

Fresno State College

GENERAL
CATALOG
1962—1963

Fresno, California

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General Catalog

Fall and Spring

1962-1963

Program Planning—Contents

Calendar

The College

Fees—Expenses

Regulations—Procedures

Degrees—Credentials

Courses of Instruction

Agriculture

Air Science

Applied Arts

Business

Education

Fine Arts

Humanities

Life Science

Physical Education—Recreation

Physical Science

Social Science

Speech Arts

Administration—Faculty

PROGRAM PLANNING

Freshman students should begin to plan their programs as early as possible. A first step, when practical, is to select a major. Degree requirements in each major are listed under the appropriate division and in the section on degrees and credentials.

Students will be given help in planning their programs by advisers and counselors, but the primary responsibility for meeting requirements falls on the student. The catalog should be carefully read and the proper college offices consulted for additional information. The *Schedule of Courses* must be followed when planning a particular semester's program.

The following are among the sections students should study carefully:

Admissions	General Education
Algebra and Geometry	Housing
College Calendar	Probation
Concurrent Registration	Registration
Counseling Services	Regulations-Procedures
Degrees and Credentials	Repetition of Courses
Entrance Examinations	Residence Requirements
Extension Credit	Scholarship Requirements
Fees and Expenses	Statement of Residence
Financial Assistance	Upper Division Credits
Foreign Language	

TRANSFER STUDENTS

Students intending to transfer to Fresno State College should plan their programs while attending other colleges to meet curriculum requirements of this college. The general degree regulations and the requirements in the division offering the major selected should be studied for courses and sequences necessary for the degree. See provisions for transfer students in *General Education* and on transfer admission.

After admission to Fresno State College, the student will usually receive a copy of his memorandum of standing indicating how previous college credits have been applied toward requirements at Fresno State College. If the memorandum of standing has not been received before arrival at the college, the student should apply after registration for a degree evaluation which will give the same information.

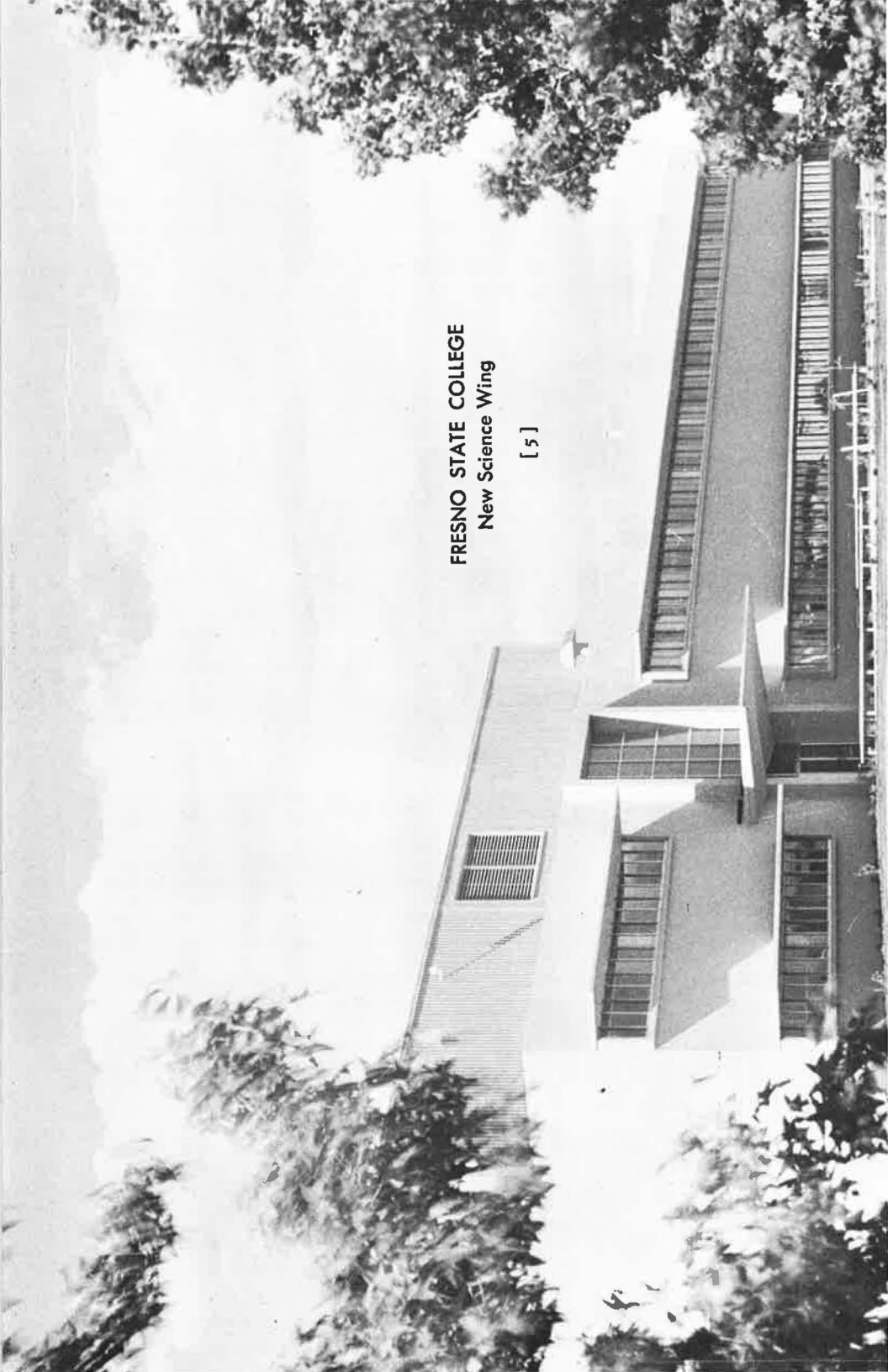
Each student should develop a personal folder in which he keeps his own copies of transcripts, grade cards, memorandum of standing, evaluation sheet, departmental check sheets, and other information pertaining to his progress toward meeting various requirements for his degree or credential. Advisers are available for assistance; however, it is the student's responsibility to be sure that he has met all requirements.

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FRESNO STATE COLLEGE
New Science Wing

[5]



COLLEGE CALENDAR, 1962-1963

SUMMER SESSIONS 1962

Fresno.....	June 11-July 20, incl
Bakersfield.....	June 11-July 20, incl
Visalia Pre-session.....	July 16-20, incl
Visalia.....	July 21-Aug 24, incl
Fresno Post-session.....	July 23-Aug 31, incl

FALL SEMESTER 1962

All entering students should consult section on *Program Planning*.

Aug	13	Mon	All applications and official transcripts for new and returning students must be filed by this date to insure processing and admission. Students seeking reinstatement will be held strictly to this deadline.
Sept	3	Mon	Holiday—Labor Day.
	10	Mon	Academic year 1962-63 begins.
	10	Mon	Faculty meeting, 10 a.m.
	10	Mon	Meeting for all new undergraduate students. Men's Gym, 2 p.m.
	10-11	Mon-Tues	Statements of residence must be filed.
Oct	11-12	Tues-Wed	Orientation and advising for new students.
	13-14	Thurs-Fri	Registration (See <i>Schedule of Courses</i>).
	17	Mon	Instruction begins.
	17	Mon	Late registration begins (\$5 fine).
	24-28	Mon-Fri	Late registration by special permission only.
	28	Fri	Last day to file applications for degrees and credentials to be granted January 1963. Fine required for all students filing after this date.
	5	Fri	Last day to drop a course without prejudice, except by special approval.
Nov	15	Mon	Last day to file applications for spring semester 1963 student teaching.
	9	Fri	Mid-term grade reports due from faculty.
Dec	22-23	Thurs-Fri	Thanksgiving recess.
	17	Mon	Christmas recess begins.
Jan	25	Tues	Holiday—Christmas.
	1	Tues	Holiday—New Year's Day.
Jan	2	Wed	Classes resume.
	18-25	Fri-Fri	Semester examinations.
	21	Fri	Last day to file with Graduate Office completed and approved theses for master's degrees to be granted January 1963.
	25	Fri	Fall semester ends.

JUNE 1962

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SPRING SEMESTER 1963

Jan	4	Fri	All applications and official transcripts for new and returning students must be filed by this date to insure processing and admission for spring semester. Students seeking reinstatement will be held strictly to this deadline.
	29	Tues	Statements of residence must be filed.
	30	Wed	Spring semester begins.
	30	Wed	Meeting for all new undergraduate students.
31-Feb	1	Thurs-Fri	Registration (See <i>Schedule of Courses</i>).
	4	Mon	Instruction begins.
	4	Mon	Late registration begins (\$5 fine).
	11-15	Mon-Fri	Late registration by special permission only.
	15	Fri	Last day to file applications for degrees and credentials to be granted June 1963. Fine required for all students filing after this date.
	22	Fri	Last day to drop a course without prejudice, except by special approval.
Mar	14	Thurs	Last day to file applications for fall semester 1963 student teaching.
	29	Fri	Mid-term grade reports due from faculty.
Apr	8-12	Mon-Fri	Easter recess.
	15	Mon	Classes resume.
May	29	Wed	Last day to file with Graduate Office completed and approved theses for master's degrees to be granted June 1963.
	30	Thurs	Holiday—Memorial Day.
28-June	5	Tues-Wed	Semester examinations.
	5	Wed	Fifty-second Annual Commencement.
	7	Fri	Academic year 1962-63 ends.

SUMMER SESSIONS 1963 (Tentative Dates)

First Session.....June 10-July 19, incl
 Second Session.....July 22-Aug 30, incl

FALL SEMESTER 1963 (Tentative Dates)

Sept	9	Mon	Holiday—Admission Day. Faculty meeting, 10 a.m. Registration. Instruction begins.
	16	Mon	
	19-20	Thurs-Fri	
	23	Mon	

FEB 1963	MARCH 1963	APRIL 1963	MAY 1963
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FRESNO STATE COLLEGE
Art-Home Economics and
Education-Psychology Buildings

FRESNO STATE COLLEGE

GENERAL INFORMATION

Fresno State College is one of the seventeen state colleges administered by the Trustees of the California State Colleges, a board created by Chapter 49, Statutes of 1960. This new governing board was created as the result of studies conducted over several years concerning the future of higher education in California.

A separate governing board for the colleges was recommended in the Master Plan for Higher Education in California which was presented to the Legislature in February 1960. The year 1961-62 was the first year of operation under this new governing board.

FUNCTIONS

The primary function of the Fresno State College, as one of the California State Colleges, is to provide undergraduate and graduate instruction through the master's degree, in the liberal arts and sciences, in applied fields and in the professions, including the teaching profession. Faculty research is authorized to the extent that it is consistent with the primary function of the college and the facilities provided for that function.

At Fresno State College an effort has been made to provide the type of undergraduate and graduate program which will develop competence in an individual as a student, a citizen, and an effective leader. The program of studies provides curricula, including general and specialized courses, designed to prepare students in a wide variety of fields. The program offers educational opportunities in preparation for the professions and for many occupations, including managerial and technical positions in agriculture, industry, business, and government. In its service role for the region, the college provides continuing and in-service education at an advanced level, serves as a consultant center for public agencies, school systems, and private business enterprises, and conducts research consistent with its functions.

HISTORY

The broad nature of the educational opportunities and services offered by Fresno State College comes naturally from its twofold origin. In 1910 the first junior college in California was established in Fresno. The following year a state normal school was authorized. These two institutions—one providing general and vocational training and the other preparation for teaching—were directed by a single administration. As they grew, they were temporarily separated; but in 1921, with the expansion of the courses for teachers to four years with authority to grant the bachelor of arts degree, the two kinds of college service were again united. In 1935 the official name was changed to Fresno State College, with authority to carry on various types of college work leading to bachelor's degrees, either with or without courses required for teaching credentials. In 1946 the college was authorized to offer a fifth year of graduate work leading to the general secondary credential. Three years later in 1949 came another important advancement in the academic program of the college with the authorization for granting the master of arts degree for teaching service. In 1955 this authorization was extended to include the occupational master of science degree, and in 1958 it was further extended to permit a liberal arts emphasis in the master of arts degree. In 1961 the administration and control of the California state colleges was transferred from the State Board of Education to the Trustees of the California State Colleges.

In its rapid development during recent years the college has emphasized not only a variety of offerings suited to the special needs of its students, but also the personal attention and guidance which help students to gain a clear understanding of their own abilities and interests and to select appropriate programs.

Serving a population of approximately one million, Fresno State College has had most favorable conditions for its development and for meeting the needs of the young people of the San Joaquin Valley.

NATIONAL RATING AND ACCREDITING

The college is accredited by the California State Board of Education, the Western College Association, and, as of January 24, 1962, by the Western Association of Schools and Colleges. It is a member of the American Association of Colleges for Teacher Education and is accredited by the National Council for Accreditation of Teacher Education for the preparation of elementary teachers, secondary teachers, and school service personnel, with the master's degree as the highest degree authorized; accreditation for the school service personnel category is limited to elementary principals and supervisors, secondary principals and supervisors, and guidance workers. The Business Division is a member of the American Association of Collegiate Schools of Business. The Chemistry Department is approved by the American Chemical Society. The Nursing Department is fully accredited by the California State Board of Nurse Examiners. The Journalism Department is accredited by the American Council on Education for Journalism; its news editorial sequence is specifically accredited by the Council. Students who transfer to other institutions will receive full credit for courses satisfactorily completed.

BUILDINGS AND FACILITIES

Fresno State College is located on a new 1410-acre site at Cedar and Shaw Avenues in the northeast section of the City of Fresno. The major buildings on the new campus are administration, agricultural classroom, agricultural mechanics, art-home economics, bookstore, business, cafeteria, education-psychology, engineering, home management cottage, industrial arts, laboratory school, library, men's gymnasium, music, science, social science, speech arts, student health service, and women's gymnasium. Three residence halls are located on the campus. Frank A. Homan Hall houses 209 men; Mary Baker Hall and George West Graves Hall house 418 women. Plans call for the construction of other new buildings and additions to existing buildings to meet the enrollment increases anticipated during the next several years.

The major academic buildings on the Shaw Avenue Campus, first occupied during the 1953-1954 school year, are located within a 220-acre area. These modern buildings are surrounded by beautiful trees, shrubbery, flowers, and broad expanses of grass. Walkways, bordered by occasional benches, interlace the campus, providing for a free flow of student traffic between the buildings. Parking areas are located within and around the fringe of the 220-acre area.

Located, in the vicinity of the former campus, approximately five miles from the Shaw Avenue Campus are Ratcliffe Stadium, on Blackstone and University Avenues, and the University Avenue Extension Center, at Van Ness and University Avenues. The former University Avenue Campus is now owned by the Fresno City Unified School District and houses the Fresno City College.

The college makes special arrangements for use of facilities in Bakersfield for the Bakersfield Center and in other valley communities for summer session and extension programs.

COLLEGE FARM

The College Farm consists of 1190 acres. This land, together with livestock and equipment, is available to students for use in conducting a wide variety of agricultural projects. The college maintains most of the major breeds of purebred livestock. In the project program students have an opportunity to exhibit their animals

at the major fairs and shows within the State. Breeding stock and student-owned livestock from the college herds have won top honors at such shows as the Great Western in Los Angeles, the Grand National in San Francisco, and the State Fair in Sacramento.

Thirty-four new farm buildings on this agricultural campus provide one of the most modern and best equipped agricultural plants in the west.

For major offerings in agriculture, see *Agriculture Division*.

LIBRARY

A functional building, completed in 1956, houses the College Library. The collections include over 160,000 catalogued volumes, 65,000 government publications, 30,000 pamphlets, 30,000 maps, and 18,000 pictures and prints. Over 1,500 periodicals are received on subscription. Special collections include the Roy J. Woodward Memorial Library of Californiana and the College Archives. A collection of 4,500 volumes in the College Laboratory School Library provides a model library for an elementary school. The Curriculum Library, with over 15,000 volumes, contains material of value to students of education. The library building accommodates 636 readers. All students have free access to the resources of the Library. Professional librarians are available to assist students in their use of library materials. The Library is open seventy-five hours a week, during hours posted at the entrance to the building.

LABORATORY SCHOOL

The Laboratory School is of special interest to students preparing for teaching and related fields. The school's philosophy, facilities, and program reflect the interest of the people of California for the education of their children. The school functions to provide demonstration, observation, participation, leadership, and some experimentation and research through its facilities and personnel to all persons interested in professional preparation and improvement. Group demonstrations and individual study may be arranged in connection with courses taught on the college campus and as a service to educational units in the service area of Fresno State College. The school consists of a kindergarten and six elementary grades housed in a modern elementary school surrounded by five acres of fenced campus. A children's library with more than 4,000 books is available within the school for use by college students as well as the pupils enrolled in the school. Selected teachers guide the program of studies for pupils in each grade. The curriculum of the elementary school implements the accepted *Framework for Public Education in California*. The school provides a laboratory in which students, in-service teachers, administrators, and parents may develop their understanding of children and of educational concepts and methods by observing and working with children. Demonstrations, observation, and individual study opportunities may be used in connection with such classes as psychology, growth and development, curriculum, arts, vocal and instrumental music, physical education, home economics, and family life education.

STUDENT LIFE

College students are expected to assume the responsibilities for personal conduct appropriate to their age and maturity. On that account rather wide freedom is granted by the college administration to the students as individuals and as organized groups. This responsibility has been accepted in an admirable way by the students of the college, and an unusual degree of self-government has been established. A student court has authority to deal with cases involving interpretation of student regulations or their violation. A committee on student life composed of faculty and students evaluates the student life program and makes recommendations on policy and procedure. Regulations as to satisfactory scholarship, disqualification for unsatisfactory work and related questions bearing upon college requirements are administered in accordance with college policies.

STUDENT LEADERSHIP

Membership and active participation in a reasonable number of student organizations are strongly recommended by the college. Student groups of this type are an excellent means of obtaining experience in leadership, cooperation, group action and social competence. Participation in student government is also encouraged. Many opportunities exist for participation in student affairs through election to student body and class offices, appointment to student committees, and attendance at meetings of the Student Council. Students are also offered an opportunity to serve on many faculty-student committees and association boards. These groups play an active part in recommending college policies and in conducting the affairs of the Fresno State College Association, Inc.

FRESNO STATE COLLEGE ASSOCIATION, INC.

All regular students are members of the Fresno State College Association, Inc., the organization of faculty and students who have united to conduct the extra-curricular affairs of the institution. A board of directors composed of faculty members and students controls the finances of the bookstore, the cafeteria, athletics, and other activities involving the collection and expenditure of student funds.

In return for a fee of \$10, collected at the time of registration, each student and faculty member is issued a Fresno State College Association, Inc., membership card which permits the holder to participate in all activities of the association and admits the holder to association affairs without charge or at a reduced admission fee determined by the board of directors of the association. The principal activities supported by this fee are athletics, publications, music, drama, and cultural activities.

STUDENT PUBLICATIONS

Membership in the Fresno State College Association, Inc., entitles the holder to free copies of the four major student publications. The *Collegian*, published tri-weekly, is the official news publication. A handbook and a directory, appearing soon after the fall semester opens, contain general information about the college and an address list of faculty and students. The college annual, the *Campus*, appears during the final month of the college year. (To obtain a copy of the *Campus*, a reservation fee must be paid at the opening of the fall semester and membership in the association must be held both semesters or one semester plus a charge of \$2.50.) All student publications distributed on campus are under the general control of an eight-member board of publications composed equally of faculty and students.

STUDENT ORGANIZATIONS

Student organizations are encouraged, and over 100 of them representing various fields of social, academic, vocational, and professional interests have been granted recognition. Nine national social fraternities and six national social sororities exist on the campus and operate group-living units. Religious interests are served by the college religious centers adjacent to the campus. These many and varied types of organizations not only offer an opportunity for social life but also make a fine contribution to the development of student leadership.

ASSOCIATED WOMEN STUDENTS

All women students are automatically members of the Associated Women Students. This organization coordinates the activities of various women's organizations on the campus and sets standards of conduct and of group living for women students.

HONOR SOCIETIES

In addition to high standards of scholarship expected of all students, special recognition is given to superior scholarship. The honor society of Phi Kappa Phi, a national scholarship organization, was established at Fresno State College in 1953. Most departments of the college sponsor honor societies, many of them national

in scope, in which membership is based upon superior college work. The Blue Key National Honor Fraternity for men and the Tokalon Honor Society for women offer membership to students who have good scholarship, are prominent in college activities, and who have demonstrated leadership in student affairs.

ALUMNI ASSOCIATION

The Fresno State College Alumni Association, with headquarters in the Bookstore Building, has a long record of extensive and varied activities. The association, incorporated in 1940, has established a sound financial policy. It provides annual scholarships and loans and has a program of athletic, social, and service activities. *The Bulldogger*, the official alumni magazine, is published five times a year. Annual dues are \$5 a single membership; \$6 joint annual membership for married couples who are alumni; and life membership is \$50, which includes husband and wife. Anyone who has attended Fresno State College for one semester or more is eligible for membership. Each member shall direct twenty percent of his dues upon payment to a scholarship of his choice listed on the Alumni Scholarship Program. The scholarships provided in this program include twenty-four various departments and divisions in the college.

STUDENT PERSONNEL SERVICES

The student personnel services assist students in making effective use of the instructional and extracurricular programs, and in making adjustments for personal and social efficiency. The personnel services are coordinated by the Dean of Students and consist of the following departments: (1) student activities and housing supervised by the Associate Dean of Students (Activities-Housing); (2) admissions, evaluations, and records supervised by the Associate Dean of Students (Admissions-Records); (3) counseling, testing, scholarships, loans, veterans affairs, and foreign student advising supervised by the Associate Dean of Students (Counseling-Testing); (4) medical consultation, treatment, and campus sanitation supervised by the Director of Health Services; and (5) educational, business and industrial, and student placement supervised by the Director of Placement. These services are described in more detail elsewhere in this catalog.

COUNSELING

Admissions Counseling. The Admissions Office provides counseling to assist students in making application, in understanding admission requirements, and in utilizing the services of the college during the admissions process. Problems concerning evaluation of previous academic record should be directed to the Associate Dean of Students (Admissions-Records).

Vocational Counseling. The Counseling Office assists students in self-appraisal of their unique interests and aptitudes and in their search for a vocational goal for which they are best fitted. Psychological and vocational tests are used as needed. A library of vocational information is maintained, and each academic department gives vocational counseling pertinent to its field.

Educational Counseling. Each student is assigned a faculty adviser in addition to the services of the Counseling Office. The student's adviser assumes special responsibility for the student's welfare and helps him plan his academic program. The student uncertain of his choice of an academic major is assigned to a general adviser until a definite academic goal is chosen; thereafter, the adviser is a faculty member in the field of the chosen major.

The Counseling Office assists students who are failing to meet scholarship standards. Counseling and testing are designed to help students to discover weaknesses and to plan remedial measures.

Personal Counseling. The Counseling Office provides services for students with adjustment problems of a personal nature. Clinical psychologist services are avail-

able in the Counseling Office and limited psychiatric consultation is available in the Health Services Office.

Foreign Student Counseling. Special services are provided in the Counseling Office for students from other lands.

HEALTH SERVICE

The objective of the Student Health Service is to keep the student in a state of optimum health, both physically and mentally, so that he may realize to the fullest the opportunities afforded by Fresno State College. Health services are sponsored jointly by the college and the student body, the latter participating by means of a \$2 health fee each semester.

The Health Service is housed in its own building, with four well-equipped doctors' suites, physiotherapy, laboratory and X-ray facilities, nurses' treatment rooms, secretarial office, and waiting room. The Health Service is open from 8 a.m. to 5 p.m. each school day, during which time registered nurses are on duty and physicians are available for consultation. Many medical specialties are represented among the part-time and full-time physicians, affording a high standard of medical care.

During hours when the Health Service is closed, a qualified student may contact his own physician, in which case the Health Service will allow \$5 toward the cost of one office visit or \$10 toward the cost of one residence visit for any one illness. Should hospitalization for a qualified student be necessary, the Health Service will allow \$10 per day for five days toward the cost of hospitalization which is not otherwise covered by insurance. In addition, an excellent student sickness and accident insurance policy is offered through the Health Service.

STUDENT ABSENCES

Students are expected to maintain regular attendance at classes. Extended absences (more than one week) due to illness, death in the immediate family, or other extraordinary emergencies, should be reported immediately to the Counseling Office which will notify the faculty concerned. When any absence occurs, however, the student should contact the instructors involved concerning the possibility of making up the work missed.

STUDENT HOUSING

College Residence Halls

The college has three modern residence halls in operation. Homan Hall houses 209 men, and Graves and Baker Halls each house 209 women. The halls are fire-proof, air-conditioned buildings having study rooms, lounges, recreation rooms, and laundry facilities. Students are housed two to a room. The rooms are attractively furnished, and provide adequate study and living facilities. Linen service is provided, but students are required to furnish their own blankets and towels. Food service is provided by the college cafeteria. For information on residence hall costs, see *Fees and Expenses*.

Each hall is under the supervision of a well qualified head resident and five student assistants. Students are encouraged to take part in group living through experience in self-government and by taking part in the social and intramural programs. Women living in the halls are required to observe the residence rules of the Associated Women Students.

Further information and applications for reservations may be obtained by writing to the Student Housing Office. Students who are applying for accommodations in the halls must also file an application for admission to the college. Conditional admission can usually be granted on the basis of a transcript of all college or high school work completed to date. For further information on admissions see *Regulations and Procedures*.

Housing Regulations for Freshman Women

The college reserves the right to require all unmarried women students under 21 years of age who are classified as freshmen and who are not living with parents

or guardians to live in the residence halls or in other housing approved by the college. Exceptions may be made for those who have written permission from their parents to live elsewhere.

Approved Off-Campus Housing for Women

The Student Housing Office maintains a list of approved rooming and boarding houses which have been inspected and meet the college housing standards for women. Women living in approved housing will be required to observe the residence rules of the Associated Women Students. Arrangements for living accommodations should be made well in advance of registration. If women secure housing not on the approved list, the parent or guardian will be asked to assume full responsibility.

Off-Campus Housing

The Student Housing Office maintains a file of available student housing as a service to students seeking living accommodations. Students are advised to make arrangements for housing as early as possible before registration. Off-campus living accommodations are provided by private homes in the area, with a limited number offering room and board. A large number of apartments are available in the area adjacent to the campus. The Housing Office will also attempt to help students interested in sharing apartments to get in touch with other students interested in similar living accommodations.

Although the college does not supervise off-campus housing, Fresno State College students living in private homes, apartments, and other types of student housing are expected to conduct themselves in a manner which will enable them to maintain desirable relations with their landlords and their neighbors.

Housing for Married Students

The college does not maintain housing facilities for married students and their families. However, some low-cost housing is available to married students and their families through application to the Fresno City and County Housing Authority, 2520 Clinton Avenue, Fresno 3, California.

The Student Housing Office also maintains a file of privately owned rentals, some of which are near the campus. These private rentals range from \$60 to \$80 per month depending on the size and furnishings.

FOOD SERVICE

The Fresno State College Association, Inc., maintains the college cafeteria and a separate snack bar, The Roundup. The cafeteria provides regular meal services for all students and faculty five days a week and for residence hall students seven days a week during the time college is in session; The Roundup is open weekdays.

PLACEMENT SERVICE

The college maintains a centralized placement service which is closely integrated with the total educational process of the college, operates in cooperation with the various departments of the college, and is part of the student personnel program. Its services include educational placement, business and industrial placement, and student placement.

The placement service seeks more efficient utilization of college manpower by assisting students of the college and alumni in seeking positions which will best utilize their education, training, experience, and abilities and by aiding them in their progress toward positions of greater responsibility and personal satisfaction. It not only serves the needs of the college and its students but is vitally concerned with and directs its service toward the needs of the community, business and industry, the public school system, and to the State generally.

The specific functions of the office are to collect and make available to prospective employers personal data and confidential letters of reference of candidates; maintain a current record of employment opportunities; recommend candidates for positions at the request of employers; arrange for interviews between candidates

and employers; provide guidance to candidates seeking positions; bring the needs of the employer to those who design and implement the training program; and conduct a follow-up program of candidates placed in positions.

There is no charge to students or employers for the placement service. Within the limitations of time and staff, an effort is made to assist those who seek the service; however, placement cannot be guaranteed. The college reserves the right to recommend for placement only those applicants who are adequately qualified for positions they seek.

