indiana University.
BENAMIN, ROBERT L. (1953), Professor of Speech Communication

BENSON. JACKSON J. (1966), Professor of English
A.B. Stanford Univerity; M.A, San Francisoo
A.B., Stanford University; M.A, San Francisco State University; Ph.D. University of Southern Califormia.

BENTON, CARL W. (1948), Professor of Physical Education
B.S., University of California, Los Angeles; M.
BERG, MARLOW. I. (1970), Associate Professor of Elementary Education
BERG, BSBERTV V. (1963), Professor of Art
BERGE, DENNIS E. (1963), Professor of History.
BERRY, RICHARD W. (1961), Professor of Geology B.E.M. Lafayette College; M.A., Ph.D., Washington University.
BERTINE, KATHE (1977), Assistant Professor of Geology
BIGELOW, MARYBELLES S. (Mrs. K. G.) (1956), Professor of Art


BIGGS, MILLARD R. (1958), Associate Dean, Professional Studies; Professor of Music
B.M., Youngtown University; M.F.A, Ohio University; Ph., Univesity of lowa.
BIHL, DONALD E. (1973), Lecturer in Physics
BILTERMAN, HENRY L. (1956), Assistant Professor of Mechanical Engineering
BIRCH,
路
BIRD, ANNE M. (1972), Assistant Professor of Physical Education
BS., State University of New York; M.A., University of Mary
BLACK, BARBARA B. (1970), Professor of Nursing
R.N., E. W. Sparrow Hospital School of Nursing; B.S., University of Minnesota; M.S., Indiana University. BLACKMUN. RUPERT. B. (1970), Assistant Professor of Industrial Studies
BLANC, SAM. S. (1966). Assitant Dean Schol of Edication; Professor of Elementary Education
A.B. Colorado State College M.A. Ed.D., University of Denver.
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[^0]:    - Includes all General Education requirements except physical education. (Students who plan to enter elementary ..education must take Physical Education 53 in lieu of one of the physical education activity
    Mathematics $10 \mathrm{~A}-10 \mathrm{~B}$ is required for students who plan to enter elementary education.
    ... One course in e either physical or life science must include a laboratory.
    Onem
    Health science and safety is required for students who plan to enter elementary education. ..... Oealth science and safety is required for students who plan to enter elem
    Music 2 is required for students who plan to enter elementary education.

[^1]:    These credentials may be obtained only after completion of the single subject or multiple subjects credential.

[^2]:    Only students who are able to complete these Fisher credentials by September 14, 1974, or who were on a lock list by
    December 1, 1973, are eligible for these credentials.

[^3]:    $\qquad$