Educational Placement

Membership in the Office of Placement is open (1) to graduates of Fresno State College qualifying for a regular California teaching credential prior to date of employment; (2) to anyone with a bachelor's degree from an accredited institution provided he completes 12 semester units at Fresno State College and qualifies for a regular California teaching credential prior to date of employment; (3) to a candidate for a master's degree at Fresno State College; (4) to anyone with a master's or higher degree from an accredited institution provided he completes 12 semester units at Fresno State College. Credential candidates are urged to register with the Office of Placement early during the semester in which they begin their student teaching.

Business and Industrial Placement

Membership in the Office of Placement is open to all graduates who desire full-time positions in agriculture, business, industry, governmental agencies, and other related fields. Seniors are urged to complete and file a personal data sheet with the Office of Placement early during the year in which they expect to graduate. Close cooperation is maintained with the various divisions and departments in the placement of candidates in these fields. Information is also available to students and former students desiring help in securing full-time employment.

Student Placement

Many students earn part of their college expenses. Entering freshmen, however, should be prepared to finance their first semester of college attendance without working; and all students should keep their outside employment to a minimum so that the total program does not endanger either health or academic achievement. Active immunization against tetanus (available through the Student Health Service) is required for any student employed on the College Farm.

Various types of employment are available. There are a number of hourly jobs in various work areas on campus for which candidates with specific abilities are sought. Other positions of a temporary nature are also available on campus. Off-campus positions consist of a variety of jobs ranging from short-term positions to those with scheduled hours for the full year. Students desiring work on or off campus should consult the Office of Student Placement. Employed students are expected in their work to reflect credit on the college.

FINANCIAL ASSISTANCE

Undergraduate Scholarships

About 240 scholarships totaling approximately \$32,000 will be available for the 1962-63 academic year. About half of these scholarships, ranging from \$50 to \$750, are open to new students. The average scholarship is for \$150 for the year and covers the cost of material and service fees, student body fees, and a partial cost of books. Generally, upper division and specialized scholarships are in larger amounts.

Scholarships are awarded on a competitive basis, consideration being given to scholastic attainment, financial need, character, and promise. Several scholarships are available on the basis of outstanding accomplishment in specialized fields. The purpose of the scholarship program is to provide deserving students with educational opportunities that might not otherwise be possible.

Scholarship awards are announced late in May each year. Entering students should file applications with the Chairman of the Committee on Scholarships and

Loans prior to April 1st. Enrolled students should file their applications prior to March 1st. Each applicant should present two letters of recommendation from people of recognized standing in his community who are in a position to give information about the applicant's character, ability, and financial need. The applications of new students must be accompanied by transcripts of high school and all college work completed to date.

Scholarship applicants should become familiar with the yearly *Scholarship Bulletin* which lists the various scholarships and their requirements in detail. Requests for this bulletin, for application blanks, and for other information on scholarships should be addressed to the Chairman, Committee on Scholarships and Loans. Students from San Joaquin Valley high schools and junior colleges may obtain information from their principals and counselors.

College Association and Foundation Loan Funds

The college maintains a number of loan funds providing financial aid to students. Loans are granted on the basis of the student's financial need, his educational program and his ability to repay his obligation to the loan fund. Most of the loan funds provide limited aid to students on an emergency basis. However, larger loans are available to senior and graduate students. These loans may be repaid after completion of the degree or credential work. The Fresno State College Association Loan Fund is administered by the Fresno State College Association, Inc. The other loan funds are held in trust by the Fresno State College Foundation. These loan funds, in general, are not available to entering students.

Applications for loans, with the exception of Agricultural Project Loans, are processed through the Chairman of the Committee on Scholarships and Loans, Fresno State College, Fresno 26, California.

The Agricultural Project Loans are provided by the Fresno State College Foundation. These loans provide financial backing to regularly enrolled students engaged in approved agricultural projects in field crops, horticulture, viticulture, ornamental horticulture, livestock, poultry and dairy. Arrangements for project loans may be made by students through their advisers.

The K. Arakelian Foundation Loan Fund was established by the K. Arakelian Foundation and provides financial assistance to senior and graduate students attending Fresno State College. Loans granted from this fund may be repaid after graduation.

The Mary C. Baker Trust Fund was established by Mary C. Baker, a former dean of women. It provides small emergency loans to students.

The Hal Beatty Benefit Fund was originated by the Delta Sigma Phi Fraternity and is sponsored by the fraternity, students, faculty and friends of Fresno State College. The fund was established in 1953 for the purpose of aiding Fresno State College students who, because of accident or illness, become physically disabled and require immediate financial assistance. Grants from this fund may be repaid when the student is able to do so.

The Elizabeth Peterson Carnine Loan Fund was established by the Fresno State College Music Department in 1932 as a memorial to Mrs. Elizabeth Carnine. The fund provides emergency loans to students majoring in music.

The Ivan Chapman Loan Fund is made available by Mr. Ivan Chapman primarily for senior students who need financial aid in order to complete their senior year.

The Chi Beta Alpha Fraternity Alumni Loan Fund was established in 1958 by the Chi Beta Alpha Fraternity Alumni. Preference for these loans is given to senior students majoring in agriculture.

The Mrs. Harry Coffee Loan Fund was established in 1929 by Mrs. Harry Coffee to provide financial aid and encouragement to students majoring in music.

The Edward Cribb Memorial Loan Fund was established in 1947 by the Fresno Junior Chamber of Commerce as a memorial to Edward J. Cribb, a former Fresno

State College student. Emergency loans are made from this fund with preference being given to veterans.

The Hanford A. Crockard Memorial Loan Fund was established in 1960 by the Northern California Motor Car Dealers Association, Inc. as a memorial to Hanford A. Crockard, a former president of the Association. Loans granted from this fund may be repaid after graduation.

The Fresno State College Alumni Association Loan Fund was established in 1949 to provide loans to students on an emergency basis in amounts not to exceed \$50.

The Fresno State College Association Loan Fund was established by the Associated Students of the college to provide emergency loans to students.

The Syd Glass Memorial Loan Fund was established in 1958 by the friends and family of Syd Glass. The fund provides loans up to \$100 to education majors during their last semester in college.

The Floy Montgomery Lewis Loan Fund was established in 1956 by Floy Lewis, a former faculty member. The fund is used to grant loans to students who are majoring in elementary education.

The Lions Club of Del Rey Loan Fund was established by the Del Rey Lions Club to provide loans to students in agriculture.

The H. J. McFarland Memorial Loan Fund was established in 1952 by the Fresno Scholarship Association to provide financial assistance to residents of Fresno County. Special preference is given to graduates of Fresno County high schools.

The Charles Lurie McLane Loan Fund was established in 1959 through a bequest from the estate of Mrs. Elizabeth Price McLane. Loans are limited to students with above-average scholarship majoring in one of the physical sciences.

The Anna Radka Loan Fund was established in 1954 to provide emergency loans to male students attending the college.

The Risley Loan Fund was established in 1926 by Mr. Thomas E. Risley. Loans from this fund are made available to senior students and may be repaid after graduation.

The Robert M. Schuler Memorial Loan Fund was established in 1953 by the employees of radio station KYNO to provide financial aid to students interested in the study of electronics and majoring in physics.

The Laura E. Settle Loan Fund was established in 1956 by the California Retired Teachers' Association as a memorial to Laura E. Settle.

The William Motier Tucker Memorial Loan Fund was established by his former students as a memorial to William Motier Tucker. Loans from this fund are available to students majoring in geology.

The Alumni Trust Council Loan Funds

A number of loan funds are administered by the Fresno State College Alumni Trust Council, Inc. These loans, available in varying amounts, are repaid on terms arranged with the student at the time the loan is made. Further information may be obtained from the Fresno State College Alumni Association Office on the campus or from the Fresno State College Alumni Trust Council, P. O. Box 892, Fresno, California. Loans granted from these loan funds may be repaid after graduation.

National Defense Student Loan Program

Fresno State College participates in the federal loan program which is provided for in Title II of the National Defense Education Act of 1958. Under this program needy students in any field of study may borrow up to \$1,000 a year, for a maximum of \$5,000. Students entering college for the first time as well as continuing students are eligible to apply for this type of loan.

No interest is charged until one year after the borrower ceases to be a full-time student. The first payments on these loans are required a year after the end of the one-year grace period, and interest thereafter is to be paid at the rate of 3 per-

cent per year. *A borrower who becomes a full-time teacher in a public elementary or secondary school may have up to 50 percent of his loan cancelled.*

Needy students with superior academic backgrounds, who are interested in teaching in public elementary or secondary schools, and whose academic background indicates a superior capacity or preparation in science, mathematics, engineering, or a modern foreign language, should consider the benefits of this program.

Inquiries should be directed to the Chairman, Committee on Scholarships and Loans, Fresno State College, Fresno 26, California.

State and Federal Aid to Veterans

The office of the Dean of Students maintains liaison with the Veterans Administration and the State Department of Veterans Affairs. The Veterans Counselor at the college assists veterans in conducting their affairs with these agencies.

In order to enroll and obtain benefits under Public Law 550 ("Korean" GI Bill), a veteran must obtain a Certificate for Education and Training (VA Form 7-1993) from the Veterans Administration and present it to the Veterans Office at the time of registration.

Students planning to enroll and obtain benefits under Public Law 634 (War Orphans Education Act) should obtain a Certificate For A Program Of Education (VA Form VB7-5493) from the Veterans Administration and present it to the Veterans Office at the time of registration.

The college is also approved for the training of disabled Korean War veterans (Public Law 894). Veterans who plan to attend the college on this program should notify the Veterans Administration of their intentions to enter Fresno State College well in advance of the registration period.

Veterans planning to attend the college under benefits available from the State of California (Cal-Vet) must obtain the required authorization each semester from the State Department of Veterans Affairs, Box 1559, Sacramento, California.

Information on the above educational programs at the college may be obtained by writing to the Veterans Counselor.

State Aid to the Handicapped

The State of California, through its Vocational Rehabilitation Services, provides financial assistance to students, both civilian and military, who have physical or emotional disabilities. This assistance equals the necessary school expenses and may include an additional amount to help cover the cost of living. Students who may be entitled to this assistance should apply to the Vocational Rehabilitation Services, 2550 Mariposa, Fresno 21, California.

FEES AND EXPENSES

Note: Fees are subject to change upon approval by the Trustees of the California State Colleges.

FEES

Materials and service fee, per semester	
Each student enrolled for over 6 units (regular student).....	\$38.00
Each student enrolled for 6 units or less (limited student).....	19.50
Association fee and health service fee, per semester (not a state fee).....	12.00
Total fees for regular student, per semester (California resident).....	50.00
Nonresident * tuition fee, per semester in addition to other fees	
Each nonresident student enrolled for 15 units or more.....	180.00
Each nonresident student enrolled for less than 15 units, per unit.....	12.00
Each nonresident foreign student enrolled for 15 units or more.....	127.50
Each nonresident foreign student enrolled for less than 15 units, per unit....	8.50

Note: Auditors pay the same fees as students registered for credit.

Extension, per unit:

Lecture or discussion course.....	10.00
Activity course.....	13.00
Science laboratory course.....	20.00
Summer session courses, per unit.....	11.50

Other Fees:

Diploma fee (not a state fee).....	\$2.50
Credential fee, each credential.....	8.00
Transcript of record (no charge for first copy).....	1.00
Thesis binding fee, 4 copies (not a state fee).....	15.00
Additional copies, per copy.....	3.50
Organ practice, per semester.....	10.00
Studio lesson, per lesson.....	1.00 to 6.00

Penalties:

Check returned for any cause.....	\$2.00
Late registration (in addition to materials and service fee).....	5.00
Change of program after final filing date.....	1.00
Failure to meet administratively required appointment or time limit.....	2.00
Late filing of student programs.....	2.00
Late filing of application for degree or credential.....	2.00
Lost or broken items, cost or \$1.00 if cost is less than \$1.00.	
Lost library items.....	cost plus 1.00

Residence Hall Rates:

Room and board, per semester each student.....	\$372.50
(Includes room, three meals per day Monday through Friday, and breakfast and dinner on Saturdays and Sundays during the time college is in session; parking space; accident, sickness and hospitalization insurance.)	

Parking Fees:

Nonreserved spaces	
Regular students, per semester.....	\$13.00
Limited students, per semester.....	6.00
Summer session—Fresno Campus Session.....	5.00
Reserved spaces	
Regular and limited students, per semester.....	22.50
Summer session—Fresno Campus Session.....	7.50

* A nonresident student is any person who has not been a bona fide resident of the State of California for more than one year immediately preceding the last day a student may register without paying a late registration fee. The Fresno State College attorney on residence matters has sole authority to make resident determinations.

ESTIMATE OF EXPENSES

The basic expenses for attendance at Fresno State College for a year (two semesters) for students who live away from home will range from \$850 to \$1000. These figures are exclusive of nonresidence tuition fee and such personal items as clothes, laundry, and incidental expenditures. Students who live at home and commute to the campus are able to reduce their expenses considerably below the estimated figure.

Board and room	from \$700 to \$800
Materials and service fee.....	76
Association fee and health service fee	24
Books and supplies	50 to 100

Some students reduce the cost of board and room by cooperative living arrangement or part-time work in exchange for room and board.

REFUND OF FEES**Refund of Registration Fees**

After a student makes a formal withdrawal through the Student Records Office, a refund of a portion of the *materials and service fee* may be made if written application for refund is filed not later than two weeks following the day instruction begins for the term. A student shall make the application personally if he is able to do so. If, in the opinion of the administration, a student is unable to make the application personally, the parents or guardian of the student who is a minor, or the duly authorized representative of the student who is of the age of majority may make the application.

The amount of the refund will be determined by the Business Office by deducting the cost of materials and services used, plus \$2 for registration costs. A full refund may be made to a student who is unable to continue a course, because of a college regulation or because of compulsory military service, at any time prior to the date when the student receives any academic credit for any course or courses for which he is registered. The *late registration fee* is not refundable. If a student reduces his units to fall within a lower fee category within the first two instructional weeks of the session, makes a formal change of program through the Student Records Office, and files a written application for refund within this time limit, the differential may be refunded except for the cost of materials and services used, plus \$2 to cover registration costs.

The same withdrawal and application for refund procedure applies for the *nonresident tuition fee* except that the time limit is different. Within the first week of the session, a full refund may be made. For each additional week, the refund diminishes as follows: 90 percent of the fee, the second week; 70 percent, the third week; 50 percent, the fourth week; 30 percent, the fifth week; 20 percent, the sixth week; no refund, after the sixth week.

Refund of Parking Fees

A student is entitled to a refund of parking fees in the amount shown in the following schedule if on any one calendar day within the applicable period he files with the Business Office a written application for refund and returns all documents issued to him by the college which evidence his right to use the parking facility including any parking permit, stickers, and decals so issued. If any of the foregoing items are attached to a vehicle and the vehicle is presented to the college for removal of the attached item by or under the direction of the State, such presentation and removal shall constitute return of the attached items.

Nonreserved Space Fee Refund. Beginning with the first day of instruction, 75 percent of the nonreserved space fee is refunded if application is made as indicated above within 1-30 calendar days; 50 percent, within 31-60 calendar days; 25 percent, within 61-90 calendar days; no refund, 91 days to end of the semester.

Reserved Space Fee Refund. The total of the following amounts is refunded for the remaining time for which payment was made for reserved space: \$5 refund for each complete calendar month; \$2.50 for more than 15 days of a calendar month; no refund for 15 days or fewer of a calendar month.

(For refund of fees during summer sessions consult the Business Office.)

Refund of Association Fee

The schedule of refunds for the *association fee and the health service fee* is set annually. Refunds are dependent upon the length of time between the opening of the semester and application for refund. Application must be made and student body card turned in to the Association Office.

Refund of Extension Fee

The *extension tuition fee* may be refunded upon formal withdrawal and the filing of written application on the official form provided by the Extension Office prior to the fourth meeting of the class. The *late registration fee* is not refundable.

Refund of Summer Session Fees

After a student makes a formal withdrawal from summer session classes, a partial refund of fees may be made, if the application for return of fees is filed within required time limits. See the *Bulletin of Summer Sessions* for the current refund schedule. As in the regular session, the *late registration fee* is not refundable.

REGULATIONS AND PROCEDURES

ADMISSIONS

Admissions standards at Fresno State College are stated in the *California Administrative Code, Title 5, Education*, Subchapter 2, which provides uniform admissions regulations for all California State Colleges.

The code provides as follows:

40600. Limitation of Enrollment. Admission to a state college shall be limited to the number of students for whom facilities and competent instructors are available to provide opportunity for an adequate college education. The Board of Trustees shall determine the number of students for whom there are available facilities and competent instructors at the college.

40700. Matriculation. Any student enrolling in any semester or quarter, other than summer session or extension or as an auditor without credit, shall meet the standards for admission contained in this subchapter.

FRESHMAN ADMISSION

The code provides as follows:

40800. High School Graduates. For admission to a state college, a high school graduate, or other applicant who is judged by the appropriate college authorities to possess equivalent preparation, must, as a minimum, meet one of the following:

(a) Have completed the equivalent of 70 semester periods (7 Carnegie units) of course work, in subjects other than physical education and military science, with grades of A or B on a five-point scale, during the last three years in high school.

(b) Have completed the equivalent of 50 semester periods (5 Carnegie units) of course work, in subjects other than physical education and military science, with grades of A or B on a five-point scale, during the last three years in high school, and attained the twentieth percentile on the national norm of a standard college aptitude test.

An applicant who fails to meet these standards may be admitted, if in the judgment of the appropriate college authorities, he gives promise of being able to succeed in college.

Technical Agriculture Program. High school graduates who do not meet the above admission requirements may be admitted to the technical agriculture program in accordance with Code Section 40802. See *Agriculture Division*.

CHANGES IN FRESHMAN ADMISSION

Effective September 1, 1963

Beginning in the fall of 1963, to be eligible for freshman admission to a state college an applicant shall meet the following:

Either, graduation from high school with a minimum of 14 semester units (7 Carnegie units) with recommending grades of A or B in courses other than physical education and military science, including at least 6 semester units in college preparatory subjects, as defined by the Trustees of the California State Colleges.

Or, graduation from high school with a minimum of 10 semester units (5 Carnegie units) with recommending grades of A or B and a score on a standard college scholastic aptitude test at or above the thirtieth percentile.

TRANSFER ADMISSION

The code provides as follows:

40409. Junior College Credit. A maximum of 70 semester units earned in a junior college may be applied toward the degree, with the following limitations:

(a) No upper division credit may be allowed for courses taken in a junior college.

(b) No credit may be allowed for professional courses in education taken in a junior college, other than an introduction to education courses.

40901. Applicants Who Were Eligible for Admission With Freshman Standing. An applicant is eligible for admission to a state college with advanced undergraduate standing if he meets all of the following standards:

(a) At the time of his graduation from high school, he was eligible for admission with freshman standing in accordance with subsection (a) or (b) of Section 40800.

(b) He has earned college credit in one or more accredited degree-granting colleges or universities and attained a grade-point average of 2.0 (grade of C on a five-point scale) or better in the total program attempted at such colleges or universities.

(c) He was in good standing at the last accredited degree-granting college or university attended.

40902. General Applicants Who Were Not Eligible for Admission With Freshman Standing. An applicant who was ineligible for freshman admission under subsection (a) or (b) of Section 40800 is eligible for admission with advanced undergraduate standing if he was in good standing at the last accredited degree-granting college or university attended and meets all of the requirements set forth in either of the following subsections:

(a) He has earned in one or more accredited degree-granting colleges or universities 60 semester units of college credit with a grade-point average of 2.0 (grade of C on a five-point scale) or better in the total program attempted at such colleges or universities.

(b) He has earned in one or more accredited degree-granting colleges or universities 24 semester units of credit with a grade-point average of 3.0 (grade of B on a five-point scale) or better in the total program attempted at such colleges or universities.

40903. Applicants With Particular Majors. An applicant who was ineligible for freshman admission under subsection (a) or (b) of Section 40800 may be admitted if his major is such that 60 units of work appropriate to state college degree requirements in the particular major are not offered by the accredited degree-granting institution from which he seeks to transfer, and if he meets all of the following standards:

(a) He has earned college credit in one or more accredited degree-granting colleges or universities and attained a grade-point average of 2.0 (grade of C on a five-point scale) or better in the total program attempted at such colleges or universities.

(b) He was in good standing at the last accredited college or university attended.

(c) In the opinion of the proper college authorities, he can succeed in the major in the state college.

40904. Other Applicants. An applicant who does not meet the requirements set forth in Sections 40901, 40902, or 40903 is eligible for admission with advanced undergraduate standing on probation, if in the opinion of the proper college authorities he can succeed in college.

ADULT ADMISSION TO SPECIAL STATUS

The code provides as follows:

40801. Adult Special Students. An applicant who has attained the age of 21 years and is not a high school graduate may be admitted to the state college as an adult special student, provided that he demonstrates to the proper college authorities ability to profit from college work.

ADMISSION TO GRADUATE STUDY

The code provides as follows:

41000. Admission With Graduate Standing: Unclassified. (a) For admission with graduate standing as an unclassified graduate student, a student shall have completed a four-year college course and hold an acceptable baccalaureate degree from an accredited institution; or shall have completed equivalent academic preparation as determined by the appropriate college authorities.

(b) Admission to a state college with graduate standing does not constitute admission to graduate degree curricula.

41001. Admission to Graduate Degree Curricula: Classified. A student who has been admitted to a state college under Section 41000 may, upon application, be admitted to an authorized graduate degree curriculum of the college as a classified graduate student if he satisfactorily meets the professional, personal, scholastic, and other standards for graduate study, including qualifying examinations, as the appropriate college authorities may prescribe. Only those applicants who show promise of success and fitness will be admitted to graduate degree curricula, and only those who continue to demonstrate a satisfactory level of scholastic competence and fitness, as determined by the appropriate college 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 college may be required to withdraw from all graduate degree curricula offered by the college.

For information regarding admission to graduate standing and candidacy for the master's degree, see *Degrees and Credentials—Master's Degrees*.

CLASSIFICATION OF STUDENTS

Students enrolling for more than 6 units in any semester are classified as *regular students*; students enrolling for 6 units or less in any semester are classified as *limited students*. Both regular and limited students are required to qualify for admission as outlined under *Admission Procedure*.

Student class levels are determined as follows:

Freshmen—Students who have earned a total of fewer than 30 semester units.

Sophomores—Students who have earned a total of 30 to 59 semester units inclusive.

Juniors—Students who have earned a total of 60 to 89 semester units inclusive.

Seniors—Students who have earned 90 semester units or more.

Graduates—Students who have a bachelor's degree or higher.

AUDITORS

Permission may be secured to enroll as an auditor for one or more courses without credit. Auditors must register in the usual way and pay the same fees as would be charged if the courses were taken for credit. Credit for courses audited will not subsequently be granted on the basis of the audit. Students enrolled for credit in any class may not transfer to audit status after the first six weeks. Students enrolled in audit status only may not transfer to credit status without completing admission procedures; this must be done within the first three weeks.

ADMISSION PROCEDURE (REGULAR AND LIMITED)

Applications for the fall semester are accepted beginning March 1 and applications for the spring semester are accepted beginning October 1.

For undergraduate admission to Fresno State College as a regular or limited student, one must:

1. Submit an application on a form provided by the Admissions Office.
2. Request institutions formerly attended to forward directly to the Admissions Office transcripts of credits from high school and colleges. College transcripts are required in duplicate. Failure to include all colleges attended may result in cancellation of the student's registration.
3. Take the college entrance examinations.
4. Veterans must, in addition, file with the Admissions Office a copy of Notice of Separation from military service.

Application for admission should be filed at least one month prior to the beginning of the semester for which the student plans to enroll. The college cannot assure approval of applicants to register or provide evaluations for applicants who file after the dates listed in the *College Calendar*. Applicants for reinstatement will be held strictly to these deadlines.

Students interested in college housing or scholarships should file applications as soon as possible in order to insure consideration.

GENERAL INFORMATION

All transcripts submitted by matriculated students are retained by Fresno State College.

Degree credit may be granted for work completed satisfactorily in another accredited institution of collegiate grade subject to the restrictions imposed on work taken at this institution. Questions concerning acceptability of a course from another institution should be addressed to the Evaluations Office.

A maximum of 70 semester units is allowed toward the degree for work completed in a junior college and no upper division credit is given. Junior college credit in excess of 70 units may be used to satisfy subject requirements, but may not be applied toward the total units required for a bachelor's degree.

For limitations on extension and correspondence credit, see *Extension Classes*.

Advanced Standing Credit for Registered Nurses

Completion of the three-year course in nursing at an accredited hospital and the possession of the R.N. license will entitle the student to receive 30 units of lower division credit toward a bachelor's degree. Credit received from a junior college

or four-year college for courses taken as part of a three-year hospital nursing program will be allowed in addition to the 30 units.

Registered nurses who are candidates for the bachelor of science degree with major in nursing will be required to take a battery of tests which will determine the number of units of the thirty units allowed which may be applied as credit toward the nursing major. See *Nursing Department*.

ADMISSION TO CREDENTIAL PROGRAMS

Admission to Fresno State College does not in itself include admission to credential programs, nor does it determine the catalog by which admission and program requirements shall be evaluated. Students planning to prepare for school service credentials, see *Education Division—Admission to Credential Programs*.

Changes in Credential Requirements

Students who, on July 1, 1963, are enrolled in the teacher education program and who, on that date, have completed two years of college work may continue in the various credential programs described in the *General Catalog*, provided they complete the requirements within established time limits. *Students who do not meet these conditions will be required to qualify for school service credentials under the revised credential structure.*

RECOMMENDED HIGH SCHOOL PREPARATION

The following high school work, while not required, is advisable as minimum preparation for any college course leading to a bachelor's degree.

English	3 year credits
Algebra	1 year credit
Geometry	1 year credit
One foreign language.....	2 year credits
American history or American history and civics.....	1 year credit
Other junior or senior social science.....	1 year credit
Botany, chemistry, physics, physiology, or zoology.....	1 year credit

Since certain fields of study require high school preparation in definite subjects, the student should consult the requirements indicated in the field of his choice.

In fields such as science, mathematics, social science, and humanities a maximum number of high school credits should be obtained in appropriate subjects in English, mathematics, science, and foreign languages.

ENTRANCE EXAMINATIONS

The examinations listed below are required of entering undergraduate students as a part of their admission procedure. For the college aptitude, reading, and English examinations, students must file reservations. The reservation forms will be supplied by the Admissions Office upon receipt of a completed application for admission.

College Aptitude Test: As an aid in classification and guidance of students, most colleges and universities give a test of college aptitude. This test is a part of the admission procedure at Fresno State College and is required of all entering undergraduate students, except foreign students.

Reading Examination: Because success in college is dependent upon efficiency in reading, accurate information about a student's degree of reading skill is essential to intelligent planning of his program. To provide this information, Fresno State College requires all entering undergraduate students to take a reading test. Students whose scores in this test are significantly lower than their scores on the college aptitude test should enroll in English 6.

English Examination: Entering undergraduate students must take an objective examination which measures competence in spelling, grammar, diction, sentence-structure, and punctuation. Students who do not pass the examination or who enter

too late to take the examination are required to enroll in English A. Transfer students who have completed freshman English or who have satisfactorily completed a course in English fundamentals equivalent to English A at another collegiate institution are excused from the examination.

English Proficiency Test for Foreign Students: A language proficiency test in English is required of all entering students from non-English speaking countries. This is an objective-type examination employed to determine whether the foreign student's competence in the English language is adequate for the academic demands of college work at Fresno State College. This test must be taken prior to enrollment. Results of this test will be used for counseling with the student concerning his academic programs and referral for specialized instructional help when indicated.

Speech Test: A speech test is required of entering freshmen and of transfer students not meeting the general education speech requirement; other transfer students are encouraged to take the test. Students failing this test must take Speech Correction IX; others are advised to enroll in Speech 20, 21, or 24, according to their needs. Candidates for teaching credentials, see language usage requirement in *Education Division—Admission to Credential Programs*.

Physical and Medical Examination: A physical and medical examination is required of each regular student upon entrance as a condition of registration. Later examinations may be required at a time college authorities deem it necessary. Candidates for teaching credentials are required to secure approval of the Health Services at the time of application for admission to credential programs, and upon assignment to directed teaching. A teaching credential may not be issued to any candidate who does not possess satisfactory physical and mental health to meet fully the responsibilities of a teacher.

PROFICIENCY TESTS

Proficiency tests are required by some departments prior to students entering or being admitted to certain courses or curricula in business, chemistry, criminology, engineering, foreign language, mathematics, music, nursing, physical education, physics, and teacher education. The test results are used to program students in those studies for which they are prepared. Some of the proficiency tests are administered by the Testing Office; others are administered by the departments concerned. Consult department advisers for further information.

STATEMENT OF RESIDENCE

A Statement of Residence must be completed prior to registration for each student, regular or limited. Students (regular or limited) in continuous attendance during successive semesters are not required to file statements of residence after the initial filing. Any break in attendance requires a new Statement of Residence. Students are held responsible for reporting any change in residence status. Arrangements are made so that students may complete the statements of residence when entrance examinations are given on campus or during the period immediately preceding registration. These statements may not be completed by mail.

Summer session and extension students are not required to file Statements of Residence.

SCHEDULE OF COURSES

An official *Schedule of Courses* is prepared by the Office of the Dean of Arts and Sciences each semester for publication listing general registration procedures, courses offered, hours and rooms. The schedule is available prior to registration and may be purchased through the Business Office for a nominal cost.

REGISTRATION

Registration is open to new regular and limited students who have been formally admitted and to former students in good standing. Former students returning after an absence of one semester or more must file in the Admissions Office a form

requesting readmission not less than one month prior to registration. Students seeking reinstatement will be held strictly to this deadline. The *College Calendar* lists dates of registration. Upon payment of the registration fee, registration materials are issued and must be filed before registration is considered completed. Late registrants are assessed a fine of \$5 and a late filing fee of \$2 if materials are not filed within 48 hours.

Students transferring between the Fresno campus and the Bakersfield Center should notify the Admissions Office where they intend to enroll well in advance of registration; this does not apply to any Summer Session, see *Educational Services*.

CONCURRENT REGISTRATION

Approval must be obtained in advance from the Admissions Officer before transfer credit may be earned at another college concurrent with registration at Fresno State College.

CHANGE IN REGISTRATION

Each student is held responsible for the program of courses listed at the time of registration. After the program has been filed, no changes may be made without advance application in writing on the form provided by the Student Records Office. The change is not recorded until this form is properly filled out and filed in the Student Records Office. All applications for courses added after the second week of the semester or dropped after the first six weeks incur a fine of \$1.

WITHDRAWAL FROM COURSES

Withdrawal from any course after filing the program requires written application on a form provided by the Student Records Office. Withdrawal without this procedure results automatically in a failing grade. A properly filed written application for withdrawal before the end of the third week permits a student to drop a course without prejudice. A properly filed written application for withdrawal after the third week but more than six weeks before the end of the semester permits a student, who is doing passing work, to drop a course without prejudice, with a W recorded on the transcript; otherwise the dropping of a course during this interval will be recorded as a failure. A properly filed application for withdrawal during the final six weeks of the semester permits, with the approval of the instructor, a student whose work is of passing quality to withdraw with an incomplete recorded on his transcript; if not passing, a failure (FW) is recorded. No program changes, other than complete withdrawal, may be made during the last two weeks of the semester. A fine of \$1 will be assessed for application to withdraw from a course after the first six weeks of the semester, unless the student is applying for a complete withdrawal for the semester. See *Refund of Fees*.

WITHDRAWAL FROM COLLEGE

Students withdrawing from college must file written application on the form provided by the Counseling Office. Applications filed before the end of the third week of the semester will enable the student to withdraw without prejudice to his standing. Applications filed after that time will be subject to the same rules as requests to withdraw from individual courses. See *Refund of Fees*.

PROGRAM RESTRICTIONS

Students planning to register for more than 17 semester units must obtain permission to carry maximum programs. In general, requests to take units above the maximum will be granted on the following basis: 18 semester units may be approved if the student has a 2.5 grade-point average or above (on a 4 grade-point system); 19 semester units may be approved if a 3.0 grade-point average has been maintained; any request to take 20 or more semester units will require the permission of the Dean of Students.

Enrollment in upper division courses is restricted to students with junior, senior or graduate standing, or who have the necessary prerequisites. Exceptions are subject to the approval of the instructor and department chairman for the course concerned. Upper division credit may not be granted until a student has completed a minimum of 45 semester units. Only students who have been fully approved for admission to credential programs may enroll in certain education courses and qualify for a school service credential on the basis of the college's recommendation.

Students employed as full-time teachers may not register in any one semester for a total of more than six units of course work in extension, day, late afternoon and evening classes, unless special written permission from the employing school official is presented at the time of registration.

Credit in any course is also subject to all restrictions which may appear in the *General Catalog*. For restrictions on graduate study, see *Master's Degrees*.

SCHOLARSHIP REQUIREMENTS

UNITS

A credit or semester unit represents one hour of class work per week for one semester. It is assumed that two hours of preparation are required for each hour in class. Three hours of laboratory per week are the equivalent of one unit. In a limited number of courses two hours of laboratory per week are the equivalent of one unit.

GRADES

- A—Exceptionally good.
- B—Above average.
- C—Average.
- D—Below average.
- F—Failure.
- FW—Withdrawal with mark F, or failure to withdraw officially.
- Inc—Semester requirements incomplete, work of passing grade.
- IP—Continuing work in progress, status satisfactory.
- P—Passed without grade.
- W—Official withdrawal.
- AU—Audit.

Permission to make up an incomplete subject extends only to the end of the following semester of residence in which the course is given.

The IP and P grades may be used only in courses designated in advance by the Dean of the College.

GRADE POINTS

For each unit of credit the student receives grade points as follows:

- A—Four grade points per unit of credit.
- B—Three grade points per unit of credit.
- C—Two grade points per unit of credit.
- D—One grade point per unit of credit.
- P—Units allowed but not counted in grade-point average.
- IP—Neither units nor grade points counted until final grade recorded.
- F, FW, Inc—Units counted, no grade points.
- AU—No units or grade points allowed.

The above grade-point system is effective as of September 15, 1961. Between September 20, 1956, and September 15, 1961, grade points were computed as follows: the E grade was used for Condition to be changed to D when condition was removed; P counted two grade points per unit of credit; E counted no grade points per unit. Prior to September 20, 1956, the system was: A, 3 grade points; B, 2; C or P, 1; D, E, F, FW, Inc, 0. Prior to September, 1948, grades E, F, FW, and Inc carried minus one grade point per unit.

An incomplete, when properly made up, will receive the grade points appropriate to the mark finally earned.

Since September, 1941, a student may repeat any course in which a mark lower than C was received. Degree credit will be allowed only once for any course. Effective September 19, 1957, a repeated course has been counted as units attempted and is credited with the appropriate grade points earned by the repetition. Prior to the fall semester, 1957, the grade made upon repetition was accepted in place of that established earlier and units attempted were not charged. Occasionally a student wishes to repeat a course in which he earns a C. Such repetition is recorded on the transcript but is not figured in unit or grade-point totals.

SCHOLARSHIP STATUS

SATISFACTORY SCHOLARSHIP

Satisfactory scholarship means at least a C average (2.0 grade-point average or twice as many grade points as units attempted). A student is considered in good standing if he is not on probation or disqualified. See *Degrees and Credentials—Scholarship Requirements*.

PROBATION

A student will be placed upon probation if either his grade-point average based on total units attempted at all colleges is below a 2.0 (C average) or his grade-point average based on all units attempted at Fresno State College is below a C average. A student will be continued on probation until his over-all and his Fresno State College grade-point average is 2.0 or better, or until he is disqualified under one of the provisions of the disqualification regulations. A limited student who has attempted fewer than 12 units will not be put on probation solely on the basis of grades of Incomplete.

DISQUALIFICATION

A student will be disqualified, except a limited student who has attempted a total of fewer than 12 units at Fresno State College, under any one of the following provisions: (a) if he is on probation and has a cumulative grade-point deficiency of 13 or more; (b) if he is on probation and earns a grade-point average of less than 2.0 for three consecutive semesters; (c) if he fails to earn at least a 1.0 grade-point average during any one semester.

A student admitted on probation must earn a 2.0 average or meet other standards set forth in his individual case during the first semester of his attendance. He will thereafter be held to the standards listed above.

REINSTATEMENT AND READMISSION

A student disqualified from the college may be reinstated only by special action and if the facts in the case seem to warrant such action. Ordinarily, consideration for readmission will not be given unless a semester has elapsed since the disqualification. Students who have been disqualified more than once may not be readmitted except under the most unusual circumstances.

A student returning after an absence and who has been disqualified after his last term of attendance must file an application with the Admissions Office by the deadlines specified in the *College Calendar*.

TRANSCRIPTS AND REPORTS

Transcript of Record. One complete transcript of record is furnished each student free of charge. Each additional copy requires a fee of \$1.

Transcripts of record submitted to this institution will be retained except in cases where the student fails to register.

Reports to Students. Grade reports are given students at the close of each semester. At mid-term a report is given to all students both as a verification of the student's official program and as a report of any unsatisfactory progress.

CREDIT BY EXAMINATION

Credit by examination may be earned in some cases in appropriate courses. For further information consult the department concerned.

INDEPENDENT STUDY

The college has established a plan of independent study for outstanding upper division and graduate students in order to provide opportunity for a greater degree of originality than is possible in regular courses, and to encourage students to develop their special abilities and interests. Independent study should deal either with a special interest not covered in a regular course or with the exploration in much greater depth of a subject presented in a regular course. Each department has an independent study upper division 190 course, and some departments have a graduate level 290 course. Students may take this work in their majors or closely related fields, but in general, independent study courses may not be substituted for regular required courses. In some departments a 190 course may be desirable preparation for the thesis or other advanced study.

To be eligible for independent study, a student should have an over-all grade-point average of 3.0 or higher. However, a student with less than an over-all grade-point average of 3.0 may, with the consent of the department chairman in his major field of study, be permitted to register for independent study. Maximum credit of six units is allowed toward the bachelor's degree in 190 courses, and maximum credit of six units is allowed in 190 and 290 courses toward the master's degree. In either case, credit in 190 and 290 courses is limited to a maximum of three units per semester. Under extraordinary circumstances more than three units of credit per semester may be allowed on petition to the Independent Study Committee.

An eligible student desiring to register for a 190 or a 290 course must first obtain the consent of an instructor who will guide the project and the approval of the chairman of the department in which the course is given. A student registers for a 190 or a 290 course the same as for any other course at the time of registration. Enrollment for independent study during the Summer Session is generally discouraged because of the short time available for completion of the project.

An independent study course normally includes an oral examination by a committee from the department in which the course is taken, a formal report which is filed in the department office, and an abstract of the study which is filed with the Independent Study Committee. Approval forms and copies of the current regulations may be obtained at department or division offices.

EDUCATIONAL SERVICES

Note: Only students enrolling in summer session or extension or as auditors are not required to meet admission standards.

EXTENSION CLASSES

The college offers off-campus extension classes in regularly listed college courses when student demand is sufficiently large to finance the instruction. These courses are arranged each year in the area served by the college. *For information regarding courses, course fees, and instructional costs, write to the Dean of Educational Services and Summer Sessions.*

The college allows enrollment in 6 units of extension courses per semester as a maximum for teachers employed full time. See *Program Restrictions* for statement regarding extension classes. Not more than a total of 24 units by extension and correspondence can be applied toward a bachelor's degree. Not more than 12 units of extension and correspondence courses may be transferred from another college or university.

Not more than 6 units of the 30 units required for the master's degree may be earned in extension courses, student teaching, transfer credit or any combination of these. When 200 series courses are taught by extension and carry the designation E after the number, they are counted as upper division courses (100 series) in master's degree programs. Candidates for the master's degree should check with the Graduate Office or departmental graduate adviser to learn whether specific extension courses may be applied on their graduate programs.

SUMMER SESSIONS

Fresno State College conducts summer sessions on its campus in Fresno, on the Bakersfield College campus, and on the College of the Sequoias campus in Visalia. Special workshop sessions are held in other valley centers. The Fresno and Bakersfield six-week sessions follow the spring semester; the Visalia and Fresno post sessions follow the Fresno and Bakersfield sessions, offering the possibility of completing a maximum of 11 weeks in a single summer. Not more than one semester unit may be earned for each week of attendance, except that upon approval of appropriate college authorities additional semester units may be earned at the rate of one-half unit for each three units for which a student is registered in a three-week period. The offerings at these sessions include a variety of courses leading to the bachelor's and master's degrees. The program includes courses to meet the requirements for elementary, secondary, administration, supervision, and special credentials and in-service professional needs in various fields. Courses of a general cultural nature in various academic departments are also offered. *A bulletin describing the offerings of all sessions is ready for distribution in March. Students who are interested in attending should write to the Dean of Educational Services and Summer Sessions, Fresno State College, Fresno 26, California.*

BAKERSFIELD CENTER

The Bakersfield Center operated by Fresno State College was established by legislative action in September 1956. The program at the center is an integral part of Fresno State College and is under the general direction of the Dean of Educational Services and Summer Sessions. It includes the recommended college program of courses leading to a bachelor's degree with a major in elementary education and

the kindergarten-primary and/or general elementary credential. The program is restricted to upper division courses applicable to this degree and these credentials.

Students who plan to attend the Bakersfield Center as regular or limited students must apply for admission to the Director of the Bakersfield Center, Fresno State College, 4021 Mt. Vernon Avenue, Bakersfield, California.

Students who plan to complete credential requirements at the Bakersfield Center must be separately admitted to the credential program. This is in addition to the general admission procedures above for regular or limited students. For information concerning procedures for admission to a credential program and the revised credential program write to the Director of the Bakersfield Center.

SUDAN EDUCATIONAL PROJECT

Fresno State College, under contract with the United States Agency for International Development, Washington, D.C., established an educational project in Sudan, Africa, in September 1961. The project consists of providing technical assistants and consultants to the Sudanese Government through their Ministry of Education in an effort to improve the quality and quantity of elementary education programs in the Sudan. The college has a team of 14 faculty members in the Sudan working in the areas of teacher education, elementary education, agricultural education, and home economics education in the following established institutes: Bakht-er-Ruda, Shendi, Dilling, and Maridi Teacher Training Institutes; and Omdurman and Wad Medani Women's Teacher Training Colleges.

For further information consult the Campus Coordinator of the Sudan Project, Fresno State College Extension Center, University and Van Ness Avenues, Fresno, California.

DEGREES AND CREDENTIALS

GENERAL REGULATIONS

Fresno State College is authorized to grant the bachelor of arts, bachelor of science, bachelor of education, bachelor of vocational education, master of arts and master of science degrees. Public school credentials for which the college is authorized to recommend candidates are listed at the end of this section.

APPLICATION FOR DEGREE OR CREDENTIAL

Application for degree or credential must be obtained and filed in the Evaluations Office at the beginning of the semester or summer session term during which the candidate expects to complete requirements. Dates for filing applications are listed in the *College Calendar*. All applications for degrees or credentials filed after the published dates incur a fine of \$2; failure to make application will delay the granting of the degree or credential. Diplomas for those completing degree requirements during summer sessions and the fall semester will be awarded at the following June commencement exercises.

EVALUATIONS

During the semester following the completion of 60 semester units, a student should file a request for an evaluation at the Evaluations Office. An evaluation is a summary of courses completed and of requirements yet to be fulfilled for a degree and/or credential. Due to staff limitations only one evaluation can be made for each student.

After evaluation, all transcripts become the property of the Records Office and are not returnable, even on loan. It is suggested that the student obtain duplicate copies of his record from his former schools and keep them for his personal file and for any other purpose for which they may be needed.

ELECTION OF REGULATIONS

A student remaining in continuous attendance in regular sessions and continuing on the same curriculum may, for purposes of meeting graduation requirements, elect to meet the graduation requirements in effect either at the time of his entering the curriculum or at the time of his graduation. The *General Catalog* lists the official graduation requirements for each year.

RESIDENCE REQUIREMENTS

For the bachelor of arts, bachelor of science, and bachelor of vocational education degrees a minimum of 24 semester units must be earned in residence at Fresno State College; at least one-half of these units (12) must be completed among the last 20 semester units counted toward the degree. Summer session credit may be applied on this requirement on a unit for unit basis.

For special residence requirements see *Bachelor of Education Degree*, *Public School Credentials*, and *Master's Degrees*.

For limitation on credit by extension and correspondence, see *Extension Classes*.

SCHOLARSHIP REQUIREMENTS

To qualify for any bachelor's degree a student must have at least a C average (2.0 on a four grade-point system) on his total college record, must have maintained at least a C average at Fresno State College, and must have at least a C average in his approved major.

See also *Application for Admission to Credential Programs—Scholarship and Master's Degrees—Grade Requirements*.

SPECIAL COURSE REQUIREMENTS

Entering undergraduate students should note the following specific requirements:

(1) *Physical Education Activities* (PE 10, 40, or 50 series). Students are expected to take these activities during their first four semesters. The physical education requirement may be waived only on request for students who have medical excuse from the college physician, or who are 25 years of age or older. Requests for this waiver or any deviation in meeting the requirement must be submitted to the Dean of Students Office. Basic air science (4 semesters) may be substituted for the physical education requirement. See *General Education Requirement*.

(2) *English A* is required of entering freshmen not passing the English entrance examination. Units in English A will count as electives for graduation but will not satisfy any of the general education requirements.

(3) *Speech Correction 1X* is required as a prerequisite to all other speech courses for those students who do not pass the speech entrance test. Units in Speech Correction 1X will count as electives for graduation but will not satisfy any of the general education requirements.

(4) *Elementary Algebra and Plane Geometry* are required for graduation, if they have not been completed in high school. See *Mathematics Department—Duplication of Courses*.

FOREIGN LANGUAGE REQUIREMENT

Foreign language is not a general college requirement for admission to or graduation from Fresno State College.

However, some divisions and departments require the study of a foreign language as part of the preparation for specified undergraduate and graduate majors. In general, upper division and graduate courses in these fields require the use of foreign language. See division and department statements of majors for details, effective dates, and suggestions for appropriate languages.

Students following majors which require the study of a foreign language ordinarily meet the requirement in one of the following ways:

1. Students who have no foreign language credit from high school complete two years of satisfactory collegiate study in one foreign language.
2. Students who have from one to four years of high school credit in one foreign language may substitute this work for part or all of the requirement. Those who have four years of high school credit in one foreign language ordinarily are relieved of further obligation. Others enter college courses according to the following schedule:

Students with one year of high school credit enter the 1B college course in the same language; with two years of high school credit, enter the 2A college course in the same language (or 3A in Latin); with three years of high school credit, enter the 2B college course in the same language (or 3B in Latin); with four years of high school credit, may enter an *upper division* course in the same language.

With the prior consent of the chairman of the Foreign Language Department, students who need review may enroll in, and receive credit for, one semester of college study that repeats one year of high school foreign language.

3. Students who do not have the prescribed high school or college credit may elect to meet the foreign language requirement by passing a competence examination. Usually only lower division courses in foreign language may be passed by examination. Credit by examination will be granted in foreign language only prior to the completion of the first upper division course in the same foreign language. See the chairman of the Foreign Language Department.
4. Students who hold the bachelor's degree are relieved of foreign language requirements in credential majors, but those seeking a second bachelor's degree major or a master's degree will be held for any foreign language requirement of the new field.

5. Unless the major specifies the language to be used, a foreign student may offer English to meet the requirement, provided his native language is not English and provided he has come to this country primarily to pursue academic work and expects to return to his home after completing his course of study.

GENERAL EDUCATION

Through its general education program, Fresno State College attempts to ensure that, in addition to his field of specialization, each student shall have an opportunity to prepare for the broad responsibilities society expects of a college graduate. Toward this end, the general education program places particular emphasis on those kinds of knowledge and understanding which an institution of higher education is especially equipped to provide.

The *California Administrative Code Title 5* provides for a minimum of 45 units of General Education, with 31 specified units and 14 units distributed by the college. Fresno State College interprets this requirement as outlined in this section.

Effective Dates

The *General Education Requirements* listed below are effective for freshmen entering Fresno State College on or after September 1, 1961, and for transfer students entering Fresno State College on or after September 1, 1963. Normally, therefore, the graduating class of June 1965 will be the first to be graduated under this program.

Provision for Transfer Students

Transfer students entering Fresno State College between September 1, 1961, and September 1, 1963, may follow *General Education Pattern II*. Transfer students planning to enter after September 1, 1963, should select courses to meet the *italicized* definition of each requirement outlined under General Education Requirements on the following pages. The Evaluations Office will accept for general education credit transfer courses which meet the intent of these requirements, even though they may not be identical to the Fresno State College courses listed.

Provision for Returning Students

Formerly matriculated Fresno State College students returning between September 1, 1961, and September 1, 1963, after an absence of one or more semesters will have the same privilege of following Pattern II as do transfer students. After September 1, 1963, returning students who have interrupted their enrollment for a semester or more will be expected to follow the program in effect on their return.

Provision for Continuing Students

Students matriculated prior to September 1, 1961, and in continuous attendance at Fresno State College are not affected by the new general education program. See *Election of Regulations*.

Selection of Courses

Students are urged to consider their selections carefully to complement the major in such a way as to produce a well-rounded degree program. In the interest of a balanced general education, not more than two semester courses should be selected from any one subject field (e.g., botany, chemistry, history, literature, mathematics, sociology, zoology).

In the event of a difference between the number of units used to meet a requirement and the number of units specified for that requirement, this difference may be absorbed in Requirement 7 if there is an appropriate category.

General education requirements are in addition to major requirements; no units counted as part of a student's degree major may also be counted as part of his 45 units of general education. Appropriate general education courses may be used toward completion of a minor or toward "Additional Requirements" beyond the degree major.

GENERAL EDUCATION REQUIREMENTS

The statements in *italics* define the intent of the program. Courses at Fresno State College acceptable to meet this intent are listed below. A minimum of 45 semester units is required.

Units

1. SOCIAL SCIENCE 9

To include at least one course from the area of man and culture and provide for meeting the requirement in American history and federal, state, and local government.

SELECT ONE FROM EACH GROUP:

Man and Culture: Hist 1, 2, Anthro 2, Geog 3, 4, Soc 1A.

American History: Hist 10, 8A-B.

American Government: Pol Sc 11, 1A-B, 101.

2. NATURAL SCIENCE 9

To include at least one basic concept course in life science and one in physical science.

SELECT AT LEAST ONE FROM EACH GROUP:

Physical Science: Phy Sc 10, 12, Physics 2A, 4A, Chem 1A, 2A, Geol. 1.

Biological Science: Biol 1A, 1B, 2A, Bot 1, Zool 1.

SELECT ADDITIONAL SCIENCE (if needed to complete units):

Physics 2B, 4B, 4C, 55, Chem 1B, 2B, 8, Geol 20, Biol 2B, Physio 1.

3. LITERATURE, PHILOSOPHY, AND ARTS 6

To include an introduction to literature, philosophy, or logic (three units) and one or more courses providing experience in or acquaintance with creative expression in the arts.

SELECT ONE (THREE UNITS) FROM LITERATURE, PHILOSOPHY, OR LOGIC:

Phil 3 (if Engl 4 is to be used for Requirement 5).

Engl 1B (if Engl 1A or 3 is used for Requirement 5).

Phil 1, 10A or 10B (if Engl 1A is used for Requirement 5).

SELECT (THREE UNITS) FROM THE FOLLOWING ARTS:

Art 3, 4, 11, 119A, 119B, 144A, 144B.

Mus 76, 1 or 101, 11A, 11B, 121A, 121B, 156, 166.

Drama 62, 184, 185A, 185B, R-TV 128.

IA 107, 108A, 108B, 117A, 128, 150.

PE 140-16, 140-17, 140-18.

4. HEALTH AND PHYSICAL EDUCATION 3

To include physical education activity and to meet the mental and physical health requirements. The college requires four semesters of physical education; two units apply here. See Special Course Requirements.

SELECT FOUR SEMESTERS (TWO UNITS APPLY HERE) PE 10, 40, 50 series.

SELECT ONE: H Ed 90, 91.

5. ORAL AND WRITTEN ENGLISH 6

To be equally divided between oral and written English.

SELECT ONE: Spch 20, 21, 24.

SELECT ONE: Engl 1A, 3, 4.

(For a year sequence in composition and literature or philosophy combine parts of Requirements 3 and 5 as follows: Phil 3 and Engl 4; Engl 3 and Engl 1B; Engl 1A and Engl 1B; or Engl 1A and Phil 1, 10A or 10B).

6. PSYCHOLOGY 3

To include an introduction to psychology.

SELECT ONE: Psych 7, 10.

ILY
RSES
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7. ADDITIONAL UNITS OUTSIDE MAJOR FIELD TO COMPLETE TOTAL OF 45 UNITS..... 9

To be distributed among categories listed below; to include at least two categories; and to consist of courses which have broad scope, relate fields of study, or provide widely applicable theory.

SELECT FROM AT LEAST TWO CATEGORIES:

(Courses listed in Requirements 1-6 above may be used in the appropriate section of Requirement 7, provided the same units are not applied in both places.)

FOREIGN LANGUAGE: Any courses in foreign language (maximum 6 units).

HUMANITIES: Engl 60, 61A, 61B, 176, 180, 181, 182, 183, Phil 1, 102, 130, courses listed in Requirement 3.

MATHEMATICS: Math B, C, 3, 4, 21, 40, 103, 130.

NATURAL SCIENCES: Biol 173, Geol 2, courses listed in Requirement 2.

SOCIAL SCIENCES: Econ 1A, 1B, 110, Geog 116, 177, Hist 4A-B, 176, 181, Soc 1B, 111, courses listed in Requirement 1.

ARTS: Courses listed in Requirement 3.

PSYCHOLOGY, JOURNALISM, BUSINESS, HOME ECONOMICS: Psych 145, Jour 104, 150, Bus Ad 8, 10, H Ec 42, 131.

GENERAL EDUCATION PATTERN II

Transfer students entering Fresno State College before September 1, 1963, and formerly matriculated students returning before September 1, 1963, after an absence of one or more semesters, will be permitted to follow General Education Pattern II outlined below instead of the new program listed on the preceding pages. Continuing matriculated students are not affected by the new program. See *Election of Regulations*.

Group 1. SOCIAL SCIENCE..... 12

Anthropology, criminology, economics, geography, history, political science, sociology, H Ec 131 (family life education). Courses must be selected from two or more of these fields.

Courses designed to meet the state requirements in American history, United States Constitution, American ideals, and California state and local government are required and may be included within the 12 units. For a list of such courses see *Social Science Division*.

Group 2. NATURAL SCIENCE (include both biological and physical science) 9

Biological—bacteriology, biology, botany, entomology, physiology, zoology.

Physical—astronomy, chemistry, Phy Sc 10, 12, geology, physics.

Group 3. LITERATURE, PHILOSOPHY, THE ARTS, FOREIGN LANGUAGE, AND MATHEMATICS..... 9

At least 3 units of literature or philosophy must be included.

(See *Special Course Requirements, 4*.)

Group 4. PHYSICAL EDUCATION ACTIVITY..... 4

Not more than one physical education activity course per semester may count on this requirement.

(See *Special Course Requirements, 1*.)

Group 5. HEALTH EDUCATION—H Ed 90 or equivalent..... 2

Group 6. ENGLISH AND SPEECH (Engl 1A and Spch 20 or 24)..... 6

Group 7. PSYCHOLOGY—Psych 7 or 10..... 3

Total..... 45

DEGREE MAJORS AND MINORS

Fresno State College offers majors as indicated below for the bachelor of arts (BA), bachelor of science (BS), bachelor of education (BEEd), bachelor of vocational education (BVEEd), master of arts (MA), and master of science (MS) degrees. A major for a degree consists of an approved program of courses designed to give depth in a principal subject or discipline. Requirements for approved majors are listed in the appropriate department or division sections of the *General Catalog*. When selections are made within the major, these choices must have departmental approval.

Minors are also offered in the areas listed below with the exception of those marked with an asterisk (*). For requirements see departments concerned.

Accounting	BS	Health education	
Agribusiness *	BS	(see Ed for MA)	BA
agricultural mechanics		History	BA, MA
animal science		Home economics	BA
business		Industrial arts	BA, BVEEd, MA
plant science		Industrial technology *	BS
Agricultural engineering *	BS	automotive	graphic arts
Agriculture	BS	drafting	metal
agricultural inspection		electrical	wood
agricultural mechanics		Journalism	BA
animal husbandry		Language arts	BA
crop production		Latin	minor only
dairy husbandry		Latin-American studies *	BA
dairy industry		Life sciences-general science	BA
enology		Marketing	BS
general agriculture		Mathematics	BA, BS, MA, MS
horticulture		Microbiology *	BS
ornamental horticulture		Music	BA, MA
poultry husbandry		Nursing *	BS
viticulture		Philosophy	BA
Air science	minor only	Philosophy-psychology *	BA
Art	BA, MA	Physical education-men	BA, MA
Art-music	minor only	Physical education-women	BA
Biology	BA, BS, MA	Physical science-general science	BA
Botany *	BA	Physics	BA, BS, MA, MS
Business	BA, MA, MS	Political economy	BA
Business administration	BS	Political science	BA
Business education	BA	Psychology	BA, MA
Chemistry	BA, BS, MS	Public administration	BA
Criminology	BS, MS	Radio-television broadcasting	BA
correction work		Recreation	BS
law enforcement		Romance languages *	BA
Dramatic art	BA	Russian	minor only
Economics	BA, MA	Secretarial administration	BA
Education	BA, BEEd, MA	Social science	BA, MA
Engineering	BS	Social welfare *	BA
civil	mechanical	Sociology-anthropology	BA
electrical	sales	Spanish	BA
industrial		Special * (see below)	BA
English	BA, MA	Speech	BA, MA
French	BA	public address	
Geography	BA	interpretation	
Geology	BA, BS	speech correction	
German	BA	Zoology *	BA

Special Major. A student may propose a program of correlated studies in two or more fields for a special major. This program must be based on a minimum of 24 units of which 12 are upper division and have the approval of chairmen of the departments concerned and the Dean of the College.

BACHELOR OF ARTS DEGREE

For the bachelor of arts degree a minimum of 124 semester units must be completed and must include at least 40 upper division units. Upper division courses taken before the student has earned 45 units, or before his fourth semester, may not be applied on this 40-unit requirement.

The general degree requirements, general education requirements, and one major must be satisfactorily completed, see *Degree Majors and Minors*; and any minor requirements listed for a given major must be met. Units used to meet the general education requirement may not apply on the major. If a second concurrent major is desired, courses acceptable for satisfaction of general education requirements for the first major may be used to satisfy second major requirements. Electives may be used to fulfill or to apply on requirements for a credential or for one or more minors, or they may be free electives selected with help of an adviser. While a minor is not required for most majors, students are encouraged to study the minor offerings of the various departments and consult their advisers to determine whether one or more minors would be an appropriate complement to their college programs.

BACHELOR OF SCIENCE DEGREE

For the bachelor of science degree, a minimum of 124 to 132 semester units depending on the major field must be completed. The general degree requirements, general education requirements, and one major must be satisfactorily completed, see *Degree Majors and Minors*. Courses used to meet the general education requirement may not apply on the major. If a second major is taken concurrently or consecutively, courses acceptable for satisfaction of general education requirements for the first major may be used to satisfy second major requirements.

BACHELOR OF EDUCATION DEGREE

The bachelor of education degree is a special degree limited to California public school teachers. For eligibility and requirements, see *Education Division*.

BACHELOR OF VOCATIONAL EDUCATION DEGREE

The bachelor of vocational education degree is a special degree limited to California vocational teachers recommended by the State Board of Examiners for Vocational Teachers. For requirements, see *Industrial Arts Department*.

MASTER'S DEGREES

Fresno State College is authorized to grant the following master's degrees: master of arts degree in art, biology, business, economics, education, English, history, industrial arts, mathematics, music, physical education (men), physics, psychology, social science, and speech; master of science degree in business, chemistry, criminology, mathematics, and physics. See *Degree Majors and Minors*.

To be eligible to receive the master's degree a student must have achieved a command of his field of specialization and must have demonstrated competence in independent investigation, analysis, and synthesis beyond the scope of individual courses. *The requirements listed in the following sections are minimums.* For details of specific curricula see the department statements and the *Graduate Bulletin*.

GENERAL REGULATIONS

Applicants for the master of arts and master of science degrees are admitted to graduate standing, programmed, and advanced to candidacy under identical policies.

ADMISSION TO GRADUATE STANDING

Admission standards are stated in the *California Administrative Code, Title 5, Education*, which provides uniform admission regulations for all California state colleges as follows:

41000. Admission with Graduate Standing: Unclassified. (a) For admission with graduate standing as an unclassified graduate student, a student shall have completed a four-year college course and hold an acceptable baccalaureate degree from an accredited institution; or shall have completed equivalent academic preparation as determined by the appropriate college authorities.

(b) Admission to a state college with graduate standing does not constitute admission to graduate degree curricula.

41001. Admission to Graduate Degree Curricula: Classified. A student who has been admitted to a state college under Section 41000 may, upon application, be admitted to an authorized graduate degree curriculum of the college as a classified graduate student if he satisfactorily meets the professional, personal, scholastic, and other standards for graduate study, including qualifying examinations, as the appropriate college authorities may prescribe. Only those applicants who show promise of success and fitness will be admitted to graduate degree curricula, and only those who continue to demonstrate a satisfactory level of scholastic competence and fitness, as determined by the appropriate college 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 college may be required to withdraw from all graduate degree curricula offered by the college.

GRADUATE ADMISSION PROCEDURES

Classified graduate status is processed by the Graduate Office after the student has been admitted to the college with unclassified graduate standing and has met admission standards for the degree program he seeks.

UNCLASSIFIED GRADUATE STANDING

A student who holds a bachelor's degree may be admitted to unclassified graduate standing according to the appropriate procedure listed below. This status permits him to enroll in undergraduate or graduate courses for which he has the prerequisites. (See *Course Numbering System—Eligibility and Definitions* and individual course descriptions.)

1. A graduate of Fresno State College who has taken no subsequent collegiate work elsewhere may be admitted to unclassified graduate standing upon the filing of the application for graduate standing.
2. A graduate of another accredited institution, or a Fresno State College graduate who has subsequently attended another institution, may be admitted to unclassified graduate standing upon the filing of the application and two copies of official transcripts showing the highest degree earned and good standing in all work taken subsequent to that degree.

Provisional Graduate Standing. A student who does not have a degree or credential objective may be admitted with provisional graduate standing upon the filing of the application declaring all schools attended since high school and one copy of an official transcript showing the granting of the bachelor's degree. (Transcripts for bachelor's degrees earned at Fresno State College are already on file and need not be resubmitted.) Subsequent changes to degree or credential applicant status will necessitate the filing of any additional transcripts required for *classified or unclassified graduate standing*.

Unvalidated Graduate Standing. A graduate of a nonaccredited college may be granted admission with *unvalidated graduate standing*, upon the filing of the application and two copies of official transcripts of all college work. Such a student may be eligible for unclassified graduate standing when he has cleared all undergraduate deficiencies and has maintained a grade-point average of 3.0 (on a four grade-point system) on 12 units of approved upper division work or an average of 2.5 on 24 units of approved upper division work. (Potential master's degree students, see also *Master's Degrees—Grade Requirements*.) When a student with this type of graduate standing has fulfilled the requirements for *classified or unclassified graduate standing*, it is his responsibility to request a new statement of standing from the Admission's Office.

CLASSIFIED GRADUATE STANDING

A graduate student who expects to have his course work apply toward a master's degree should clearly indicate his master's degree objective on the application for graduate standing which he sends to the Admissions Office. As soon as his admission to the college has been processed, the Graduate Office will inform him of the procedures for obtaining admission to the degree program with *classified status*. Since these procedures regularly involve an interview, the process is not normally completed until after registration for the first semester. Any degree aspirant who does not receive instructions in the mail within two weeks of receiving a statement of unclassified graduate standing, or any such student whose admission is delayed until registration time, is invited to come or write to the Graduate Office for this material prior to consulting an adviser.

Classified graduate standing, which normally occurs at the outset of graduate study, should not be confused with advancement to candidacy, which normally occurs about halfway through the program.

ADVANCEMENT TO CANDIDACY

Classified graduate standing gives a student permission to work toward qualifying for candidacy. Advancement to candidacy gives a student permission to proceed toward qualifying for the degree. Requirements for advancement to candidacy include the following:

1. Classified graduate standing.
2. Completion of any specified undergraduate prerequisites to the master's degree major.
3. Completion at Fresno State College of at least 9 units of B average work appropriate for a master's degree program.
4. A grade average of B on all upper division and graduate course work completed after the date of embarking on the first course of the program.
5. Satisfactory completion of a scholastic aptitude test for graduates and such departmental and scholastic achievement tests as may be required.
6. Approval by the appropriate departmental graduate committee. Ordinarily upon receipt of examination scores the Graduate Office sends to the department committee a transcript and a report of grades and examination scores and requests departmental recommendation. In making this recommendation, the department takes into account professional and personal standards as well as scholastic achievement as revealed by grades and performance on examinations. The student is responsible for ensuring that the adviser has sufficient information other than grades and scores on which to make this recommendation. A student who does not qualify at this time has the responsibility for initiating the procedure in the Graduate Office when he has removed deficiencies.
7. Formulation of a departmentally approved contract program of graduate study for the master's degree.
8. As soon as possible after the completion of steps 1 through 7, submission to the Graduate Office of a properly signed petition for advancement to candidacy, including the proposed contract program.

PROGRAM REQUIREMENTS

The program requirements for the master of arts and master of science degrees assume substantial undergraduate preparation in the field. See division and department statements in this catalog or in the *Graduate Bulletin* for particulars. A student lacking this preparation will find it necessary to exceed the minimum requirements indicated below.

The contract program for the master's degree is a coherent pattern of (1) courses specified for an approved field of concentration and (2) additional courses selected to meet the student's particular needs. It consists of at least 30 units com-

pleted after the bachelor's degree and within seven years just preceding the granting of the master's degree. Only graduate courses (200 series) and such upper division courses (100 series) as are recommended by the divisions or departments and approved by the Committee on Graduate Study are acceptable on the unit requirement. In individual cases and subject to departmental approval, 300 series courses may be applied under special circumstances toward unit requirements of master's degree programs for which the course work is appropriate. Other courses are counted in calculating the student's study load, but cannot be counted toward the unit requirement for the master's degree. The total contract program must include the following:

1. At least 24 units of Fresno State College residence credit, 6 units of which must have been taken on the Fresno campus prior to enrolling for the thesis or project or for a seminar alternative to the thesis.
2. Of the 30 units for the degree, not more than 6 units may be in student teaching, extension courses, or transfer credit, or any combination of these. Student teaching credit is not ordinarily used on master's degree programs. In unusual circumstances, if student teaching is demonstrably appropriate to a program, up to 3 units of such work may be approved by the Committee on Graduate Study.
3. Work earned at Fresno State College during the session in which the bachelor's degree is granted may be applied toward the 30 units for the master's degree, provided the work so applied is formally identified at the time of filing the application for the bachelor's degree, and provided neither the courses nor the units are used in any way to meet bachelor's degree requirements.
4. At least 12 units in courses designed primarily for master's degrees (numbered in the 200 series). Some majors require more than 12 units of 200 series course work.
5. At least 10 units completed after advancement to candidacy. Work taken during the semester of advancement may apply on this requirement.
6. Appropriate course work from a field other than the major may be required at the discretion of the major department.
7. Appropriate provision for a thesis, a project, or, when permitted, a seminar alternative.

It is the student's responsibility to complete the specific courses listed on his contract program. Once a contract program has been approved by the Committee on Graduate Study, it may be changed only on the written request of the student and his department or division adviser and with the approval of the Graduate Office. Forms for requesting such program adjustment are available in the Graduate Office.

THESIS REQUIREMENT

Most master's degree curricula at Fresno State College require the preparation of a thesis or a project. For the master of arts degree in education and for the master of science degrees in business, mathematics, and physics, specially designed or selected seminars may be substituted for the thesis requirements (see Bus 291, Ed 295, 296, 297, 298).

The Committee on Graduate Study has prepared a statement describing the general college policy on research in the master's degree program. Theses, projects, and other types of research are defined. In general, regulations for the project are identical to those of the thesis.

1. To be eligible to enroll for thesis or project (299), a student must have
 - (a) been advanced to candidacy for the master's degree.
 - (b) maintained a B (3.0) average on his contract program.
 - (c) completed at least six units on the Fresno campus of Fresno State College.

- (d) completed any course in research techniques required by his major department.
 - (e) secured a thesis committee, consisting of a chairman and at least two other members.
 - (f) secured approval of his thesis plan from the division or department graduate committee before his committee submits thesis committee assignment (Form 13) to the Graduate Office.
2. A student may enroll in 299, thesis or project, at any time after he has met the requirements listed in (a) through (f) above. However, if a student fails to enroll within one semester (excluding summer sessions) after his official acceptance by a thesis committee, the committee is dissolved and its members are relieved of further obligation to the student.
 3. A student whose thesis is planned to extend over more than the semester in which he first enrolls in 299 may receive an In Progress (IP) grade, which may remain in effect for one full year after being recorded. If at the end of this time the thesis has not been completed, the chairman of the thesis committee through the Graduate Office will request the changing of the In Progress to a clear Withdrawal. With the recording of a W, the thesis committee and the library are relieved of any further thesis obligation to the student. After the recording of a W for 299, the student must re-enroll and apply for a new committee in each subsequent semester or summer session during which he uses the library or draws on faculty time in connection with his thesis. The new committee will not necessarily be composed of the same personnel and is not necessarily bound by the decisions of the former committee.
 4. The student and his thesis chairman should set a deadline for the completion of the semifinal draft, no later than four weeks before the last day of scheduled final examinations. This date should be early enough so that the chairman and the other members of the committee can clear the draft before the student must meet the deadline for clearance by the technical adviser.
 5. Before a thesis is officially accepted by the Committee on Graduate Study, it must meet the approval of the committee's technical adviser, who passes on matters of format, documentation, and quality of writing. The semifinal draft, initialed by the thesis chairman as acceptable with technical corrections, should be submitted to the technical adviser in the College Library at least three weeks before the last day of scheduled final examinations. This deadline has been set as late as possible in the semester to accommodate the student; late manuscripts will not be accepted until the following semester or summer session. Students are urged to follow meticulously the specifications for the master's thesis, copies of which are available from the Graduate Office.
 6. Four copies (three to be retained by the college) signed by the thesis chairman and ready for binding, together with the divisional clearance (Form 49-G17) must be submitted to the Graduate Office no later than one week before the last day of scheduled final examinations. A fee for binding is due and payable at the Fresno State College Association Office on the date of final submission. A student who wishes to retain more than one bound copy may arrange for the extra binding by paying an additional fee. (See *Fees and Expenses*.)

APPLICATION FOR DEGREE

An application for the master's degree must be filed in the Evaluations Office in the first two weeks of a semester or first week of a summer session. (For dates see *College Calendar or Schedule of Courses*; see also *Fees and Expenses*.)

Failure to complete requirements for the degree during the semester of the application necessitates the filing of a new application for the semester of actual completion.

FOREIGN LANGUAGE REQUIREMENT

Fresno State College does not have a general foreign language requirement for the master's degree. Some specific master's degree majors do, however, require competence in an appropriate foreign language. (See *Degrees and Credentials—Foreign Language Requirement* and department requirements.) Students who contemplate graduate study beyond the master's degree are urged also to investigate foreign language requirements in the institution in which they anticipate advanced graduate study.

MAXIMUM STUDY LOAD

Students are warned that graduate courses require substantially more concentrated study than do undergraduate courses. During the fall or spring semester 16 units is the maximum load for master's degree students in full-time attendance when one or more courses in the 200 series are included. Students employed full time may take a maximum of 6 units. The maximum for summer session is one unit per week of attendance.

GRADE REQUIREMENTS

All graduate students will be held to the scholarship standards listed under *Regulations and Procedures*.

No course with a grade below C may apply on a master's degree contract program.

To be eligible for advancement to candidacy, a student must have earned a B average on all upper division and graduate course work completed after the date of embarking on the first course to be included in the master's degree program.

To be eligible for enrollment in the thesis or project or in a seminar alternative to the thesis, a student must have been advanced to candidacy and must have maintained a B average on his contract program.

To be eligible for the granting of the degree, a student must have maintained a B average on his complete contract program. Any grade earned in a course on the contract program continues to figure in the grade-point average, even if that course is for any reason later dropped from the program.

To be eligible to receive the master's degree *with distinction* a student must have earned a 3.9 grade-point average on the contract program for the master's degree or on all upper division and graduate work subsequent to the bachelor's degree.

EXAMINATIONS

In addition to the qualifying examinations required for advancement to candidacy for the master's degree all departments reserve the right to require written or oral comprehensive examinations when circumstances demand. A few departments require final comprehensive examinations of all their students. Candidates are urged to consult the chairman of the division graduate committee or the Graduate Office about examination requirements.

EXTENSION OF TIME

A period of seven years is allowed for the completion of all requirements for the degree. A student whose program has been interrupted by military service should consult his adviser about provisions for military extensions. Otherwise, time may be extended only by the substitution of recent courses for outdated ones or by the passing of comprehensive examinations in the relevant courses or subject field.

PUBLIC SCHOOL CREDENTIALS

Fresno State College is authorized by the State Department of Education to recommend candidates for the credentials for public school service listed below. All students must meet certain minimum requirements prior to admission to a credential program. These requirements are listed in the *Education Division*. Holders of bachelor's degrees must complete a minimum of 15 semester units in residence at Fresno State College to qualify for a college recommended teaching credential. For the administration, supervision, and general pupil personnel services credentials, candidates must complete at least one-half of the postgraduate work in residence.

Students who have completed two years of college and who on July 1, 1963, are enrolled in the teacher education curriculum may qualify for the public school credentials listed below on the basis of the programs described in the *General Catalog* provided they complete the requirements within established time limits. *Students who have not completed two years of college and who are not enrolled in the teacher education curriculum on July 1, 1963, must qualify under the revised credential structure.* See *Education Division* and departments concerned for requirements.

Kindergarten-Primary Credential
 General Elementary Credential
 Junior High School Credential
 Majors and Minors (see General
 Secondary Credential below)

Special Secondary Credentials in:
 Art
 Business education
 Homemaking education
 Industrial arts
 Music
 Physical education (men)
 Physical education (women)
 Public safety and accident prevention
 including driver education and
 driver training
 Speech arts

Special Secondary Limited Credentials
 in:
 Industrial arts education
 Music

General Secondary Credential
 Majors and Minors in: (for Junior
 High and General Secondary)
 Agriculture (general)
 Art
 Business education
 English

Foreign language
 Health education
 Homemaking education
 Industrial arts
 Language arts
 Life sciences-general science
 Mathematics
 Music
 Physical education (men)
 Physical education (women)
 Physical science-general science
 Social science
 Speech

Elementary School Administration Credential

Secondary School Administration Credential

The Supervision Credential
 General Pupil Personnel Services Credential

Areas of specialization: pupil counseling; child welfare and attendance work; school psychometry
 Credential to Teach Exceptional Children

Areas of specialization: speech correction and lip reading in remedial classes; mentally retarded

(Junior college and health and development credential through direct application to the State; see department concerned.)

PREPROFESSIONAL PREPARATION

Preprofessional programs are available for students who plan to transfer to another institution for the completion of professional curricula in such fields as dentistry, forestry, law, librarianship, medicine, optometry, occupational therapy, pharmacy, physical therapy, theology, and veterinary medicine. Certain of these programs are described below. Students should consult an adviser and the catalog of the school of their choice.

PREDENTAL

The minimum training for dentistry is a six-year course—the first two years (predental training) in a liberal arts college and the remaining four years (dental training) at a school of dentistry.

The minimum predental program required by accredited dental schools is one year each of English, inorganic chemistry, physics, and zoology; one semester of organic chemistry; and additional courses (usually elective in general education, but specified by some dental schools) to make a total of 60 units. Each science course must include laboratory.

The trend among dental schools is to require more than two years of predental training including a broad liberal arts background. Additional science courses recommended or required include a year course of organic chemistry instead of one semester, quantitative chemical analysis, elementary physical chemistry, other zoology courses, and in some cases a foreign language. Several schools require a bachelor's degree for entrance. The applicant is usually required to take the American Dental Association aptitude test and present evidence of physical fitness and good moral character. Many dental schools also require a personal interview and some administer additional tests. For other information, see the predental adviser and dental school catalogs.

PRELEGAL

Many law schools require a bachelor's degree for admission. It is, therefore, advisable for students preparing for law to arrange a four-year program leading to a bachelor's degree. Law schools recommend a prelegal program which gives a broad cultural background; no specific major is required. The prelegal student should choose the major most interesting to him. The majors offered at this college, many of which are suitable for a prelegal program, are listed under *Degree Majors and Minors*. Law schools suggest courses, but not necessarily a major, in the following: written and oral English, American and English constitutional history, world history, accounting, elementary logic, mathematics, economics, political science, philosophy, science, and foreign language. For further information consult an adviser and law school catalogs.

PRELIBRARIANSHIP

Accredited graduate schools of librarianship require a bachelor's degree for admission. A major in any subject is acceptable. A reading knowledge of two modern foreign languages is a requirement for admission to most graduate schools of librarianship; this requirement is normally satisfied by the successful completion of one college year in each of the languages. Students considering librarianship as a career should consult a member of the Library staff.

PREMEDICAL

Medical colleges vary widely in their specific requirements for admission. All medical schools require completion of three years of college (a minimum of 90 semester units) with a C average or better. A program which includes 38 semester

units of natural science distributed in biology (12 units), chemistry (18), and physics (8), one year of English, including composition, and a reading knowledge of a modern foreign language will qualify a student for most medical schools. The applicant is usually required to take the medical aptitude test and to present evidence of physical fitness and moral character.

It is occasionally possible for a good student to complete all general requirements for a bachelor's degree in three years of premedical study and be awarded a bachelor's degree by Fresno State College upon the completion of the first year of medicine in an accredited medical school. Due to competition for admission to medical schools the majority of students find it necessary to complete the four-year program for the bachelor's degree and to achieve a grade average of better than C.

Each student embarking on a premedical course at Fresno State College will be assigned to a member of the premedical advisory committee who will assist him in planning his course and will maintain close contact with him during the first year. During this period, screening tests are available to aid in ascertaining fields in which the student possesses the greatest interest, achievement, and aptitude. By the beginning of the sophomore year the student will be expected to select his major, and will be assigned to an adviser qualified to guide him in his field of concentration.

Although the premedical requirements include a minimum of 38 hours of natural science, it does not follow that the premedical student must load his program with many additional hours in the sciences. In fact, a student who has particular aptitude and interest in the social sciences or humanities may well elect his major in one of these fields, and still be able to meet the premedical requirements quite satisfactorily. The medical schools continue to report that they do not expect entering students to be finished technicians, but that they are more concerned with a good record in the specific science requirements, evidence of a well-balanced liberal education, and the ability to adapt to the rigid disciplines of medicine.

The college, through its premedical advisory committee, will make every effort to guide the student through the premedical course successfully, and will endeavor to assist those who have demonstrated suitability for the study of medicine to gain admission to the medical school of their choice. The committee, when requested, will submit its appraisal of each student to the medical schools to which the student applies for admission.

PRETHEOLOGICAL

Students planning to attend a theological seminary or school may satisfy the undergraduate requirements at Fresno State College. Seminaries or schools which are members of The American Association of Theological Schools for graduate study require the following semester units in preseminary studies: 12 in English; 12 in foreign language; six each in philosophy and history; four each in natural science, social science, and Bible or religion; two in psychology. The Bible or religion requirement may be satisfied at Fresno State College by courses such as Engl 182, Phil 140, or Psych 141. Additional courses are advised for students interested in religious education. The pretheological student is free to choose whatever major he desires. Pretheology faculty advisers will assist in course programming. For further information consult theological school catalogs.

PREVETERINARY

Students planning to attend a school of veterinary medicine may satisfy a part of their requirements at Fresno State College. The Agriculture Division is equipped to provide valuable experience with large animals through the student project program. Students desiring further information regarding the preveterinary curriculum should consult the Dean of the Farm School.

COURSES OF INSTRUCTION DIVISIONS AND DEPARTMENTS

For administrative purposes the 30 subject matter departments of the college are organized under 12 instructional divisions.

The following section is arranged alphabetically by divisions. Departments are listed within divisions together with requirements in major and credential programs, followed by course descriptions. Faculty members are listed as of the 1961-62 academic year.

	<i>Abbrev.</i>		<i>Abbrev.</i>
Agriculture Division		Life Science Division	
Agriculture	Ag	Biology Department	
Agriculture Mechanics		Bacteriology	Bact
Department	AgM	Biology	Biol
Animal Science Department		Botany	Bot
Animal Husbandry	AH	Entomology	Ent
Dairy Industry	DI	Physiology	Physio
Poultry Husbandry	PH	Zoology	Zool
Plant Science Department		Nursing Department	Nurs
Crop Production	CP	Psychology Department	Psych
Enology	E	Physical Education-Recreation	
Horticulture	H	Division	
Ornamental Horticulture	OH	Physical Education—	
Viticulture	V	Men's Department	PE
Air Science Division	Air Sc	Recreation	Rec
Applied Arts Division		Women's Department	PE
Home Economics Department	HEc	Physical Science Division	Phy Sc
Industrial Arts Department	IA	Chemistry Department	Chem
Business Division		Engineering Department	Engr
Accounting	Acct	Geography Department	Geog
Business	Bus	Geology Department	Geol
Business Administration	Bus Ad	Mathematics Department	Math
Business Education	Bus Ed	Physics Department	Physics
Marketing	Mkt	Social Science Division	
Secretarial Administration	Sec Ad	Anthropology	Anthro
Education Division	Ed	Economics	Econ
Health Education Department	HEd	Political Science	Pol Sc
Fine Arts Division		Social Science	Soc Sc
Art Department	Art	Sociology	Soc
Music Department	Mus	Criminology Department	Crim
Honors Program		History Department	Hist
Humanities Division		Speech Arts Division	
English Department	Engl	Dramatic Art	Drama
Linguistics	Ling	Radio-Television	R-TV
Foreign Language		Speech	Spch
Department	F Lang	Speech Correction	Sp Corr
French	Fr		
German	Ger		
Italian	Ital		
Latin	Lat		
Portuguese	Port		
Russian	Russ		
Spanish	Span		
Journalism Department	Jour		
Philosophy Department	Phil		

COURSE NUMBERING SYSTEM

DEFINITIONS AND ELIGIBILITY

Lower Division Courses

Numbers 1-99 designate *lower division (ld) courses* designed for first- and second-year students, but open to others.

Upper Division Courses

Numbers 100-199 designate *upper division (ud) courses* designated for third-, fourth-, and fifth-year students. Such courses will count as graduate work when taken by students who have graduate status. Freshmen and first-semester sophomores are not normally eligible for upper division courses; but second-semester sophomores who have completed a minimum of 45 units are permitted to enroll in the upper division courses for which they have adequate preparation. Course number 190 designates independent study. See *Regulations and Procedures* and specific course prerequisites.

Graduate Courses

Numbers 200-299 designate *graduate courses*, open to bachelor's degree holders with adequate preparation and ability. Graduate courses are generally conducted as seminars, requiring original research; some are lectures based upon instructors' research; all involve originality, initiative, and independence of judgment. A second-semester senior with superior preparation and ability may be admitted by the instructor. Course number 290 designates *independent study* at the graduate level; 299 a master's degree thesis or project. See *Regulations and Procedures; Degrees and Credentials*; and specific course prerequisites.

When 200 series courses are taught by extension and carry the designation E after the number, they are counted as upper division courses (100 series) in master's degree programs. For limitation of credit in these courses, see *Extension Classes*.

Numbers 300-399 designate courses whose purpose is to meet professional needs which cannot be served by established undergraduate or graduate offerings. These courses assume completion of the bachelor's degree and professional competence and focus on problems the enrolled students are encountering in their professional service. Although 300 series courses are designed primarily for purposes other than use on degrees and credentials, in individual cases and subject to departmental approval, 300 series courses may be applied toward degree or credential programs for which the course work is appropriate.

OTHER DESIGNATIONS

For *symbols* appearing after course numbers, A-B indicates a two-semester sequence normally to be taken in order; A and B courses which may be taken independently are normally listed as separate items. The following symbols usually indicate: L, a laboratory for another course; F, a field course; E, an extension course; S, a course listed only in the *Summer Session Bulletin*.

Figures in parentheses following course titles indicate the number of semester units a course carries, and the maximum total credit allowed is indicated by *max total* following the number of units. In general, each unit represents one hour per week in class and two hours in preparation. Courses involving laboratory, activity, or other application, normally require additional hours of class attendance. Lecture, laboratory hours, etc., following course descriptions indicate deviation from the usual one class hour per week for each unit of credit. Under special circumstances, courses may be offered with reduced unit value with approval of the Dean of the College.

Course *prerequisites* are listed at the beginning of the course description and under *Definitions and Eligibility* above. Unless otherwise stated, the A part is prerequisite to the B part of year courses. Student should check prerequisites before enrolling.

Course offerings for each semester are listed in the *Schedule of Courses*.

AGRICULTURE DIVISION

Division Head and
 Dean of Farm School.....Lloyd Dowler
 Farm Manager.....George F. Ilg

<i>Department</i>	<i>Chairman</i>
Agricultural Mechanics.....	Clarence D. Jensen
Animal Science.....	Edwin J. Rousek
Plant Science.....	Wayne E. Biehler

The Agriculture Division provides degree and nondegree curricula preparatory to professions and occupations in agriculture and related fields. For information concerning preveterinary medicine, see *Preprofessional Preparation*. The college farm is organized and operated to provide experience and practical training. Eleven hundred and ninety acres serve as a laboratory and production unit where students carry on supervised farming programs in animal and plant science. In addition, livestock, vineyards, orchards, and crop land are maintained for laboratory use.

The division offers programs leading to the bachelor of science degree in agriculture with thirteen specialized majors and in agricultural engineering; three-year technical curricula for students not desiring degree or transfer credit; an agriculture minor; short courses for those not enrolled in the college program but engaged in farming or allied occupations.

Students may qualify for a general secondary credential with a teaching major or minor in general agriculture. Students desiring to qualify for the special secondary credential in agricultural education may complete the first four years of their program at Fresno State College. For revised credential structure, see *Education Division*.

Teachers of general agriculture or vocational agriculture may obtain nine units of graduate credit in agriculture for use on the master of arts degree in education.

Agriculture	56
Agricultural Engineering	
General Agriculture	
Agricultural Mechanics	60
Agribusiness	
Agricultural Mechanics	
Animal Science	63
Agribusiness	
Animal Husbandry	
Dairy Husbandry	
Dairy Industry	
Poultry Husbandry	
Plant Science	70
Agribusiness	
Agricultural Inspection	
Crop Production	
Enology	
Horticulture	
Ornamental Horticulture	
Viticulture	

AGRICULTURE DIVISION

BACHELOR OF SCIENCE DEGREE IN AGRICULTURE

The bachelor of science degree in agriculture is granted upon completion of a four-year curriculum consisting of 128 semester units selected from one of the major programs. The general requirements for the bachelor of science degree must be completed (see *Degrees and Credentials*). The required agricultural courses for majors along with other requirements, are listed in departments as follows: *Agricultural Mechanics Department*—agribusiness, agricultural mechanics; *Animal Science Department*—agribusiness, animal husbandry, dairy husbandry, dairy industry, poultry husbandry; *Plant Science Department*—agribusiness, agricultural inspection, crop production, enology, horticulture, ornamental horticulture, viticulture. Requirements for the general agriculture major and the credential major and minor are listed below.

BACHELOR OF SCIENCE DEGREE IN AGRICULTURAL ENGINEERING

The bachelor of science degree in agricultural engineering requires 132 units (see *Engineering Department*) and the completion of the general requirements for the bachelor of science degree (see *Degrees and Credentials*). The required agriculture courses follow a selected pattern approved by the head of the Agriculture Division.

BACHELOR OF SCIENCE DEGREE IN AGRIBUSINESS

Students qualify for the three-year technical agriculture certificate upon completion of a four-year curriculum consisting of 128 semester units selected from one of the agribusiness major options in the *Agricultural Mechanics*, *Animal Science*, or *Plant Science Departments*, or the *Business Division*. The general education and general requirements for the bachelor of science degree must be completed (see *Degrees and Credentials*).

The agribusiness curriculum prepares students in agriculture and business for positions in operations involved in the manufacture of supplies needed on the farm, production operations on the farm, and the storage, distribution, and merchandizing of agricultural commodities.

TECHNICAL AGRICULTURE

Any student who has graduated from high school may be admitted to the technical agriculture program upon special application and approval of the head of the Agriculture Division. These programs stress technical and practical training appropriate to the San Joaquin Valley and include maximum laboratory use of the college farm. Students may take production programs in fattening of livestock, growing of crops, and management of breeding herds, flocks, vineyards, and orchards and are employed so far as possible to assist with the operation of the college farm.

Students qualify for the three-year Technical Agriculture Certificate upon completion of the required general education and related courses and one of the technical majors in the *Agricultural Mechanics*, *Animal Science*, or *Plant Science Departments*, with additional selected production courses to make a total of 84 units. Approved nonagriculture courses open to limited technical students: Math 27, 28; Bus Ad 27; Sec Ad 1, 5; Engl A, 1A, 6; Spch 20, 24; Sp Corr 1X; Hist 1, 10; Pol Sc 11; Biol 1A, 1B; H Ed 90, 91; PE 10-50 (activities); Mus 1 (activities); Psych 7; other specified courses required in the program.

Technical agriculture students enroll in regular agriculture courses with special arrangements to meet their needs. Students admitted to the technical agriculture program who wish to transfer to the degree program may petition the Admissions Committee for such transfer after completing two semesters at Fresno State College with a C average or better.

MINOR

A minor in agriculture is available to degree students in other departments and may be selected from one of the 12 specialized agriculture fields. The minor consists of 20 units of which six are upper division. See also requirements for the credential minor.

GENERAL AGRICULTURE MAJOR

The general agriculture major prepares students for diversified farming where a knowledge of farm crops, livestock, and farm machinery is necessary. The curriculum is not intended to replace majors in the Division of Agriculture in which students specialize in a single field.

The requirements are flexible and especially well adapted to meet the needs of students interested in teaching vocational agriculture. Many graduates have found positions with county, state, and federal agencies, or in business and services related to agriculture.

Major Requirements

General agriculture majors must complete a minimum of 36 units (12 units upper division) including 15 units in animal science (AH, DH and/or PH), 15 units in plant science (CP, H, OH and/or V), and six units in agricultural mechanics. The selection of courses in each of the respective departments is worked out with the student's major adviser.

Additional Requirements

In addition, general agriculture majors must complete the following courses: Ag 1, 112, 130, 136; Biol 1A or B, 120, Bot 1 or Zool 1; Chem 2A-B, 8; Econ 1A; Math B or equivalent. A total of 128 semester units including general education is required for the bachelor of science degree.

SUGGESTED SEQUENCE OF COURSES FOR BACHELOR OF SCIENCE DEGREE

In addition to the specific courses listed below, general education requirements and electives should be included to bring total to 15-17 units per semester. A total of 128 units is required for the bachelor of science degree. (See *Degrees and Credentials*.)

General Agriculture

1st Year: Ag 1, Chem 2A-B, Biol 1B, AgM electives, plant and animal science electives
 2nd Year: Bot 1, Econ 1A, Chem 8, AgM elective, animal and plant science electives
 3rd Year: Ag 130, 136, Biol 120, Math B, animal and plant science electives (u.d.)
 4th year: Ag 112, animal and plant science electives (u.d.)

GENERAL SECONDARY CREDENTIAL

(For revised credential structure see *Education Division*.)

The general secondary credential authorizes the holder to teach in the secondary schools and in grades seven and eight in elementary schools, with the exception of classes organized under the provisions of the Federal and State Vocational Educational Acts where special credentials in specific vocational subjects are required.

For general and professional requirements, see *Education Division*. Candidates for the general secondary credential with a teaching major in general agriculture must submit an application for admission to the credential program; submit verification of three years of farm experience or equivalent; and complete a bachelor's degree in agriculture including 44 semester units in agriculture subjects included in the following credential major, of which 12 units must be upper division. In meeting the major requirements for the bachelor of science degree, credential candidates must complete a minimum of 36 units, including 15 units in animal science (AH, DH, and/or PH), 15 units in plant science (CP, H, OH and/or V), and 6 units in agricultural mechanics.

Credential Major in General Agriculture	<i>Units</i>
Agricultural Economics: Ag 31, 112.....	6
Agricultural Mechanics: AgM 15, 25, electives (4 un).....	8
Animal Science: AH 1, 71, 172, PH 1, DH 11A or 11B.....	15
Plant Science: CP 12, OH 3, 22, 33, 123.....	15
	44

Additional Requirements: Ag 1, Biol 1B, Bot 1, Chem 2A-B, and Econ 1A. For further information see the department credential adviser.

Credential Minor in General Agriculture	<i>Units</i>
Agricultural Mechanics: AgM 15, 25.....	4
Animal Science: AH 1, 71, DH 11A, PH 1.....	12
Plant Science: CP 12, OH 3, 22, 33.....	12
	28

Courses

Note: Active immunization against tetanus (available through the Student Health Service) is a prerequisite for registration in any laboratory course in agriculture and for any student employment on the College Farm.

AGRICULTURE

Ag 1. Agricultural Orientation (1)

Survey of agriculture and its related agencies; job opportunities.

Ag 13. Pest Control (3)

Survey of the pest control field; insects, plant diseases, rodents, and weeds of importance in agriculture and around the home; methods, materials, and equipment used for their control. (2 lecture, 3 lab hours)

Ag 20. General Microbiology (4) (See Bact 20)

Ag 31. Agricultural Economics (3)

Prerequisite: Econ 1A. Farm credit, taxation, marketing and commodity problems; government agencies and farm price structures.

Ag 40. Projects (1; max total 6)

Ag 105. Plant Quarantine Laws (3)

For students interested in county, state, or federal inspection work. Federal, California state, and county laws relating to plant quarantine to prevent the introduction and spread of agricultural pests as outlined in the *California Agricultural Code*.

Ag 106. Economic Entomology (3) (Same as Ent 106)

Prerequisite: Biol 1A or B. General and economic entomology; taxonomy of the principal orders of insects; life histories, habits, recognition, and control of some of the principal agriculture insect pests of the San Joaquin Valley. (2 lecture, 3 lab hours, field trips)

Ag 112. Farm Management (3)

Prerequisite: junior standing. Survey of farm management; basic economic principles relating to farm management; organizing the individual farm unit; balancing crop and livestock enterprises; farm business administration. (2 lecture, 3 lab hours)

Ag 113. Apiculture (2)

Fundamentals of beekeeping; manipulation of the hive; diseases and enemies of bees; nectar sources and pollination problems; production and marketing of honey and beeswax; laws and regulations pertaining to beekeeping. (1 lecture, 3 lab hours)

Ag 114. California Fruit and Vegetable Standards (3)

For students interested in government fruit inspection. California laws and enforcement of regulations for packing or shipping fruits, nuts and vegetables. (2 lecture, 3 lab hours)

Ag 130. Plant Pathology (4) (Same as Bact 130)

Prerequisite: Bot 1. Nature, cause, and control of plant disease in economic agriculture plants. (2 lecture, 6 lab hours)

Ag 136. Soils (3)

Physical and chemical properties of soils influenced by climate, parent material, topography, organisms, and time; use, interpretation and evaluation of soil practices and research, including soil maps, field experiments, fertilizers, physical and chemical analysis. (2 lecture, 3 lab hours; one Saturday field trip)

Ag 146. Irrigation (3)

Methods of irrigation adapted to the San Joaquin Valley; water requirements of various crops and methods of application. (2 lecture, 3 lab hours; 1 Saturday field trip)

Ag 151. Farm Accounting (3)

Prerequisite: Econ 1A, Bus Ad 27, or permission of instructor. Farm accounting systems, farm records, budgets, income tax returns. (2 lectures, 3 lab hours)

Ag 159. Spray Materials (2)

Prerequisite: Chem 2A-B. Development of agricultural chemical industry; chemical properties of compounds used as insecticides, fungicides, rodenticides and herbicides; formulations, regulations and typical uses of these materials. (1 lecture, 3 lab hours)

Ag 180. Special Problems (1-4; max total 4)**Ag 182. Soil Management (3)**

Prerequisite: Ag 136 or equivalent, Chem 2A-B. Factors affecting soil fertility, management of soils, attaining continuous maximum productivity. Physical, chemical and field tests on soil fertility, crop and livestock soil management. (2 lecture, 3 lab hours; one week-end field trip)

Ag 184. Advanced Irrigation (3)

Prerequisite: Ag 146 or equivalent. Evaluation of the equipment design, operation, soil and crop response of methods of irrigation, sprinkler methods; pipe line and other methods featuring water control, soil and water conservation. (2 lecture, 3 lab hours; one week-end field trip)

Ag 186. Methods of Teaching General Agriculture (3)

Prerequisite: Ed 185; Ed 131 or permission of instructor. Philosophy and teaching techniques in general agriculture; organization of teaching materials; professional standards for teachers.

190. Independent Study (1-3; max see reference)

See *Regulations and Procedures—Independent Study*.

GRADUATE COURSE

(See *Course Numbering System—Definitions and Eligibility*)

Ag 280. Seminar in Agriculture (3; max see below)

Maximum total credit 9 units in any given area or any combination of the three areas. Prerequisite: bachelor's degree in agriculture or permission of instructor. Advanced problems in agriculture; research and experimentation in a selected area: animal science, plant science, or agricultural mechanics.

AGRICULTURAL MECHANICS DEPARTMENT

(In the Agriculture Division)

Principal Vocational Instructor: C. Jensen (Chairman)

Intermediate Vocational Instructor: DeTar, Keck

The Agricultural Mechanics Department offers majors in agribusiness and agricultural mechanics for students who wish to qualify for positions in such fields as farm equipment sales and service, farm structures, rural electrification, teaching vocational agriculture, and farming. Students are trained in the selection, operation, construction, maintenance, and repair of equipment and structures used in modern agriculture.

The *agribusiness major* with an option in agricultural mechanics prepares students for positions in areas such as farm machinery and equipment sales; appraising for insurance companies and banks; management, credit, accounting and other office work; and general farming.

The Agricultural Mechanics Building and the Farm Machinery Center located adjacent to it provide excellent laboratory facilities. The production of hay, cotton, corn, grain crops, grapes, and fruit provides excellent opportunities for a study of farm machinery equipment under varied conditions. The entire College Farm is used as a working laboratory.

Students majoring in *agricultural engineering* enroll under the *Engineering Department*. A minimum of 23 units in agricultural mechanics and agriculture is included in the program.

MAJOR REQUIREMENTS

Agribusiness (Agricultural Mechanics Option) Units

BS Degree Major: AgM 15, 17, 18A, 25, 81, 91, 111, 115A-B, 151A-B, 158, 159; Ag 136, 146, 182 or 184; Acct 1A-B; Mkt 100; Bus Ad 102, 110, 118A-B, 133, 151; business elective (3 u.d.)..... 67

Agricultural Mechanics

BS Degree Major: AgM 15, 17, 18A-B, 25, 81, 91, 111, 115A-B, 121, 151A-B, 158, 159; Ag 136, 146..... 38

Technical Certificate: AgM 15, 17, 18A-B, 25, 81, 111, 115A-B, 121; Ag 146; AgM elective (2 un)..... 25

Additional Requirements—BS Degree

In addition to major requirements, degree students (except agribusiness) must complete the following courses: Ag 1, 151; Physics 2A-B; animal science and/or plant science electives (6 un); IA 10A-B; Econ 1A; Biol 1A or B; Math B, C. Agribusiness majors take Ag 1, 31, 112, Biol 1A or B, Physics 2A-B, Econ 1A-B, Math B, C. A total of 128 semester units including general education is required for the bachelor of science degree.

Additional Requirements—Technical Certificate

Technical students must complete in addition to the major requirements, the following courses: Ag 1, 31, 40, 151; Bus Ad 27; animal science and/or plant science electives (10 un); Hist 10, Pol Sc 11; Biol 1A or B; PE (4 semesters); H Ed 90 or 91; Engl 1A; Spch 20 or 24. A total of 84 semester units is required for the technical certificate.

SUGGESTED SEQUENCE OF COURSES FOR BACHELOR OF SCIENCE DEGREE

In addition to the specific courses listed below, general education requirements and electives should be included to bring total to 15-17 units per semester. A total of 128 units must be completed for the bachelor of science degree. (See *Degrees and Credentials.*)

Agribusiness (Agricultural Mechanics Option)

1st Year: Ag 1, AgM 15, 17, 18A, Math B, C, Biol 1A or B

2nd Year: AgM 25, 81, 91, Acct 1A-B, Econ 1A-B, Physics 2A-B

3rd Year: Ag 31, 136, AgM 111, 115A-B, 159, Bus Ad 102, 110, 118A-B, 133

4th Year: Ag 112, 146, 182 or 184, AgM 151A-B, 158, Bus Ad 151, Mkt 100, business elective (3 u.d.)

Agricultural Mechanics

1st Year: Ag 1, AgM 15, 17, 18A, Biol 1A or B, Math B, C

2nd Year: AgM 25, 18B, 81, 91, Physics 2A-B, Econ 1A

3rd Year: Ag 136, 146, AgM 111, 115A-B, IA 10A-B, animal or plant science electives

4th Year: Ag 151, AgM 121, 151A-B, 158, 159

Courses

Note: Active immunization against tetanus (available through the Student Health Service) is a prerequisite for registration in any laboratory course in agriculture and for any student employment on the College Farm.

AGRICULTURAL MECHANICS**AgM 15. Agricultural Mechanics (2)**

Mechanical skills in field of agriculture; selection, care and use of common farm tools; projects of wood and metal in farm appliances. (1 lecture, 3 lab hours)

AgM 17. Farm Tractors (2)

Operation and maintenance of farm tractors; operation of farm tractor under field conditions; service, maintenance and minor repair of gas, diesel, and butane type engines of wheel and crawler type. (1 lecture, 3 lab hours; and total of 5 hours of field operation.)

AgM 18A-B. Agricultural Welding (2-2)

Prerequisite or concurrently: AgM 15. (A) Arc and oxyacetylene welding as a tool of construction and repair in the farm shop; brazing; building up worn parts; burning with hand torch. (B) Hard facing by arc and gas welding; AC and DC welding and application to farm construction and repair; welding projects and farm appliances. (1 lecture, 3 lab hours)

AgM 25. Agricultural Drafting (2)

May be taken concurrently with AgM 15. Use of drafting instruments, lettering, dimensioning, scale drawings and working drawings of projects in agricultural mechanics; elementary plan and perspective drawings of small buildings. (1 lecture, 3 lab hours)

AgM 81. Farm Structures and Equipment (2)

Prerequisite: AgM 15. Construction and repair of farm structures and equipment; farm carpentry and construction principles; engineering principles, codes; farmstead layouts and basic requirements of farm structures. (1 lecture, 3 lab hours)

AgM 91. Farm Surveying (2)

Prerequisite: sophomore standing or permission of instructor. Use of the steel tape, level, transit and compass; field problems in chaining distances, laying out building lines, profile leveling for irrigation ditches and drains, land leveling, and measuring land areas. (1 lecture, 3 lab hours)

AgM 111. Rural Electrification (2)

Prerequisite: junior standing. Fundamentals of alternating current, wiring practices, circuit layouts and problems, motor and branch circuit protection; safe use of electricity; wiring of farmstead.

AgM 111L. Rural Electrification Laboratory (1)

Laboratory experiments to accompany AgM 111. (3 lab hours)

AgM 115A-B. Farm Machinery (2-2)

Prerequisite: AgM 15. (A) Study and operation of tillage tools, interaction of the soil and tool; cotton, grain, and specialized harvesting machinery and equipment. (B) Orchard and field spraying equipment, field and row crop planters, cultivating tools, and haying machinery. (1 lecture, 3 lab hours)

AgM 121. Advanced Agricultural Welding (2)

Prerequisite: AgM 18A-B. Arc and gas welding processes in construction and repair of farm equipment; inert arc welding; radiograph and shape burning; aluminum and stainless steels; welding tests and design of welded structures. (1 lecture, 3 lab hours)

AgM 151A-B. Farm Power (2-2)

Prerequisite: AgM 15. (A) Principles of the internal combustion engine; adjusting, servicing, and minor repairs practical in farming operations. (B) Overhauling and repairing of gasoline and diesel farm tractors and engines; field servicing and repairing of auxiliary power plants on farm machinery. (1 lecture, 3 lab hours)

AgM 158. Unit Operations I (3) (See E 158)**AgM 159. Pumps and Motors (3)**

Prerequisite: AgM 15, Ag 146. Operation and study of centrifugal and deep well turbines; testing of pumps and motors under operating conditions to determine efficiency; installation, protective devices, maintenance and proper selection of single and three-phase motors used on the farm. (2 lecture, 3 lab hours)

AgM 190. Independent Study (1-3; max see reference)

See *Regulations and Procedures—Independent Study*.

ANIMAL SCIENCE DEPARTMENT

(In the Agriculture Division)

Principal Vocational Instructors: Bell (Acting Chairman), Hixson, Rousek, Selkirk, W. E. Smith (p-t)

Intermediate Vocational Instructors: J. Evans, Larsen, Verdugo

Junior Vocational Instructors: Pflueger, Sedor

The Animal Science Department offers majors in agribusiness, animal husbandry, dairy husbandry, dairy industry, and poultry husbandry.

The *agribusiness* major with an option in animal science prepares students for positions in areas such as agricultural sales, including veterinary supplies, feeds; appraising for insurance companies and banks; management, credit, accounting and other office work; and general farming.

The *animal husbandry* major prepares students for occupations in farming where beef cattle, sheep, swine and horse enterprises are an important part of the industry. Many graduates in this department are engaged in the livestock and farming business or in other agribusiness occupations. The department maintains purebred herds of Hereford, Shorthorn and Angus beef cattle; a purebred flock of Rambouillet, Corriedale, and Hampshire sheep; four breeds of swine—Berkshire, Hampshire, Yorkshire, and Duroc; and a complement of registered quarter horses.

The *dairy husbandry* major trains students for commercial dairy farming enterprises, dairy herd managers, milk testers, fieldmen for breeding associations, dairy sanitarians, and other agribusiness occupations. The department maintains three breeds of purebred dairy cattle—Holsteins, Guernseys, and Jerseys. A Grade A dairy barn, dry feed lots, bull barn, fitting and showing barn, and a cow and calf barn provide excellent facilities for practical training in dairy husbandry.

The *dairy industry* major prepares students for jobs in dairy plants in processing milk, ice cream, cheese, butter, and other dairy products. The college maintains its own processing plant for bottling milk and teaching the required courses in butter making, ice cream, cheese, and dairy plant management. Dairy products are processed for the college cafeteria and retail sales store by students as a part of the practical training program.

The *poultry husbandry* major prepares students for occupations in commercial egg production, fryer operators, breeder flock management, hatchery, processing, and sales positions with feed companies. Many graduates operate their own turkey and poultry farms. The poultry plant includes a central hatchery with cold storage facilities for egg handling, grading and candling; commercial egg production and pedigree pens; brooding facilities for conventional type houses along with sunshine brooders; intermediate growing batteries and wire floor cage houses. Over 3,000 birds are maintained in the college flock.

MAJOR REQUIREMENTS

Units

Agribusiness (Animal Science Option)

BS Degree Major: Ag 31, 112, 136, AH 71, 116, 172, Acct 1A-B, Mkt 100, Bus Ad 102, 110, 118A-B, 133, 151, business electives (3 u.d.); elect two of the following animal science fields—animal husbandry (AH 1, 22, 30, 40), dairy husbandry (DH 11A-B, 102, DI 53), dairy industry (DH 11B, DI 53, 156, 165), poultry husbandry (PH 1, 32, 162, 163)..... 72

Animal Husbandry

BS Degree Major: AH 1, 2, 22, 30, 40, 71, 106, 115, 116, 172, Ag 112, AH electives (4 un)..... 36
Technical Certificate: AH 1, 2, 22, 25, 30, 40, 71, 172, AH electives (5 un)..... 28

Dairy Husbandry

<i>BS Degree Major:</i> DH 11A-B, 55, 56, 102, 106, DI 53, 165, AH 71, 115, 116, 172,	
DH elective (2 un)	36
<i>Technical Certificate:</i> DH 11A-B, 55, 56, 102, 106, 108, DI 53, AH 71, 172.....	27

Dairy Industry

<i>BS Degree Major:</i> DI 53, 54, 103, 104, 108, 151, 154, 156, 165, 185, 189, DH 11A-B	36
<i>Technical Certificate:</i> DI 53, 54, 103, 104, 108, 189, DH 11A-B, 55.....	24

Poultry Husbandry

<i>BS Degree Major:</i> PH 1, 31, 32, 34, 161, 162, 163, 164, 181, 182, AH 115, AH or DH electives (6 un).....	37
<i>Technical Certificate:</i> PH 1, 31, 32 34, 161, 162, 163, 164, 182	25

Additional Requirements—BS Degree

In addition to major requirements, degree students (except agribusiness) must complete the following courses: Ag 1, 20, 136, 151, AgM electives (6 un), Zool 1, Chem 2A-B, 8, Biol 1A, 120, Econ 1A, Bus Ad 27 (or Math B or equivalent). Dairy industry majors may substitute Bus Ad 110 for Ag 136, and Acct 1A for Ag 151, and are not required to take Biol 120. Agribusiness majors take Ag 1, Biol 1B, Chem 2A-B, 8, Econ 1A-B. A total of 128 semester units including general education is required for the bachelor of science degree.

Additional Requirements—Technical Certificate

Technical students must complete, in addition to the major requirements, the following courses: Ag 1, 31, 40, 151, AgM electives (6 un), Bus Ad 27, animal science and/or plant science electives (10 un), Hist 10, Pol Sc 11, Biol 1A or B, Engl 1A, Spch 20 or 24, PE (4 semesters), H Ed 90 or 91. Dairy industry majors may substitute Acct 1A for Ag 151. A total of 84 semester units is required for the technical certificate.

SUGGESTED SEQUENCE OF COURSES FOR BACHELOR OF SCIENCE DEGREE

In addition to the specific courses listed below, general education requirements and electives should be included to bring total to 15-17 units per semester. A total of 128 units is required for the bachelor of science degree. (See *Degrees and Credentials*.)

Agribusiness (Animal Science Option)

1st Year: Ag 1, Biol 1B, Chem 2A-B, animal science electives
2nd Year: AH 71, 172, Acct 1A-B, Chem 8, Econ 1A-B, animal science electives
3rd Year: Ag 31, 136, AH 116, Bus Ad 102, 110, 118A-B, 133
4th Year: Ag 112, Bus Ad 151, Mkt 100, business and animal science electives

Animal Husbandry

1st Year: Ag 1, AH 1, 2, Biol 1A, Bus Ad 27, Chem 2A-B, AgM electives
2nd Year: AH 22, 71, 172, Chem 8, Econ 1A, Zool 1, AH and AgM electives
3rd Year: Ag 20, 136, AH 30, 115, 116, Biol 120
4th Year: Ag 112, 151, AH 40, 106, AH electives

Dairy Husbandry

1st Year: Ag 1, DH 11A-B, Bus Ad 27, Biol 1A, Chem 2A-B, AgM electives
2nd Year: AH 71, 172, DH 55, 56, DI 53, Chem 8, Econ 1A, Zool 1, AgM elective
3rd Year: Ag 20, 136, AH 115, 116, Biol 120
4th Year: Ag 151, DH 102, 106, DI 165, DH elective

Dairy Industry

1st Year: Ag 1, DH 11A-B, Biol 1A, Chem 2A-B, AgM electives
 2nd Year: DI 53, 54, Bus Ad 27, Chem 8, Econ 1A, Zool 1, AgM elective
 3rd Year: Ag 20, DI 103, 104, 108, Acct 1A, Bus Ad 110
 4th Year: DI 151, 154, 156, 165, 185, 189

Poultry Husbandry

1st Year: Ag 1, PH 1, 34, Biol 1A, Chem 2A-B, AgM electives
 2nd Year: PH 31, 32, Bus Ad 27, Chem 8, Econ 1A, Zool 1, AgM elective
 3rd Year: Ag 20, 136, AH 115, PH 161, 163, 164, Biol 120
 4th Year: Ag 151, PH 162, 181, 182, AH or DH electives

Courses

Note: Active immunization against tetanus (available through the Student Health Service) is a prerequisite for registration in any laboratory course in agriculture and for any student employment on the College Farm.

ANIMAL HUSBANDRY**AH 1. Introduction to Animal Husbandry (3)**

Types and breeds of farm animals in the United States and their adaptation under various conditions; preview of production methods common to livestock enterprises. (2 lecture, 3 lab hours)

AH 2. Livestock Selection (2)

Prerequisite: AH 1. A beginning course in judging market and breeding classes of beef cattle, swine, sheep, and horses. (1 lecture, 3 lab hours)

AH 3. Livestock Judging (2)

Prerequisite: AH 1, 2. Follows AH 1 and 2 in judging market and breeding classes of beef cattle, swine, sheep, and horses. (1 lecture, 3 lab hours)

AH 10. Slaughtering and Meat Cutting (3)

Prerequisite: AH 1. Slaughtering of farm meat animals; cutting of carcasses into wholesale and retail cuts; related meats material. (2 lecture, 3 lab hours)

AH 22. Beef Husbandry (3)

Prerequisite: AH 1. Management of purebred and commercial beef herds; selection of breeding stock; management practices in fattening cattle; marketing of slaughter and purebred cattle. (2 lecture, 3 lab hours)

AH 25. Fitting and Showing Livestock (3)

Prerequisite: AH 1. Techniques in selecting, fitting, and showing livestock; classification and entrance requirements for shows; rules, regulations, fair management, sales organization. (2 lecture, 3 lab hours)

AH 30. Swine Husbandry (3)

Prerequisite: AH 1. Principles and practices of purebred and commercial swine husbandry; breeding, feeding, and management program. (2 lecture, 3 lab hours)

AH 40. Sheep Husbandry (3)

Prerequisite: AH 1. Breeding, feeding management, and marketing of commercial and purebred sheep; breeds, setting up a program of breeding, housing, and equipment requirements; feeding and care of ewes and lambs; docking; castrating; shearing, tying, sacking, and storing the wool. (2 lecture, 3 lab hours)

AH 50. Horse Husbandry (3)

Prerequisite: AH 1, 2. Breeds, selection, care, and feeding of light horses; their use and place in the agriculture of California. (2 lecture, 3 lab hours)

AH 71. Feeds and Feeding (3)

Prerequisite: AH 1, Chem 2A-B, Biol 1A or B. Composition and nutritive value of livestock feeds and their utilization by the farm animal body; processes of digestion and assimilation; feeding standards and basic principles of feeding farm animals.

AH 73. Feed Mill Management (2)

Prerequisite: AH 71 or PH 32. Operation and maintenance of feed mills; compiling rations; mixing, buying and selling feeds; participation in management and operation of college feed mill. (1 lecture, 3 lab hours)

AH 103. Advanced Livestock Judging (2)

Prerequisite: AH 2, 3, or permission of instructor. Livestock judging preparing individuals to better select animals according to breed types and characteristics. Trips to intercollegiate judging contests. (1 lecture, 3 lab hours)

AH 106. Animal Breeding (3) (Same as DH 106)

Prerequisite: Biol 120, AH 1 or DH 11A. Principles of physiology and heredity as applied to the breeding of farm animals; application of genetics to a livestock breeding program.

AH 115. Anatomy and Physiology of Farm Animals (3)

Prerequisite: Zool 1, Chem 8. General structures of farm animals and physiological functions of organs of the animal body. (2 lecture, 3 lab hours)

AH 116. Livestock Sanitation and Diseases (3)

Prerequisite: AH 115. Sanitation practices and use of disinfectants; cause, symptoms, prevention, and treatment of common diseases of livestock. (2 lecture, 3 lab hours)

AH 122. Advanced Beef Production (3)

Prerequisite: AH 22. Study of research material in breeding, nutrition, diseases and management; records of performance, pedigrees, purebred sales and show herd management. (2 lecture, 3 lab hours; 1 week-end field trip)

AH 133. Market Swine Production (3)

Prerequisite: AH 1, 30. Types, market classes, and grades of swine; food demands, building and equipment requirements, marketing methods, and management problems in market swine production. (2 lecture, 3 lab hours)

AH 143. Advanced Sheep and Wool Technology (3)

Prerequisite: AH 40, Chem 2A-B, 8. Research material in breeding, nutrition, diseases, progeny and performance testing; carcass quality improvement and economics of sheep industry; testing techniques in wool technology, grade and other physical measurements, properties and characteristics determining value; role of wool in world trade. (2 lecture, 3 lab hours; 2 field trips)

AH 150. Advanced Horse Husbandry (3)

Prerequisite: AH 1, 50. Advanced principles of horse husbandry including management of horse breeding farms, breeding systems, training and selling horses, and western equitation. (1 lecture, 6 lab hours; 1 week-end field trip)

AH 172. Animal Nutrition (3)

Prerequisite: AH 71, Chem 8, or permission of instructor. Principles of animal nutrition; nutritive requirements for growth, fattening, reproduction, lactation and other body functions of farm animals; relationship of malnutrition and deficiency diseases to livestock production.

AH 175. Grading and Marketing Livestock (3)

Prerequisite: AH 1, 2. Grading live and dressed carcasses; determining cut-out values for beef, sheep, and swine. (2 lecture, 3 lab hours; field trips to central markets)

AH 190. Independent Study (1-3; max see reference)

See *Regulations and Procedures—Independent Study*.

DAIRY HUSBANDRY**DH 11A-B. Introduction to Dairying (3-3)**

A general survey of the growth and development of dairying. (A) Principles and practices in the production of milk; basic feeding, management, and disease control practices. (B) Basic principles of dairy industry practices; common dairy tests; general survey of all important branches of the industry. (2 lecture, 3 lab hours)

DH 55. Dairy Cattle Judging (2)

Prerequisite: DH 11A. Judging dairy cattle on type and conformation; comparative judging of cattle in college herd and outstanding dairy herds in the San Joaquin Valley. (1 lecture, 3 lab hours)

DH 56. Dairy Cattle Selection (2)

Correlation of production and pedigree records together with type classifications in selection of dairy cattle. (1 lecture, 3 lab hours)

DH 102. Dairy Farm Management (3)

Prerequisite: DH 11A-B 55, 56, Econ 1A. Problems in management of a dairy farm; marketing problems and factors in controlling milk secretion. (2 lecture, 3 lab hours)

DH 105. Advanced Dairy Cattle Judging (2)

Prerequisite: DH 55, 56. Advanced practice in comparative judging and selection of dairy cattle; detailed scoring of cattle and practice in justifying comparative placing. Trips to intercollegiate judging contests. (1 lecture, 3 lab hours)

DH 106. Animal Breeding (3) (See AH 106)**DH 108. Selecting, Fitting and Showing Dairy Cattle (2)**

Prerequisite: DH 11A-B, 55. Techniques in selecting and fitting dairy cattle for shows and sales; entrance requirements for dairy cattle in California fairs and shows. (1 lecture, 3 lab hours)

DH 110. Artificial Insemination (2)

Prerequisite: DH 11A, Biol 120, AH 115. Basic principles of artificial insemination of dairy cattle; semen collection, processing, evaluation and use. (1 lecture, 3 lab hours)

DH 190. Independent Study (1-3; max see reference)

See *Regulations and Procedures—Independent Study*.

DAIRY INDUSTRY**DI 53. Market Milk (3)**

Prerequisite: DH 11A-B or permission of instructor. Principles of market milk production, processing and distribution; modern processing methods and equipment. (2 lecture, 3 lab hours)

DI 54. Ice Cream Making (3)

Prerequisite: DI 53 or permission of instructor. Basic principles of formulating ice cream mixes; freezing and storage of ice cream, sherbets, and ices; modern freezing, packaging, and storage facilities in the San Joaquin Valley. (2 lecture, 3 lab hours)

DI 73. Dairy Plant Practice (3) Summer only

Open only to dairy industry majors. Prerequisite: DH 11A-B or permission of instructor. Six weeks of practical experience or its equivalent in an approved dairy processing plant. Written reports required.

DI 103. Butter Making (3)

Prerequisite: DI 53 or permission of instructor. Production, grading, and marketing of cream for butter; manufacture and marketing of butter; modern equipment used in manufacturing and packaging. (2 lecture, 3 lab hours)

DI 104. Cheese Making (3)

Prerequisite: DI 53 or permission of instructor. Methods of manufacturing common varieties of cheese; types of cheese common to the San Joaquin Valley. (2 lecture, 3 lab hours)

DI 108. Judging Dairy Products (2)

Prerequisite: DH 11A-B, DI 103, 104. Practice in scoring and grading dairy products; methods of control of defects. (1 lecture, 3 lab hours)

DI 151. Dairy Bacteriology (3) (Same as Bact 151)

Prerequisite: Ag 20. Bacteria, yeasts, and molds in manufacture of dairy products. (2 lecture, 3 lab hours)

DI 154. Dairy Plant Management (3)

Prerequisite: DI 53, 54, 103, 104, Acct 1A. Application of principles of management to dairy manufacturing plants; cost accounting, selling, advertising, and labor problems; current local problems.

DI 156. Marketing Dairy Products (3)

Prerequisite: DI 53, 54, 103, 104, Acct 1A. Principles of purchasing and marketing dairy products; products of the San Joaquin Valley.

DI 165. Dairy Inspection (3)

Prerequisite: DH 11A-B. Methods of scoring and grading dairy farms, milk plants, and creameries; California Agricultural Code as it applies to dairies and dairy plants; tests and their application to control work. (3 lecture hours; 3 3-hour field trips)

DI 185. Advanced Testing (2)

Prerequisite: Chem 2A-B, 8. Full operation of the Mojonnier Dairy Products Tester for analyzing all dairy products for fat and total solids. (1 lecture, 3 lab hours)

DI 189. Advanced Dairy Products Judging (2)

Prerequisite: DI 108. Product judging; training for participation in judging contest work. Trips to intercollegiate judging contests. (1 lecture, 3 lab hours)

DI 190. Independent Study (1-3; max see reference)

See *Regulations and Procedures—Independent Study*.

POULTRY HUSBANDRY**PH 1. Poultry Production (3)**

Poultry production; brooding, rearing, laying flocks, feeding, and housing. (2 lecture, 3 lab hours)

PH 31. Breed Characteristics and Production Judging (2)

Prerequisite: PH 1. Characteristics of poultry breeds; origin and development of breeds; production and exhibition judging and breeder selection. (1 lecture, 3 lab hours)

PH 32. Poultry Feeding (3)

Prerequisite: PH 1. Poultry feeds and application of principles of nutrition to poultry and turkey feeding. (2 lecture, 3 lab hours)

PH 34. Egg Processing and Marketing (3)

Principles, practices, and problems in processing and marketing shell eggs and egg products. (2 lecture, 3 lab hours; 1 Saturday field trip)

PH 161. Turkey Management (3)

Prerequisite: PH 32. Principles and practices in commercial production of turkeys for meat and in turkey breeding. (2 lecture, 3 lab hours; 1 Saturday field trip)

PH 162. Poultry Management (3)

Prerequisite: PH 32. Principles and practices in commercial egg production for wire-floored and conventional litter-type housing. (2 lecture, 3 lab hours; 1 Saturday field trip)

PH 163. Poultry Products and Processing (3)

Prerequisite: PH 1. Grading, processing, preservation, and marketing of poultry. (2 lecture, 3 lab hours; 1 Saturday field trip)

PH 164. Hatchery Management (3)

Prerequisite: PH 1. Hatchery operations, including practical work. (2 lecture, 3 lab hours; 1 Saturday field trip)

PH 181. Poultry Breeding (3)

Prerequisite: Biol 120, PH 1. Selection of poultry breeding flocks and application of principles of genetics to poultry breeding. (2 lecture, 3 lab hours; 1 Saturday field trip)

PH 182. Poultry Diseases and Sanitation (2)

Prerequisite: PH 1, AH 115. Anatomy and physiology of fowl; poultry diseases. (1 lecture, 3 lab hours)

PH 190. Independent Study (1-3; max see reference)

See Regulations and Procedures—Independent Study.

PLANT SCIENCE DEPARTMENT
(In the Agriculture Division)

Principal Vocational Instructors: Braun, Petrucci, Strong
Senior Vocational Instructors: Biehler (Chairman), Skofis (p-t)
Intermediate Vocational Instructors: R. D. Harrison, LeValley, Van Elswyk
Junior Vocational Instructor: Dokoozlian

The Plant Science Department offers majors in agribusiness, agricultural inspection, crop production, enology, horticulture, ornamental horticulture, and viticulture.

The department has excellent facilities for classroom and laboratory work. The agriculture classroom building is well equipped and provides laboratory facilities for soils and irrigation, cotton classing, grains and grasses, horticulture, viticulture, plant disease, and ornamental horticulture. The College Farm includes a 160-acre vineyard, 105 acres of orchard, 15 acres for the nursery, and adequate acreage for cotton, corn, grain, and vegetable crop projects. A part of the College Farm is planted to permanent pasture and hay crops for livestock. The entire 1,190 acres is used as a working laboratory. A horticulture and viticulture packing shed and a raisin processing plant make it possible for students to pack out and process their own fruit, grapes, and raisins grown in the project program.

The *agribusiness* major with an option in plant science prepares students for positions in areas such as agricultural sales, including seeds, fertilizers, insecticides, weedicides, herbicides and fungicides; appraising for insurance companies and banks; fruit, grain, and vegetable buying; management, credit, accounting and other office work in related agricultural industry; and general farming.

The *agricultural inspection* major prepares students for job opportunities in civil service positions with county, state, and federal agencies. These agencies employ inspectors to enforce the agricultural laws and regulations which have been established for the protection of various agriculture enterprises. This major will also qualify students for sales positions with chemical and insecticide companies.

The *crop production (agronomy)* major prepares students for field crop production and for general farming involving combinations of both crops and livestock; for placement in such fields as service and sales in seeds, weed and pest control, and fertilizers; as research assistants; as fieldmen with chemical companies; positions in the Soil Conservation Service; gin managers; for county, state and federal government employment as agronomists; and as farm foremen.

The *enology* major prepares students for positions in the California wine industry. Typical positions include laboratory technicians, cellar foremen, plant sanitarians, wine chemists, processing department supervisors, production managers, and winery and vineyard fieldmen.

The *horticulture* major prepares students for general fruit farming, managers of orchards, inspectors in fruit processing plants, supervisory positions in fruit packing plants, and for careers with county, state, and federal agencies.

The *ornamental horticulture* major prepares students for the nursery industry, landscaping and grounds work, sales positions, and teacher education in general agriculture.

The *viticulture* major prepares students for a wide variety of jobs, such as vineyard foremen, extension assistants, inspectors for raisin plants, grape buyers, field and plant representatives, shipping clerks, salesmen of chemical supplies and insecticides. Many graduates return to farms where they operate their own vineyards.

MAJOR REQUIREMENTS

	<i>Units</i>
Agribusiness (Plant Science Option)	
<i>BS Degree Major:</i> Ag 31, 106, 112, 130, 136, 146, 159, CP 60; elect 12 units from one of the following: CP, H, OH, E, V, or Ag Inspection; Acct 1A-B, Mkt 100, Bus Ad 102, 110, 118A-B, 133, 151, business electives (3 u.d.)	66
Agricultural Inspection	
<i>BS Degree Major:</i> Ag 13, 105, 106, 113, 114, 130, 159, CP 60, H 57, 181, OH 33, V 50; V 101, Ag 112, or H 112	38
<i>Technical Certificate:</i> Ag 13, 105, 106, 113, 114, 159, CP 60, H 57, OH 33, V 50	28
Crop Production	
<i>BS Degree Major:</i> CP 11, 12, 60, 150, Ag 106, 112, 146, Bot 104, CP electives (12 un)	37
<i>Technical Certificate:</i> CP 11, 12, 60, Ag 106, 146, CP electives (9 un)	24
Enology	
<i>BS Degree Major:</i> E 15, 115, 116, 158A-B, 160, 171, V 13, 50, 101, Ag 20	36
Horticulture	
<i>BS Degree Major:</i> H 11, 12, 57, 112, 181, 186, Ag 106, 114, 146, Bot 104, V 11 or 16, H elective (3 un)	37
<i>Technical Certificate:</i> H 11, 12, 57, 112, 186, Ag 105, 114, 159, H elective (3 un)	26
Ornamental Horticulture	
<i>BS Degree Major:</i> OH 3, 22, 33, 53, 111, 123, 125, 132, 162, 163, Ag 106, 146, 159	38
<i>Technical Certificate:</i> OH 3, 22, 33, 53, 111, 123, 125, Ag 13, 159	26
Viticulture	
<i>BS Degree major:</i> V 11, 13, 16, 50, 101, 110, 166, 170, Ag 106, 146, Bot 104, E 15, H 11 or 12	37
<i>Technical Certificate:</i> V 11, 13, 16, 50, 101, 110, 166, Ag 106, E 15	26

Additional Requirements—BS Degree

In addition to major requirements degree students (except agribusiness and enology majors) must complete the following courses: Ag 1, 20, 130, 136, 151, AgM electives (6 un); Bot 1, Chem 2A-B, 8, Biol 1B, 120, Econ 1A. Agricultural inspection majors are not required to take Biol 120, but are required to complete CP 12, H 12, V 11, AgM electives (4 un).

Agribusiness majors must complete the following additional requirements: Ag 1, Biol 1A, Bot 104, Chem 2A-B, 8, Econ 1A-B. Enology majors take Acct 1A-B, Ag 1, Bus Ad 110, Chem 2A-B, 8, 105, 109, Econ 1A-B, Biol 1A, Math B, Physics 2A-B, and two semesters of satisfactory collegiate study (or equivalent) in one foreign language.

A total of 128 semester units including general education is required for the bachelor of science degree.

Additional Requirements—Technical Certificate

Technical students must complete, in addition to the major requirements, the following courses: Ag 1, 31, 40, 151, AgM electives (6 un), Bus Ad 27, animal science and/or plant science electives (10 un), Hist 10, Pol Sc 11, Biol 1A or B, H Ed 90 or 91, PE (4 semesters), Engl 1A, Spch 20 or 24. Agricultural inspection majors are required to complete CP 12, H 12, V 11 and 4 units of AgM electives. A total of 84 semester units is required for the technical certificate.

SUGGESTED SEQUENCE OF COURSES FOR BACHELOR OF SCIENCE DEGREE

In addition to the specific courses listed below, general education requirements and electives should be included to bring total to 15-17 units per semester. A total of 128 units is required for the bachelor of science degree. (See *Degrees and Credentials*.)

Agribusiness (Plant Science Option)

- 1st Year: Ag 1, Biol 1A, Chem 2A-B, plant science electives
- 2nd Year: Ag 31, CP 60, Acct 1A-B, Chem 8, Econ 1A-B, plant science electives
- 3rd Year: Ag 106, 136, 146, Bus Ad 102, 110, 118A-B, Bot 104
- 4th Year: Ag 112, 130, 159, Bus Ad 133, 151, Mkt 100, business elective

Agricultural Inspection

- 1st Year: Ag 1, 13, CP 12, Biol 1B, Chem 2A-B, AgM electives
- 2nd Year: Ag 20, CP 60, H 57, OH 33, Bot 1, Chem 8, Econ 1A
- Summer: V 50
- 3rd Year: Ag 105, 106, 136, 159, H 12, V 11
- 4th Year: Ag 113, 114, 130, 151, H 181; V 101, H 112, or Ag 112

Crop Production

- 1st Year: Ag 1, CP 11, 12, Biol 1B, Chem 2A-B, AgM electives
- 2nd Year: Ag 20, Bot 1, Chem 8, Econ 1A, AgM and CP electives
- 3rd Year: Ag 106, 136, CP 60, Biol 120, Bot 104, CP electives
- 4th Year: Ag 112, 130, 146, 151, CP 150

Enology

- 1st Year: Ag 1, Biol 1A, Chem 2A-B, Math B, foreign language
- 2nd Year: Ag 20, E 15, Acct 1A-B, Chem 8, 109, Econ 1A-B
- Summer: V 50
- 3rd Year: E 115, 116, 158A or 171, 158B or 160, Chem 105, Physics 2A-B
- 4th Year: E 171 or 158A, 160 or 158B, V 13, 101, Bus Ad 110

Horticulture

- 1st Year: Ag 1, H 11, 12, Biol 1B, Chem 2A-B, AgM electives
- 2nd Year: Ag 20, H 57, Bot 1, Chem 8, Econ 1A, AgM and H electives
- 3rd Year: Ag 106, 114, 136, V 11 or 16, Biol 120, Bot 104
- Summer: H 112
- 4th Year: Ag 130, 146, 151, H 181, 186

Ornamental Horticulture

- 1st Year: Ag 1, OH 22, Biol 1B, Chem 2A-B, AgM electives
- 2nd Year: Ag 20, OH 33, 53, Bot 1, Chem 8, Econ 1A, AgM elective
- 3rd Year: Ag 106, 136, 159, OH 111, 123, 132, Biol 120
- 4th Year: Ag 130, 146, 151, OH 125, 162, 163

Viticulture

- 1st Year: Ag 1, V 11, 16, Biol 1B, Chem 2A-B, AgM electives
- 2nd Year: Ag 20, V 13, 110, Bot 1, Chem 8, Econ 1A, AgM elective
- Summer: V 50
- 3rd Year: Ag 106, 136, H 11 or 12, V 101, Biol 120, Bot 104
- 4th Year: Ag 130, 146, 151, E 15, V 166, 170

Courses

Note: Active immunization against tetanus (available through the Student Health Service) is a prerequisite for registration in any laboratory course in agriculture and for any student employment on the College Farm.

CROP PRODUCTION

CP 11. Introduction to Agronomy (3)

Principles of crop production, survey of important field crops, production methods and major uses in California and the San Joaquin Valley. (2 lecture, 3 lab hours; 2 Saturday field trips)

CP 12. Introduction to Vegetable Crops (3)

Culture of vegetable crops for market and home; importance, varieties, cultivation, harvesting, storing, and marketing; vegetable diseases and insect pests; vegetables grown commercially in the San Joaquin Valley. (2 lecture, 3 lab hours; 2 Saturday field trips)

CP 51. Forage Crops (3)

Prerequisite: CP 11 or permission of instructor. Irrigated forage crops of California as related to livestock enterprises; cultural methods, harvesting, marketing, quality, insect and disease control. (2 lecture, 3 lab hours)

CP 52. Fiber and Oil Crops (3)

Prerequisite: CP 11. Fiber and oil crops, cotton, flax, ramie, castor bean, safflower, common to the San Joaquin Valley; cotton production; varieties and improvement, cultural methods, harvesting and marketing. (2 lecture, 3 lab hours)

CP 53. Cereal Crops (3)

Prerequisite: CP 11. Cereal crops common to the San Joaquin Valley; varieties and cultural practices, harvesting and marketing. (2 lecture, 3 lab hours)

CP 56. Vegetable Field Crops (3)

Prerequisite: CP 12. Methods of production, harvesting, grading, storing, and processing vegetable crops common to the San Joaquin Valley; potatoes, tomatoes, sweet potatoes, carrots, melons, and lettuce. (2 lecture, 3 lab hours; 3-day field trip)

CP 60. Weeds (3)

Prerequisite: CP 11. Weeds common to the San Joaquin Valley and their prevention and control; weed identification and recommended methods of control or prevention. (2 lecture, 3 lab hours; 1 week-end field trip)

CP 103. Seed Production (3)

Prerequisite: CP 11 or permission of instructor. Principles and practices in the culture of vegetable and field crops for seed production; harvesting, storage, yields, quality, seed laws, certification, seed cleaning, and marketing. (2 lecture, 3 lab hours)

CP 105. Cotton Technology (3)

Prerequisite: CP 52 or equivalent. Cotton harvesting, processing, marketing, utilization, and testing; cotton fiber technology. (2 lecture, 3 lab hours)

CP 118. Range Management (3)

Prerequisite: CP 11 or permission of instructor. Identification of range forage; estimating carrying capacity; methods of range conservation, controlled grazing, water development, rodent control, fertilization, reseeding, brush removal; identification of poisonous plants. (2 lecture, 3 lab hours; 1 Saturday field trip)

CP 150. Crop Breeding (3)

Prerequisite: Biol 120. Application of genetic and environmental principles to improvement of crop plants; heredity and variation in crop plants, effects of various environmental factors on crop improvements, effects of self and cross fertilization, principles and results of selection and hybridization in crop improvement. (2 lecture, 3 lab hours)

CP 152. Cotton Classing (2)

Characteristics of classes and grades of cotton; practical work in classing cotton; cotton quality as related to grade, staple, and utilization. (1 lecture, 3 lab hours)

CP 190. Independent Study (1-3; max see reference)

See *Regulations and Procedures—Independent Study*.

ENOLOGY**E 15. Introduction to Enology (3)**

History and development of the wine industry; mechanics of various processes and factors involved in wine making.

E 115. Winery Practices (5)

Prerequisite: E 15, V 50, Chem 109, Bact 54. Principles and practices of preparation of dessert and table wines; operation of plant equipment; controlled tests; sanitation and waste disposal problems. (3 lecture, 6 lab hours)

E 116. Advanced Winery Practices (4)

Prerequisite: E 115. Winery operations; quality control and production of specialty products; laboratory tests for aldehydes and esters, copper and iron, pasteurization and fining; microbiological techniques. (2 lecture, 6 lab hours)

E 158A-B. Unit Operations I and II (E 158A same as AgM 158)

Not open to students with credit in E 151A-B. Prerequisite: permission of instructor. Basic principles of industrial operations as they apply to the wine industry with application to chemistry and physics, transformation of energy, heat transfer, and flow of fluids; application of principles as they apply to evaporation, heat exchange equipment, distillation and drying.

E 160. Winery Technology (3)

Prerequisite: permission of instructor. Technological study of winery equipment; evaluation, location, and operation; sanitation procedures. (2 lecture, 3 lab hours; 3- or 4-day field trip)

E 171. Winery Management (3)

Prerequisite: permission of instructor. Physical properties of a winery; administrative organizational set-up; personnel; purchasing, packaging, and shipping; local, state, and federal regulatory statutes.

HORTICULTURE**H 11. Introduction to Fruit Growing (3)**

Varieties, adaptation, pruning, and cultural requirements of deciduous fruits; harvesting and preparation for market. (2 lecture, 3 lab hours; 16 hours additional pruning practice arranged)

H 12. Fruit Production (3)

Prerequisite: permission of instructor. Production of fruits and nuts in the San Joaquin Valley; spring orchard practices, laying out, planting and planning orchards on the college farm. (2 lecture, 3 lab hours; 2 Saturday field trips)

H 52. Citrus Production (3)

Survey of citrus industry; cultural operations including management practices in budding, planting, grafting, fertilizing, irrigating, controlling diseases, pruning, spraying, and harvesting the crop. (2 lecture, 3 lab hours; one Saturday field trip)

H 55. Subtropical Horticulture (3)

Prerequisite: H 11. Problems in production of citrus fruits, figs, olives, avocados, pomegranates, and persimmons. (2 lecture, 3 lab hours)

H 57. Fruit Varieties (3)

Prerequisite: H 12 or permission of instructor. Characteristic differences of fruit species; varieties produced in the San Joaquin Valley. (2 lecture, 3 lab hours)

H 58. Small Fruit Culture (3)

Cultural practices in production of strawberries and small fruits; berry culture management practices, pruning, planting; insect pest and disease control; practical experience in harvesting, grading, and marketing berries. (2 lecture, 3 lab hours)

H 112. Marketing Fresh Fruit (3) Summer only

Prerequisite: H 11, 12. Practice in harvesting, grading, sorting, and packing fruit; operation of packing house, selection and use of equipment; inspection and marketing of packed fruit. (3-day field trip)

H 181. Fruit Processing (3)

Prerequisite: H 11. Grading of fruits and nuts, packaging, drying, and quick freezing; improvement of produce, laws in maintaining fruit standards. (2 lecture, 3 lab hours)

H 186. Orchard Management (3)

Prerequisite: H 57, 112 or permission of instructor. Principles and practices of orchard management; appraisal; farm contracts and leases. (2 lecture, 3 lab hours)

H 190. Independent Study (1-3; max see reference)

See *Regulations and Procedures—Independent Study*.

ORNAMENTAL HORTICULTURE**OH 3. Fundamentals of Plant Propagation (3)**

Principles of sexual and asexual propagation; seed identification, seedage, cuttage, specialized plant structures for propagation; propagation media, rooting aids, propagation structures. (2 lecture, 3 lab hours)

OH 22. Principles of Landscape Gardening (3)

Planting and maintenance of the garden; selection, planting, fertilization, irrigation, pruning of plant material; disease and insect control, weed control; lawn planting and care; the home vegetable and fruit garden, house and patio plants. (2 lecture, 3 lab hours)

OH 33. Plant Identification and Materials (3)

Identification, habits of growth, culture and landscape use of trees, shrubs, vines, annuals, herbaceous perennials including tropicals, subtropicals, conservatory and house plants. (2 lecture, 3 lab hours)

OH 53. Principles of Nursery Practice (3)

Prerequisite: OH 3. Nursery structures; practice in production of ornamental, fruit, nut, annual, perennial, bedding, vegetable, and pot plants; retail and wholesale nursery practices. (2 lecture, 3 lab hours)

OH 111. Market Flower Production (3)

Prerequisite: OH 3. Market flower industry in California and the United States; selection, production, care, preparation for market, and use of florist crops. (2 lecture, 3 lab hours; 2-day field trip)

OH 123. Production of Ornamentals (3)

Prerequisite: OH 53, Bot 1. Production of ornamental trees, shrubs, vines and groundcovers by cuttings, budding, grafting, layerage, separation and division; lining out, balling, bare rooting, canning, growing of cutting material, growing liners; pruning and training espaliers, specimen plant production. (2 lecture, 3 lab hours; one all-day field trip)

OH 125. Ornamental Trees (3)

Prerequisite: Bot 1, OH 3. Trees grown in California for landscaping, shade and ornamentation; identification, habits of growth, cultural requirements, landscape use. (2 lecture, 3 lab hours)

OH 132. Turfgrass Production and Management (3)

Production and maintenance of grass for lawns, public parks, public institutions, playgrounds, playing fields, golf courses, bowling greens; identification of turf-grasses and turfgrass seed. (2 lecture, 3 lab hours)

OH 162. Nursery Management (3)

Prerequisite: OH 22, 33, 123. Design, construction and utilization of nursery structures; control of temperatures and lighting; business organization. (2 lecture, 3 lab hours)

OH 163. Farm and Home Landscaping (3)

Prerequisite: OH 22, 33, 123, 125. Arrangement, planning, planting the farmstead; arrangement and care of selected adapted ornamentals; layout, design and installation from plans. (2 lecture, 3 lab hours; 2 all-day field trips)

OH 190. Independent Study (1-3; max see reference)

See *Regulations and Procedures—Independent Study*.

VITICULTURE**V 11. Grape Production (3)**

Production of grapes; structure, physiology, and climatic requirements of the vine; fall budding, pruning, raisin drying; practice in fall cultural operations. (2 lecture, 3 lab hours)

V 13. Raisin Production and Processing (2)

Prerequisite: V 11 or permission of instructor. Principles and practices of raisin production and processing operations. The college vineyard and raisin processing laboratory will be utilized. (1 lecture, 3 lab hours)

V 16. Vineyard Operations (3)

Application of spring vineyard operations; laying out a vineyard, planting, trellising, training young vines, thinning, girdling; and grape propagation, cuttings, rootings, grafting (cleft, notch, bench, and green); T-budding and spring care of fall budded vines. (2 lecture, 3 lab hours)

V 50. Grape Varieties (3) Summer only

Prerequisite: V 11. Grape varieties common to California; rootstocks and species, identification, adaptability, and use.

V 101. Processing and Marketing Grapes (3)

Prerequisite: V 11, 50, Econ 1A. Processes in preparing grapes for market, marketing procedures; grape processing plants, and grape and raisin marketing centers. (2 lecture, 3 lab hours; 3-day field trip)

V 110. Grape Diseases and Pests (3)

Prerequisite: Ag 106, V 11. Grape diseases and pests; identification and control; application of sprays, insecticides; establishment of control programs. (2 lecture, 3 lab hours)

V 166. Vineyard Management (3)

Prerequisite: E 15, V 101. Management of vineyards in the San Joaquin Valley; coordination of production and marketing, cost studies, and planning an economical vineyard. (2 lecture, 3 lab hours)

V 170. Viticulture Seminar (1)

Open to seniors majoring in viticulture and enology. Latest developments in research; assigned research paper in viticulture or enology to be presented in both oral and written form.

V 190. Independent Study (1-3; max see reference)

See *Regulations and Procedures—Independent Study*.

AIR SCIENCE DIVISION

Division Head..... Lt. Col. Edgar L. Stambaugh

The Air Science Division through its instructional program provides precommissioning education and training which, in conjunction with the bachelor's degree, qualify a student for a commission in the United States Air Force.

The program of military instruction includes a two-year basic course designed to provide education and training in military subjects common to the aerospace age; a two-year advanced course in global relations and leadership training leading to a reserve commission as a second lieutenant in the United States Air Force; and a minor for the bachelor's degree.

Field trips to Air Force Bases and familiarization flights in Air Force aircraft are normally offered to enrolled students.

A flight instruction program leading to a private pilot's license is offered to qualified seniors at government expense.

AIR SCIENCE DIVISION

Professor: Lt. Col. Stambaugh (Head)

Assistant Professors: Lt. Col. Wasserman; Captain Carlson

MINOR

A minor in air science consists of 15 units including Air Sc 103A-B-C, 104A-B.

BASIC AIR SCIENCE

The basic course is designed to provide a fundamental understanding of aerospace power and includes leadership training. In addition, specified college courses in the areas of mathematics, physical science, natural science, foreign language, the humanities, or social science satisfy pre-commission officer education requirements and are designated as part of the air science curriculum. Consult the head of Air Science Division for the list of approved courses from which two courses must be selected.

The basic course is a prerequisite to enrollment in the advanced course. All male students who are physically qualified for military training and who are citizens of the United States are eligible to take the basic course. They are not, however, in the military service and assume no military obligation. Uniforms and military textbooks, as required, are provided by the government and must be returned in good condition upon completion of the course.

ADVANCED AIR SCIENCE

The advanced course, to which selected upper division students are admitted, upon successful completion leads to a reserve commission as second lieutenant in the United States Air Force. The students are not, however, in the military service and normally assume no military obligation while enrolled in advanced air science.

To be eligible for admission to the advanced course, a student must:

- (1) Be a citizen of the United States and not less than 14 years of age.
- (2) Be physically and morally qualified under standards of the Department of Air Force.
- (3) Be accepted by the institution as a regularly enrolled student.
- (4) Be not more than 26½ years of age, if programmed for flying training, or 28 years of age, if programmed for other than flying training, at date of graduation and commissioning.
- (5) Successfully complete such survey and general screening tests as may be required.
- (6) Be selected by the Professor of Air Science and the President of the College.
- (7) Execute a written agreement with the United States Government and the President of the College to complete the advance course contingent upon completion of college at the institution at which he is enrolled or any other institution where such course is given in the case of a transfer from one institution to another.
- (8) Devote five hours per week to the military education prescribed and pursue the courses of the Summer Training Unit during such period as prescribed by the Secretary of the Department of the Air Force, in consideration of commutation of subsistence to be paid to the student by the government.
- (9) Have completed the basic course, or the equivalent thereof, for previous honorable active military service, as approved by the President of the College and the Professor of Air Science under regulations established by the Department of the Air Force.

An advanced cadet will receive a subsistence of approximately \$27 a month which is paid quarterly. During attendance at the Summer Training Unit, normally held during the summer preceding the senior year, a student receives subsistence, quarters, and a monetary allowance of \$78 for the month of attendance, plus travel pay to and from the place of summer training. Reference books, officer-type

uniforms and most textbooks are provided by the government. All AFROTC payments or other benefits are in addition to those to which a veteran is entitled under the GI Bill or other laws.

Courses

AIR SCIENCE

1A. Leadership Laboratory (1)

Introduction and orientation to ROTC and the Air Force; systematic instruction and education in leadership principles providing the cadet with guided learning experiences. Designated institutional courses in lieu of the academic air science phase (see division head for courses so designated).

1B. Foundations of Aerospace Power (2)

Constituent elements of aerospace power; basic aeronautical science; organization and operation of the military arm of the federal government. (2 lecture, 1 lab hour)

2A. Fundamentals of Aerospace Weapon Systems (2)

Prerequisite: Air Sc 1A-B or equivalent. Introduction to aerospace missiles and aircraft, propulsion systems; aerospace defense; targeting and electronic warfare; conventional, nuclear, chemical, and biological warfare; strategic and tactical organizations; operations with Air Force weapon systems; future space operations and contemporary aerospace military thought. (2 lecture, 1 lab hour)

2B. Leadership Laboratory (1)

Prerequisite: Air Sc 2A or equivalent. Systematic instruction and education in the application of leadership principles providing the cadet with guided learning experiences. Designated institutional courses in lieu of the academic air science phase (see division head for courses so designated).

103A. Air Force Officer Development (3) (Former Air Sc 101A)

Prerequisite: Air Sc 2A-B or equivalent. Staff organization and functions; skills required for effective staff work, including oral and written communication, observing, individual and group problem solving. (4 lecture, 1 lab hour)

103B. Air Force Officer Development (3) (Former Air Sc 101B)

Prerequisite: Air Sc 103A. Basic psychological and sociological principles of leadership, application to leadership practices and problems; introduction to military justice; briefing for Summer Training Unit. (4 lecture, 1 lab hour)

103C. Air Force ROTC Summer Training Unit (3) (Former Air Sc 101C)

Prerequisite: Air Sc 103A-B or 104A-B. One month's training required for advanced cadets at designated Air Force installations to qualify for reserve commission. Physical training, drill, weapon familiarization, familiarization flying, field exercises, United States Air Force base activities, equipment, and problems.

104A. Global Relations (3) (Former Air Sc 102A)

Prerequisite: Air Sc 103A-B or equivalent. International relations; major factors underlying international tensions; nationalism, imperialism, and communism; attempts to alleviate these tensions; balance of power concepts; rise of the super-powers, United States and USSR. Weather and navigation. (4 lecture, 1 lab hour)

104B. Global Relations (3) (Former Air Sc 102B)

Prerequisite: Air Sc 104A or equivalent. Military aspects of world political geography, concepts, maps and charts, factors of power; geographic influences upon political problems with a geopolitical analysis of strategic areas. Briefing for commissioned service; the Air Force officer. (4 lecture, 1 lab hour)

APPLIED ARTS DIVISION

Division Head _____ Marion A. Grosse

Department _____ *Chairman*

Home Economics _____ Christine Spraker

Industrial Arts _____ Marion A. Grosse

The Applied Arts Division prepares for professional, semiprofessional, and technical careers in home economics and industrial arts and offers majors and minors for the bachelor of arts degree; special, junior high, and general secondary teaching credentials; bachelor of vocational education degree; bachelor of science degree in industrial technology; and the master of arts degree in industrial arts.

Home Economics _____ 84
Industrial Arts _____ 89

HOME ECONOMICS DEPARTMENT

(In the Applied Arts Division)

Associate Professors: Spraker (Chairman), Rose

Assistant Professors: Jarvis, Monts, Newsome, Sollic

Part-time: Plaunt, Thoren, Yeary

The Home Economics Department offers a major in home economics for the bachelor of arts degree, a major in homemaking education for the special and general secondary teaching credentials, a general minor, elementary and secondary school credential minors, and a minor for use with majors in business. Programs may be planned to provide preparation for professional careers in dietetics, nutrition, and institutional food service and for home economists in the agriculture extension service, social welfare, journalism, radio, television, and business. All curricula are planned to develop the knowledge, appreciation, and skills essential for successful living and family life.

MAJORS

The requirements for a bachelor of arts degree major in home economics consist of 24 units of home economics, 12 of which must be upper division, exclusive of courses used to meet general education requirements. All home economics majors must include some work in the basic areas. In preparation for careers in home economics, the following areas of emphasis may be programmed. A complete suggested sequence of courses for each program may be obtained from the department advisers.

Home Economics Education. A credential major in homemaking education supplemented by other requirements for teaching credentials.

Home Economics and Dietetics. A home economics major including such courses as quantity cookery, institutional management and dietetics and meeting the American Dietetics Association requirements in such fields as chemistry, bacteriology, and economics. A year of internship in an approved institution upon completion of the bachelor's degree is required for membership in the American Dietetics Association.

Home Economics in Agriculture Extension Service. A special secondary credential major in homemaking education with additional work in radio and television production.

Home Economics in Business. A home economics major of maximum breadth and depth supplemented by appropriate courses chosen from business, art, journalism, and speech.

Home Economics in Radio and Television. Home economics courses in all areas with selected courses in speech, radio and television.

Home Economics in Journalism. A broad major in home economics plus selected journalism courses in reporting, editing, feature writing, and public relations.

Home Economics in Social Welfare. A double major in home economics and social welfare with a psychology minor.

MINORS

In addition to the general minor in home economics, the department offers minors for business majors, elementary education, and secondary education. These minors may be varied with permission to meet individual needs and interests depending on students' majors.

General Minor	Units
H Ec 1, 11, 12A, 39, 40, 41, 43	14
H Ec 132, 133, 139	7

Minor for Business Majors

	<i>Units</i>
H Ec 38, 40, 43.....	4
H Ec 132, 6 units electives (incl 4 ud)	8
	12

Minor for Elementary Education(See revised credential structure, *Education Division*)

H Ec 1, 11, 12A, 39, 40, 41.....	13
H Ec 101, 133, 139.....	7
	20

Minor for Secondary EducationSee *General Secondary Credential* minor in homemaking education.**SPECIAL SECONDARY CREDENTIAL IN HOMEMAKING EDUCATION**(For revised credential structure see *Education Division*)

The special secondary credential in homemaking education authorizes the holder to teach homemaking subjects in elementary and secondary schools. Candidates for this credential must complete the requirements for a bachelor's degree, have full approval for admission to the credential program, and complete the following major and professional requirements.

Credential Major in Homemaking Education	<i>Units</i>
H Ec 1, 10A-B, 11, 12A-B, 38, 39.....	19
H Ec 100, 110, 130, 131, 132, 133, 137, 139.....	22
Elect from: H Ec 21, 43, 50, 101.....	1-3
	42-44

In addition to the above courses the following should be included: Art 3, Physio 1, Chem 2A-B. For further information and additional recommended courses, see the department credential adviser.

Professional Requirements	<i>Units</i>
Ed 109, 133 (6 un), 173, 174, 185	17
H Ec 140.....	3
	20

JUNIOR HIGH SCHOOL CREDENTIAL(For revised credential structure see *Education Division*)

The junior high school credential authorizes the holder to serve as a teacher in grades seven, eight, and nine of elementary and secondary schools. For general and professional requirements, see *Education Division*.

The junior high school credential major in homemaking education is the same as the special secondary credential major in this field; the minor is the same as the general secondary credential minor.

GENERAL SECONDARY CREDENTIAL(For revised credential structure see *Education Division*)

The general secondary credential authorizes the holder to teach in secondary schools and in grades seven and eight of elementary schools. For general and professional requirements see *Education Division*.

Credential Major in Homemaking Education

Requirements for the general secondary credential major in homemaking education are the same as for the special secondary credential major. See also requirements for the bachelor of arts degree major in home economics.

Credential Minor in Homemaking Education		<i>Units</i>
H Ec 1, 10A-B, 12A-B, 39, 40, 139.....		20
Elect from: H Ec 11, 38, 100, 110, 130, 131, 132, 133, 180		6
		26

*Courses***HOME ECONOMICS****1. Introduction to Home Economics (2)**

The social and economic problems of the young American family; consumer decisions relating to clothing and textiles, food and nutrition, home furnishings, family finance; child development, family relationships; use of leisure time.

2. Home and Family Life (3)

Modern homemaking in theory and practice; house plans, furnishings and equipment, furniture refinishing; meal planning, preparation and service; selection of china, glass and silver. Activities in practice apartment. (2 lecture, 4 lab hours)

10A-B. Food Study (3-3)

Prerequisite: Chem 2A-B or permission of instructor. Preparation and service of foods for family meals; psychological, cultural, aesthetic, economic, nutritional, and scientific principles. (2 lecture, 4 lab hours)

11. Textiles (3)

Principles of fabric production; characteristic use and care of natural and man-made fibers, use and care of new finishes; laboratory testing to determine the ability of the fabrics to withstand normal wearing conditions. (2 lecture, 2 lab hours)

12A. Clothing Construction (2)

Clothing selection and construction with emphasis on the individual; basic theories influencing skills and techniques; use of commercial patterns. (1 lecture, 3 lab hours)

12B. Clothing Construction (3)

Continuation of 12A. Advanced problems in construction; use of modern fabrics; development of originality in design. (1 lecture, 5 lab hours)

21. Home Planning (2) (See IA 21)**31. Dietetics (2)**

Elements of nutrition and diet in disease; principles involved in feeding the sick. (1 lecture, 3 lab hours)

38. Problems in Home Furnishing (1)

Basic principles in selecting and furnishing a satisfying home; design and functional consideration in selection of floor coverings, wall finishes, draperies, lighting, furniture, and accessories.

39. The Child in the Family (2)

Open to non-majors. Prenatal care of mother and child; development and guidance of children from birth to twelve years in relation to the family group. Supervised observation of children in nursery schools, hospitals, child guidance clinics.

40. Elementary Nutrition (2)

Not open to home economics majors. Nutrition for promotion of good family health; relation of inadequate dietaries to nutritional deficiencies; minimum food budgets in relation to optimum nutrition.

41. Food for the Family (2)

Not open to home economics majors. Menu planning, meal preparation, nutritional needs of the family; service, cost, management, and social aspects of family meals. Lecture, discussion, with laboratory periods for preparation and serving of breakfast, luncheon, dinner, and special meals.

42. Management for Effective Living (2)

Offered for men students. Foods and nutrition; care and selection of clothing; human relationships; child care and development; family finance and consumer problems.

43. Social Procedure (1)

Present day social procedure; introductions and social correspondence; table service and etiquette; selection of china, glassware, silver. Meets nine weeks of semester.

50. Household Equipment (3)

Selection, methods of operation, and care of household appliances; testing electrical equipment for efficiency and cost of operation; kitchen planning, arrangement of work, preparation and serving units. (2 lecture, 2 lecture-lab hours)

100. Advanced Clothing (3)

Prerequisite: H Ec 12A-B. Tailoring a suit or coat; draping, using individual dress form.

101. Economics of Clothing Consumption (2)

Psychology of clothing selection, causes of fashion trends; designers; commercial production of ready-to-wear; merchandising, protective legislation for consumer. Special reports on buying consumer goods.

110. Home Management (5)

Application of theory of home management to creative and intelligent home living; establishment of values, goals and standards of living; relationship of money, material goods, time and energy to management process; care and use of household equipment and furnishing; family health, home safety, home nursing. (4 lecture, 6 lab hours)

130. Advanced Foods (2)

Prerequisite: H Ec 10A-B. Principles of food processing; structure and composition of basic raw foods, their behavior during processing; food demonstration techniques; experimental cookery. (1 lecture, 3 lab hours)

131. Marriage and the Family (2)

May be used to fulfill 2 units of the general education requirement in social science. Appreciation of and an intelligent approach to the problems and responsibilities of marriage and family life; functions, status and problems of the present-day American family; factors basic to success; legal aspects of marriage; psychology and physiology of sex.

132. Family Finance (2)

Practical financial problems of the individual and family; bank accounts, consumer credit, insurance, savings, and investments; wills, property laws, home mortgages; personal and family budgets; efficient buying practices.

133. Home Furnishings (2)

Recommended H Ec 38. History of homes and home furnishings from the time of early Egyptians to the present; geographic, sociological, economic, cultural, religious and other influences affecting design; furnishings from various periods in the present day home.

137. Nutrition (3)

Prerequisite or concurrently: general chemistry. Principles of nutrition and factors influencing ability of the individual and the family to secure and maintain good nutritional status; requirements at different stages of growth and development; recent scientific developments in the field.

138. Diet in Disease (2)

Prerequisite: H Ec 137. Metabolism in disease and adaptation of diet to meet existing conditions.

139. Child Development (3)

Prerequisite: H Ec 39 or permission of instructor. Application of principles of development and guidance in specific situations in the child development laboratory. Directed observation and participation in guiding children in the nursery school; opportunities to work with parents. (2 lecture, 3 lab hours)

140. Methods of Teaching Home Economics (3)

Philosophy and procedures of homemaking education in secondary schools; factors in homemaking teaching competence; observation in public schools. (2 lecture, 2 lab hours)

141. Institution Organization and Management (3)

Institution food service organization and operation; management principles; methods of control, selection, and training of personnel; food cost control and record keeping.

142. Quantity Cookery (3)

Prerequisite: H Ec 10A-B, 130, junior standing. Calculation of raw materials needed; experience in quantity food preparation and service; use and care of institution food service equipment. (1 lecture, 6 lab hours)

143. Institution Experience (3)

Open only to dietetics majors. Prerequisite: H Ec 138, 141, 142. Supervised work experience in hospital dietary departments. (Lecture-lab hours arranged)

144. Marketing, Equipment and Plant Layout (3)

Wholesale market functions and purchase of food for institutional use, factors determining quality and cost; floor plan and layouts; materials, construction, specifications, and maintenance of equipment, furniture, and furnishings for institution food units.

180. Advanced Studies in Home Economics (2)

Advanced study of problems related to the teaching of home economics. (Recommended for student teachers)

190. Independent Study (1-3; max see reference)

See *Regulations and Procedures—Independent Study*.

GRADUATE COURSE

(See *Course Numbering System—Definitions and Eligibility*)

380. Topics in Home Economics (1-3; max total 9 if no area repeated)

Special problems in home management, foods and nutrition, child care, housing and home furnishings, textiles and clothing, household equipment, family finances, marriage and the family.

INDUSTRIAL ARTS DEPARTMENT

(In the Applied Arts Division)

Professors: Grosse (Chairman), Bliss, Dunning, Noakes, Schorling
 Associate Professors: Dettinger, Feuches, McComas, F. E. Schroeter
 Assistant Professors: L. Aldrich, Gonser, Newcomb, Rockwell
 Part-time: Stafford

The Industrial Arts Department meets the needs of students who are working for the bachelor of arts degree with a teaching credential, the bachelor of arts degree without a teaching credential, and the bachelor of science degree in industrial technology. The programs offered for preparation of teachers lead to special secondary, junior high, and general secondary credentials. The department also prepares applicants for the limited credential for vocational teachers, limited credential in industrial arts education, the bachelor of vocational education degree, and the master of arts degree. The industrial technology major emphasizes physical science and industrial management as well as the subject fields within the industrial arts for students seeking technical and managerial positions in areas such as sales, personnel, and production management.

BACHELOR OF ARTS DEGREE IN INDUSTRIAL ARTS

The bachelor of arts degree in industrial arts consists of 124 units. The general requirements for the bachelor of arts degree must be completed (see *Degrees and Credentials*). Students majoring in industrial arts without a teaching credential must complete a minimum of 40 units of industrial arts courses, 12 of which must be upper division, excluding industrial arts courses listed as professional education (IA 123, 125, 126). Students may elect to do the major part of their work in various areas such as drafting, metal, graphic arts, woodwork, crafts, electricity and radio or automotive and transportation.

INDUSTRIAL ARTS MINORS

Minors in industrial arts consist of 15 to 17 units, 6 units of which must be upper division. Applicants for minors in this field should consult the chairman of the department. See also general secondary credential minors.

BACHELOR OF SCIENCE DEGREE IN INDUSTRIAL TECHNOLOGY

The bachelor of science degree with a major in industrial technology consists of 128 units, including one of the options listed below. The general requirements for the bachelor of science degree must be completed (see *Degrees and Credentials*). In addition to the specific requirements in one of the options, all industrial technology majors must complete the following courses: Econ 1A-B, Physics 2A-B.

INDUSTRIAL TECHNOLOGY MAJOR

Automotive Industries Option	<i>Units</i>
IA 6, 9, 10A-B, 11, 18, 19, 106, 109A-B, 110, 111A, 112, 116	40
Engr 11; Bus Ad 8, 151, 153	11
Electives in related areas approved by department	30
	<hr style="width: 100%;"/>
	81
 Drafting Option	
IA 2, 6 or 106, 10A, 11, 19, 22, 40, 111D, 112 or 115, 118, 121, 122, 150, 151	39
Engr 1, 1L, 11, 26; Math 3; Art 7, 9, 11	18
Electives in related areas approved by department	24
	<hr style="width: 100%;"/>
	81

	<i>Units</i>
Electrical Industries Option	
IA 6, 10A-B, 11, 18, 19, 51, 51L, 111A-B-C-D, 112 or 115, 118 or 119, 121, 150.....	43
Engr 11; Math 3; Bus Ad 8, 151, 153.....	16
Electives in related areas approved by department.....	22
	81
Graphic Arts Industries Option	
IA 10A, 11, 26, 127, 128, 142, 145, 150.....	21
Bus Ad 8, 151, 153; Acct 1A-B, 132; Mkt 140, 141, 150; Art 3, 7, 9, 115.....	34
Electives in related areas approved by department.....	26
	81
Metal Industries Option	
IA 6, 10A-B, 11, 18, 19, 40, 106, 111A, 112, 115, 117B, 118, 119, 121, 150.....	44
Engr 11; Math 3; Bus Ad 8, 110.....	13
Electives in related areas approved by department.....	24
	81
Wood Industries Option	
IA 1, 2, 11, 18, 19, 22, 100, 101, 104, 111D, 118, 122, 150, 151, 190.....	43
AgM 91; Acct 1A; Bus Ad 21, 151, 153; Art 3, 7, 9; Mkt 150.....	21
Electives in related areas approved by department.....	17
	81

BACHELOR OF VOCATIONAL EDUCATION DEGREE

This degree is limited to candidates recommended by the State Board of Examiners for Vocational Teachers. The applicant will have received, through this Board of Examiners, credit for occupational, managerial, and supervisory experience of from 20 to 40 units to be applied toward the major. Credits earned in Trade and Industrial Teacher Training will be applied toward a minor.

Each applicant for the degree shall have completed a course of 124 units with a grade-point average of 2.0 or better (on a four grade-point system), including credits allowed by the Board of Examiners.

	<i>Units</i>
General Education.....	45
Major in Vocational Education (24 lower division; 12 upper division).....	36
(Board of Examiners evaluation plus upper division courses to total 36 units.)	
Minor in Vocational Teacher Training.....	18
Electives (general or professional).....	25
	124

MASTER OF ARTS DEGREE

The graduate program for the master of arts degree in industrial arts is based on the equivalent of the undergraduate major at Fresno State College. Twenty of the 30 units required for the degree must be in industrial arts. For specific requirements, consult the chairman of the department; for general requirements, see *Degrees and Credentials—Master's Degrees and Graduate Bulletin*. For information on junior college teaching, see *Education Division* section.

SPECIAL SECONDARY CREDENTIAL IN INDUSTRIAL ARTS

(For revised credential structure see *Education Division*)

The special secondary credential in industrial arts authorizes the holder to teach industrial arts subjects named in the credential in elementary and secondary schools.

Candidates for this credential must complete the requirements for a bachelor's degree, have full approval for admission to the credential program, and complete the following major and professional requirements.

Credential Major in Industrial Arts	<i>Units</i>
IA 1, 9, 11, 19, 26, 40, 50	19
IA electives (including at least 12 u.d.)	21
	40

The applicant for the credential must include in his program the following minimum requirements in at least one area of concentration: Automotive Essentials (12 units; or 9 units plus 416 hours experience), Drafting (12 units), Electricity (12 units), General Metal (12 units), Graphic Arts (12 units; or 9 units plus 416 hours experience), Handicrafts (12 units), Machine Shop (12 units), Woodwork (12 units). For further information and additional recommended courses, see the department credential adviser.

Professional Requirements	<i>Units</i>
Ed 109, 133, 173, 185	14
IA 123, 125	5
	19

SPECIAL SECONDARY LIMITED CREDENTIAL IN INDUSTRIAL ARTS EDUCATION

(For revised credential structure see *Education Division*)

Applicants with certain training and experience may be recommended for a limited special secondary credential in industrial arts education after the completion of 60 semester hours of required college work. This credential authorizes the holder to teach his trade subject in an industrial arts program in elementary and secondary schools.

Plan I. The Practical Craftsman

- (1) Graduation from a four-year high school or the equivalent.
- (2) Five years of acceptable trade experience in an approved trade or trade field, and the passing of the approved trade tests.
- (3) Sixty semester hours of teacher education distributed as follows:

	<i>Units</i>
Education	15
Education (Student Teaching)	6
English	6
Health Education	2
Mathematics	3
Physical Education	4
Science	6
Social Studies	9
Related technical subjects	9
	60

Plan II. The Holder of a Vocational Credential

- (1) Graduation from a four-year high school or its equivalent.
- (2) Completion of required trade and industrial teacher training program for the long-term credential.
- (3) Forty-four semester hours of work selected by the evaluating institution from Plan I, (3) above, after credit has been granted for 16 semester hours of the work completed in vocational teacher training.

JUNIOR HIGH SCHOOL CREDENTIAL(For revised credential structure see *Education Division*)

The junior high school credential authorizes the holder to serve as a teacher in grades seven, eight, and nine of elementary and secondary schools. For general and professional requirements, see *Education Division* section.

The junior high school credential major in industrial arts is the same as the special secondary credential major in this field; the minors are the same as the general secondary credential minors.

GENERAL SECONDARY CREDENTIAL(For revised credential structure see *Education Division*)

The general secondary credential authorizes the holder to teach in secondary schools and in grades seven and eight of elementary schools. For general and professional requirements see *Education Division* section.

General Secondary Credential Major in Industrial Arts

Requirements for the general secondary credential major in industrial arts are the same as for the special secondary credential major. See also requirements for the bachelor of arts degree major in industrial arts.

General Secondary Credential Minors in Industrial Arts

Various teaching minors are offered in industrial arts for students majoring in other departments and working toward the general secondary credential. In addition to the course options listed below, a credential minor in industrial arts must include IA 123 and Ed 133 (3 units in industrial arts).

	<i>Units</i>
Auto Mechanics	
IA 9, 109A-B, 110, 116, 270, IA elective (3 un)	20
Crafts	
IA 1, 19, 107 or 117B, 108A-B, 117A, 270, IA electives (4 un)	20
Drawing	
IA 19, 21, 22, 121, 122, 151, 270, IA elective (2 un)	20
Electricity	
IA 11, 19, 40, 111A-B-C, 270	20
General Metal	
IA 6, 10A, 19, 40, 117A, 119, 270, IA elective (2 un)	20
Graphic Arts	
IA 26, 127, 128, 142, 145, 270, IA electives (5 un)	20
Machine Shop	
IA 6, 10A-B, 19, 112, 115, 270, IA elective (1 un)	20
Woodwork	
IA 1, 2, 19, 103, 104, 270, IA elective (3 un)	20

Courses**INDUSTRIAL ARTS****1. Elements of Woodwork (3)**

Processes of bench woodworking and wood turning; use and care of hand tools; fundamentals, exercises, correct construction methods; basic operations on light woodworking machinery.

2. Machine Woodworking (3)

Prerequisite: IA 1. Operation and upkeep of woodworking machinery in the construction of various types of cabinet work, case work, and furniture.

5. Beginning Carpentry (3)

For technical majors, prospective industrial arts teachers, and students interested in architecture. Principles of carpentry and frame construction; building materials, concrete, brick, plaster, glass, roofing, and insulation.

6. Welding (2)

Laboratory course in the fundamentals of welding; oxyacetylene welding and cutting; electric arc welding.

9. Automotive Essentials (3)

For students taking only one course of auto mechanics or specializing in an automotive area of concentration. Automotive components, servicing tools, and equipment.

10A-B. Machine Shop (3-3)

(A) Construction and operation of the lathe, drilling machine, milling machines, shapers, and grinders; simple operations performed by the machinist, including bench work, methods of layout. (B) Operation of machine tools, including the shaper, milling machine, and grinders; special machine tools and instruments.

11. Practical Problems in Electricity (3)

Fundamentals of electricity; application to industry and everyday life; practical projects and teaching aids constructed in shop laboratory.

18. Sheet Metal (3)

Metal work including bending, shaping, soldering, riveting, and spot welding on sheet metal equipment.

19. Applied Drawing (3)

Not open to students with credit in IA 20. Grammar and composition of drawing; sketching, lettering, orthographic projection, working drawings, dimensioning, developments, pictorial drawing, and blueprinting.

20. Mechanical Drawing (2)

Not open to students with credit in IA 19. For engineering and mathematics students. Elementary lettering, orthographic and isometric projections, intersections, developments, simple machine drawings.

21. Home Planning (2) (Same as H Ec 21)

Preliminary drawings for a practical and economical residence; home financing, building costs, building codes and restrictions; functional aspect of home planning and provision of adequate storage space.

22. Architectural Drawing (3)

Developing drafting skills, techniques and the fundamentals in construction as required by codes; working drawings and detailing of architectural problems.

26. Hand Composition (3)

Introduction to the graphic arts; hand composition and typography; trade history; fundamentals and application of design; use and operation of composing room equipment; proofreading, lockup and imposition.

30. Industrial Arts for Elementary Schools (2)

Techniques of using simple hand tools; leather craft, weaving, and other crafts.

34. Theatre Craft (3) (See Drama 34)**40. General Metal (3)**

Occupational exploration, appreciation of good design and sound construction; selection of industrial products and making articles for home and recreation; art metal, bench metal, forging, machine shop practice, heat treating, metal casting, ornamental iron, sheet metal.

50. Orientation to Industrial Arts (1)

Orientation and problems relating to industrial arts.

51. Introduction to Electronics (2)

Not open to students with credit in Physics 126 or Engr 156. Fundamental theory of electronics; principles of electron tubes and devices, basic associated circuits.

51L. Introduction to Electronics Laboratory (1)

Prerequisite or concurrently: IA 51. Experimental aspects of IA 51. Use of electronic equipment. (3 lab hours)

100. Carpentry (3)

Wood frame house construction; principles of roof framing; estimating and ordering materials. Occasional field trips.

101. Mill Cabinet and Furniture Construction (3)

Prerequisite: IA 2, 19. Use of woodworking machinery for building construction and machine-made cabinets, fixtures, and furniture; routing and managing of work and the possibilities of each machine; adjustment, care, and upkeep of machines, motors, and other equipment.

103. Woodwork Specialties (3)

For senior teaching majors. Prerequisite: IA 1, 2. Fundamental operations; shop organization; ordering of supplies and equipment; development of teaching devices and projects; care, repair and maintenance of woodworking tools and machines.

104. Wood Technology (3)

Not open to students with credit in IA 103B. Prerequisite: IA 1, 2. Study and activities in wood finishing, wood bending, plywood and veneering, uses and properties of wood, lumber manufacture, lumber grading, wood seasoning and preserving. Field trips required.

106. Advanced Welding (2)

Prerequisite: IA 6. Welding processes; fields of application; metallurgy and engineering application; welding symbols; heat treatment, testing and determining strength of welds.

107. Jewelry (2)

Techniques and materials used in the designing and fashioning of jewelry; basic processes and techniques; useful and artistic projects.

108A-B. Handcraft (2-2)

IA 108A is not prerequisite to IA 108B. Recommended for general students as well as industrial arts majors. Creative and recreational experiences in craft media; wood carving, plastics, metal tooling, leatherwork, enameling and other industrial arts craft areas; historical and industrial related materials.

109A. Advanced Automotive Fundamentals (3)

Prerequisite: IA 9, 11. Advanced study of fundamental principles and modern refinements in the action and construction of the components studied in IA 9.

109B. Auto Diagnosis and Repair (3)

Prerequisite: IA 109A. Basic diagnosis and service procedures on automotive repair jobs; motor testing, tune up, and trouble shooting.

110. Advanced Automotive Processes (3)

Prerequisite: IA 109A. Shop practice in maintenance and repair in automotive specialty areas, automotive machine shop, wheel alignment, body work, electrical service, power equipment, and trouble shooting.

111A. Principles of Electrical Motors (3)

Prerequisite: IA 11. Principles of construction, operation, maintenance, and repair of alternating current and direct current motors and generators. Occasional field trips.

111B. General Electricity (3)

Prerequisite: IA 11. Instruction in basic radio; organization and management of the public school electricity and radio shop. Laboratory practice in construction of practical projects and teaching aids.

111C. Applied Radio and Television (3)

Prerequisite: IA 111B. Maintenance and repair in the field of radio and television; use of oscilloscope, signal generator, signal tracer, and other radio test instruments in service operations; principles of television; frequency modulation.

111D. Principles of Electrical Wiring (3)

Prerequisite: IA 11. Principles of electrical power distribution; industrial and residential wiring; practical problems in wiring layout and design, installation and repair; local and national electrical codes. Occasional field trips.

112. Advanced Machine Shop (3)

Prerequisite: IA 10A. Design, repair, and construction of machines and tools for practical use; making of repair parts for tools, machines.

115. General Machine Shop (3)

Prerequisite: IA 10A. Review of fundamental operations; machine shop organization, management and ordering of materials and supplies; development of teaching devices, projects; care, repair, maintenance of machine shop tools, machines, supplementary equipment.

116. Automotive Technical Problems (3)

For industrial arts auto mechanics teaching and technical majors. Prerequisite: IA 109A. Planning, organization and management of an auto mechanics laboratory. Occasional field trips.

117A-B. Metal Craft (2-2)

Use of copper, brass, bronze, aluminum, pewter, gal-alloy, and silver in construction of artistic and useful projects; historical and industrial related materials. (A) Basic tools of the silversmith and coppersmith; design, annealing, surface and contour enrichment, hard and soft soldering, piercing, high and low raising, etching, repousse, chasing, coloring and finishing. (B) Spinning and precision centrifugal casting of nonferrous metals; lost wax investment; low and high form and sectional spinning.

118. Advanced Sheet Metal (3)

Pattern drafting and layout; tool operations and techniques through practice in make-up of sheet metal work.

119. General Metal (3)

Development of appreciation and manipulation of metals; metal casting, forging, bench metal, and ornamental iron.

121. Machine Drawing (3)

Prerequisite: IA 19 or equivalent. Sketching and drawing of machine parts in detail and assembly; use of standard tables.

122. Advanced Architectural Drawing (3)

Prerequisite: IA 22 or permission of instructor. Perspective elements, oblique lines and planes, parallel perspective and perspective plan method; perspective views developed from working drawings in IA 22.

123. Methods of Teaching Industrial Arts (3)

Prerequisite: Ed 185. Teaching techniques and procedures in industrial arts; organization of teaching material; literature of the field; professional standards for teachers. Observation in public schools.

125. Curriculum Development in Industrial Education (2)

Prerequisite: IA 123. Development of the curriculum for industrial arts in elementary and secondary schools through individual planning and laboratory experimentation.

126. Teaching Aids in Industrial Education (2)

Preparation and use of various teaching aids such as models, mockups, cutaways, charts, motion pictures, slides; application to the planned lesson.

127. Typography (3)

Fundamentals of typographic layout and design, type styles and uses; adaptability, limitations, and peculiarities of hand and machine-set type; photoengraving and other-art reproduction.

128. Graphic Reproduction Fundamentals (2)

Overview of the processes, materials, and personnel of the graphic arts industry; major reproduction processes of letterpress, intaglio, and plane surfaces; line, half-tone, and process color reproduction; silk-screen and block printing.

130. Handwork in Elementary Education (3)

For elementary credential candidates. Not open to others except by permission of instructor. Developing and fabricating teaching aids and integrated handwork units for elementary schools; basic skills in use of simple construction materials and tools.

132. Architectural Field Study (2)

Open only to drafting majors. Prerequisite: IA 122. Practical drafting experiences in architectural firms; regular conference meetings and reports.

134. Advanced Theatre Craft (3) (See Drama 134)**142. Bookbinding (2)**

Not open to students with credit in IA 27. Prerequisite: IA 26 or permission of instructor. Historical development of the book and its influence on our society; preparation for publication, methods of reproduction and materials used; projects in bookbinding and rebinding.

145. Publications Production Management (3)

Prerequisite: upper division standing. Production planning and management; letterpress, silk screen, lithography, xerography, rotogravure, and other processes; types of publication; media, materials, equipment; technical problems in layout; legal problems; yearbook and technical reproduction.

150. Materials of Industrial Arts Design (2)

Prerequisite: IA 19 or permission of instructor. Selection and use of materials in industrial arts design; organization and experimentation in two- and three-dimensional problems using varied media in industrial arts projects.

151. Industrial Arts Projects Design (2)

Prerequisite: IA 19 or permission of instructor. Form, construction, and decoration of wood and metal projects used in industrial arts and technical classes.

180. Design in the Theatre (3) (See Drama 180)**190. Independent Study (1-3; max see reference)**

See *Regulations and Procedures—Independent Study*.

GRADUATE COURSES

(See *Course Numbering System—Definitions and Eligibility*)

224. Industrial Education Philosophy and History (2)

Evolution, development, and present status of industrial education; industrial arts education and trade and industrial education; industrial arts in general education; developing, promoting, and improving a program of instruction in industrial arts.

270. Graduate Technical Problems in Industrial Arts (2-9; max total 9 if no area repeated)

Technical work in selected areas; research under supervision of instructor.

280. Problems in Industrial Arts Research (2)

Seminar in research procedures in the industrial arts; basic bibliography, research form and method.

284. Seminar in Industrial Arts (2-6; max total 6 on master's degree if no area repeated)

Advanced study in different phases of industrial arts; recent developments and trends in the various design, drawing, and technical areas of industrial arts.

285. School Shop Planning and Organization (2)

Problems in planning and organizing various types of school shops; architectural considerations, selection of equipment, specifications. Visits to schools and shop buildings under construction.

286. Safety and Related Problems (2)

Research and study of safety problems in school shop, home, and community; planning specific safety programs for shops, units of shops, and public school systems.

287. Seminar on the General Shop (2)

Prerequisite: graduate standing and 12 units upper division industrial arts. The general shop and its place in industrial arts education; organization, advantages, limitations; equipment, supplies, safety; subject matter, content, and methods of teaching.

288. Administration and Supervision of Industrial Arts (2)

Policies and procedures in administration and supervision of industrial arts.

290. Independent Study (1-3; max see reference)

See *Regulations and Procedures—Independent Study*.

299. Thesis or Project (2-4; max total 4)

Prerequisite: see *Master's Degrees—Thesis Requirement*. Preparation, completion, and submission of an acceptable thesis or project for the master's degree.

BUSINESS DIVISION

Division Head _____ McKee Fisk

Divisional Administrative

Assistant _____ William C. Wayne

The Business Division prepares students for professional careers in the business world and for teaching in secondary schools. The program is designed to provide a knowledge of the principles, procedures and art of business management; an understanding of the role and responsibility of business in present day society; a foundation of basic background materials for participation in the American enterprise system; and such proficiency in technical skills and information as the job market demands.

The division offers bachelor of science degree programs in the three specialized business areas of accounting, business administration, and marketing, and in agribusiness. Bachelor of arts degree programs are offered in secretarial administration, in general business, and in business education leading to teaching credentials. Minors and special courses are offered to supplement work in other fields.

The master of science degree is designed to provide advanced work in business, particularly in management. The master of arts degree is designed to deepen the competence of teachers of business subjects in secondary schools and junior colleges.

A Bureau of Business Research and Service and an Institute of Industrial Relations are part of the division program.

The Business Division is a member of the American Association of Collegiate Schools of Business.

Business _____ 100

Accounting
Agribusiness
Business Administration
Business Education
General Business
Marketing-Retailing-
Advertising
Secretarial Administration

BUSINESS DIVISION

Professors: Fisk (Head), Jepsen, Mudge, Pierson, H. Rohrer, Storli, Tidyman
 Associate Professors: E. Austin, R. Carr, Halper, Mullennix, W. Parker, Wayne, Wight

Assistant Professors: W. Brooks, Close, I. Davis, Elias, Emerson, Hampton, McCormack, R. Piersol, Reighard, Rossner, Sherman

Part-time: Simons, Taga, F. Taylor

Opportunity is afforded students through classes and student organizations to become acquainted with business and industrial organizations in California and the San Joaquin Valley. Effort is made to adapt the program to meet the particular needs of the San Joaquin Valley. Business and industrial concerns in Fresno and vicinity cooperate to make possible practical application of the theory studied in the classroom through field trips and guest lecturers in classes. A special course, business lectures, brings to the campus each week a business executive who discusses some topic of current business and economic interest. The Beta Gamma Sigma Colloquium brings to the campus well-known top management men for discussions with selected senior and graduate students. This blending of the practical and theoretical is designed to insure vitality of instruction and breadth of vision.

BUREAU OF BUSINESS RESEARCH AND SERVICE

The Bureau of Business Research and Service is organized within the Business Division to meet the research and service needs of the students and faculty of the Business Division and of the San Joaquin Valley business community. The Bureau compiles, interprets, and publishes statistics and studies on the local and regional economy, including *Fresno Facts and Trends*, which is published monthly during the regular academic year in cooperation with the Fresno County and City Chamber of Commerce. It facilitates research in appropriate areas by the students and faculty; seeks cooperative arrangements with outside organizations for conducting specific research and service projects; and arranges and conducts executive development and other programs as the need arises.

INSTITUTE OF INDUSTRIAL RELATIONS

In cooperation with labor and management groups in the San Joaquin Valley, the Institute of Industrial Relations offers work both on campus and off campus. It also provides opportunities for students to participate in labor relations programs and to engage in research in the field.

HIGH SCHOOL PREPARATION

In addition to the usual college preparatory courses it is recommended that students include four years of English, mathematics through intermediate algebra, and one year each of typewriting and bookkeeping in their high school programs.

BACHELOR OF ARTS DEGREE MAJORS

Majors are offered in the following fields for the bachelor of arts degree. See general degree requirements under *Degrees and Credentials*.

The *business education* major in combination with other requirements for the special secondary, junior high, or the general secondary credential prepares students to teach business subjects in secondary schools, including junior colleges.

The *general business* major is for students who desire a general preparation in business, and for those with other objectives, such as law and foreign trade.

The *secretarial administration* major prepares students for responsible positions as personal and executive secretaries, administrative assistants, and office supervisors.

BACHELOR OF SCIENCE DEGREE MAJORS

Majors are offered in the following fields for the bachelor of science degree. See general degree requirements under *Degrees and Credentials*.

The *accounting* major prepares for the California examination for Certified Public Accountant and for positions in governmental, public, internal, and general accounting.

The *agribusiness* major prepares students for positions in businesses allied with agriculture. These include farm credit and finance, agricultural purchasing, processing, and marketing, as well as management and office positions in agricultural industry. The degree requires 128 units including course work in both business and agriculture.

The *business administration* major prepares for positions in the fields of banking and finance, business and industrial management, small business operation, and personnel administration.

The *marketing* major prepares for positions in retailing and merchandising; in advertising; and in other types of general and specialized marketing work such as specialty selling, sales management, agricultural marketing, and market research.

MAJOR REQUIREMENTS

Each student desiring to major in a business field must select one of the majors listed below. The general regulations and general education requirements for a bachelor's degree must be completed (see *Degrees and Credentials*).

Additional Requirements: Econ 1A-B is required of all majors in the division; Math 2 is required for accounting majors; IA 26 is required for marketing (advertising) majors. Recommended additional courses are: Geog 3, Econ 110, Soc 1A, Psych 145; and H Ec 43 for secretarial administration majors. Demonstrated ability in the use of the typewriter as indicated by a proficiency examination or by credit in a college typing course is also required of all majors in the division.

MAJORS FOR BACHELOR OF ARTS DEGREE

(See *Additional Requirements* above)

Business Education	<i>Units</i>
Acct 1A-B, Bus Ad 102, 110, 118A-B, 133, 151, Mkt 10 or 100.....	27
Bus Ad 100 or equivalent, Bus Ed 154, Sec Ad 4.....	7
Elect from: Bus Ed 180, 181, 182, 183, 186.....	3
Elect from one field (u.d.): Acct, Bus Ad, Mkt, Sec Ad.....	6
	—
	43
General Business	
Acct 1A-B, Bus Ad 102, 110, 118A-B, 133, 151, Mkt 100.....	27
Elect from one field (u.d.): Acct, Bus Ad, Mkt, Sec Ad.....	6
	—
(In addition, economics minor required)	33
Secretarial Administration	
Acct 1A-B, Bus Ad 102, 110, 118A-B, 133, 151, Mkt 100.....	27
Sec Ad 4, 14, 15, 16, 114, 122A-B.....	14
Sec Ad 23, 112 (units may be adjusted for high school shorthand).....	8
	—
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MAJORS FOR BACHELOR OF SCIENCE DEGREES

(See *Additional Requirements* above)

Accounting	<i>Units</i>
Acct 1A-B, Bus Ad 102, 110, 118A-B, 133, 151, Mkt 100.....	27
Acct 120A-B, 132, 144A, 162, electives (4-5 un).....	18-19
Elect 3 units from each of two of the following series.....	6
(a) Bus Ad 100, Econ 100A	
(b) Bus Ad 104, Econ 103	
(c) Bus Ad 134, 135, Econ 131A	

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Agribusiness (Business Option)*Business Courses*

Acct 1A-B, Bus Ad 102, 110, 118A-B, 133, 151, Mkt 100.....	27
Bus Ad 100, Mkt 102.....	5
Elect from: Acct 128, 132, Bus Ad 104, 120, 124, 143, 180, 183, 184, Mkt 106, 108, 140, 150, 176.....	6

Agriculture Courses

Elect from: CP 11, E 15, H 11, OH 3, V 11.....	6
Elect from: AH 1, 71, DH 11A, 11B, PH 1, 32.....	6
Elect from: AgM 15, 17, 115A, 115B, 151A, 159.....	6
Elect from: Ag 106, 112, 130, 136, 159, AH 116, 172, 175.....	12

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Business Administration

Acct 1A-B, Bus Ad 102, 110, 118A-B, 133, 151, Mkt 100.....	27
Bus Ad 100, 120, 124.....	9
Elect from: Acct 120A, 128, 132.....	3
Elect 6 units from each of two of the following series:.....	12

- | | |
|--------------------------------|--------------------------------------|
| (a) Bus Ad 135, 139 | (g) Bus Ad 119, Econ 174 |
| (b) Bus Ad 132, 134, Econ 131A | (h) Bus Ad 104, Econ 103,
Mkt 108 |
| (c) Bus Ad 143, 144 | (i) Mkt 176, Econ 178 |
| (d) Bus Ad 153, 154, Econ 150 | (j) Bus Ad 160, 161 |
| (e) Bus Ad 152, 156, Psych 181 | (k) Bus Ad 129, Jour 113 |
| (f) Bus Ad 180, 181, 183, 184 | |

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Marketing

Acct 1A-B, Bus Ad 102, 110, 118A-B, 133, 151, Mkt 10 or 100.....	27
Mkt 106, 140, 150.....	9
Elect one subject field:.....	16-17

- (a) *General Marketing*
Bus Ad 100, 137, Mkt 105, 108, 155
Elect one: Econ 170, Mkt 176
- (b) *Advertising*
Mkt 108, 141, 144, Jour 145A-B; and Art 101 or Jour 17A
Elect one: Jour 106, 113, Mkt 105, 199
- (c) *Retailing*
Bus Ad 22, Mkt 130, 132, 134, 199, Jour 145A
Elect one: Mkt 105, Bus Ad 137, 143, Jour 145B

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SUGGESTED SEQUENCE OF COURSES FOR BACHELOR OF ARTS DEGREE MAJORS

In addition to the specific courses listed below, general education requirements and electives should be included to bring total to 15-16 units per semester. A total of 124 units must be completed for the bachelor of arts degree (see *Degrees and Credentials*).

Business Education (Including Special Secondary Credential)

1st Year: Sec Ad 1 or 2 (or exam); Sec Ad 4; one course from—Bus Ad 21, 22, Math 2, Sec Ad 5
 2nd Year: Acct 1A-B, Econ 1A-B, Mkt 10, Sec Ad 15, field electives
 3rd Year: Bus Ad 102, 110, 118A-B, 133, 151, Ed 173, 185, field electives
 4th Year: Bus Ad 100, Bus Ed 154, 180; 4 units from Bus Ed 181, 182, 183; Mkt 105; Ed 109, 133; field electives

General Business

1st Year: Sec Ad 1 or 2 (or exam)
 2nd Year: Acct 1A-B, Econ 1A-B
 3rd Year: Bus Ad 102, 110, 118A-B, 151, 133, Mkt 100, Econ minor (6 un)
 4th Year: Econ minor (6 un); field electives (6 un)

Secretarial Administration

1st Year: Sec Ad 1 or 2 (or exam); Sec Ad 4
 2nd Year: Acct 1A-B, Econ 1A-B, Sec Ad 14, 15, 16, 23
 3rd Year: Bus Ad 102, 110, 118A-B, 133, 151, Mkt 100, Sec Ad 112, 114
 4th Year: Sec Ad 122A-B

SUGGESTED SEQUENCE OF COURSES FOR BACHELOR OF SCIENCE DEGREE MAJORS

In addition to the specific courses listed below, general education requirements and electives should be included to bring total to 15-16 units per semester. A total of 124 units must be completed for the bachelor of science degree (128 for degree in agribusiness). (See also *Degrees and Credentials*).

Accounting

1st Year: Sec Ad 1 or 2 (or exam), Math 2
 2nd Year: Acct 1A-B, Econ 1A-B
 3rd Year: Acct 120A-B, 132, Bus Ad 102, 110, 118A-B, 133, 151, Mkt 100
 4th Year: Acct 144A, 162, Acct electives (4-5 un); approved Bus Ad and Econ electives

Agribusiness

1st Year: Sec Ad 1 or 2 (or exam), approved agriculture electives (6 un)
 2nd Year: Acct 1A-B, Econ 1A-B, approved agriculture electives (6 un)
 3rd Year: Bus Ad 102, 110, 118A-B, 133, 151, Mkt 100, approved agriculture electives (6 un)
 4th Year: Bus Ad 100, Mkt 102, approved business electives (6 un), approved agriculture electives (12 un)

Business Administration

1st Year: Sec Ad 1 or 2 (or exam)
 2nd Year: Acct 1A-B, Econ 1A-B
 3rd Year: Bus Ad 102, 110, 118A-B, 133, 151, Mkt 100, Acct elective (3 un)
 4th Year: Bus Ad 100, 120, 124, approved electives (12 un)

General Marketing

1st Year: Sec Ad 1 or 2 (or exam), Mkt 10
 2nd Year: Acct 1A-B, Econ 1A-B
 3rd Year: Bus Ad 102, 110, 118A-B, 133, 151, Mkt 105, 140, 150
 4th Year: Bus Ad 100, 137, Mkt 106, 108, 155, Econ 170 or Mkt 176

Marketing-Advertising

1st Year: Sec Ad 1 or 2 (or exam), Mkt 10, IA 26

2nd Year: Acct 1A-B, Econ 1A-B

3rd Year: Bus Ad 102, 110, 118A-B, 133, 151, Mkt 140, 150, Jour 145 A-B

4th Year: Mkt 106, 108, 141, 144; Art 101 or Jour 17A; field elective (3 un)

Marketing-Retailing

1st Year: Bus Ad 22, Sec Ad 1 or 2 (or exam), Mkt 10

2nd Year: Acct 1A-B, Econ 1A-B

3rd Year: Bus Ad 102, 110, 118A-B, 133, 151, Mkt 140, Jour 145A

4th Year: Mkt 106, 130, 132, 134, 150, 199, field elective (2-3 un)

MINORS

Minors are offered in several fields of business for students with majors in other departments. Satisfactory skill in use of typewriter as demonstrated by a proficiency examination or credit in Sec Ad 1 or 2 or equivalent is required of all minors. See also general secondary credential minor.

Accounting*Units*

Acct 1A-B, 120A 9

Electives (ud): Acct (6 un), Bus Ad (3 un) 9

18**Business Administration**

Acct 1A, Bus Ad 8 or 118A, 110, Bus Ad electives (6 ud) 15

Elect from: Bus Ad 133, 151, Econ 150 3

18**General Business**

Acct 1A, Mkt 10 or 100, Sec Ad 1 or 2 7-8

Bus Ad 8 or 118A, 110, Bus Ad electives (3 ud) 9

16-17**Marketing**

Acct 1A, Bus Ad 8 or 118A 6

Mkt 10 or 100, Mkt electives (6 u.d.) 9

15**Secretarial Administration**

Sec Ad 1 or 2, 4, 23, 112 11-12

(Units may be adjusted for students with high school shorthand and typing)

Sec Ad 114, 122A-B 8

19-20

SPECIAL SECONDARY CREDENTIAL IN BUSINESS EDUCATION

(For revised credential structure see *Education Division*)

The special secondary credential in business education authorizes the holder to teach in elementary and secondary schools subjects basic to business and commerce, such as those listed in the basic business requirements below, and, in addition, subjects in the fields of concentration named in the credential.

Requirements

1. Bachelor's degree including 40 units of general education with a minimum of six units in each of the following areas:
 - a. Science and/or mathematics.
 - b. The practical arts and the fine arts such as art, music, homemaking, health education, physical education, industrial arts, and similar fields.
 - c. Social studies. (It is recommended that Econ 1A-B be included as part of the social science general education program.)
 - d. The communicative arts such as languages, literature, speech arts, and similar fields.

2. Full approval for admission to the credential program.

3. Business Experience: Six months of practical experience or 1,000 clock hours in a business occupation.

	<i>Units</i>
4. Basic Business Requirements	
Acct 1A-B	6
Bus Ad 10 or 110, 102, 118A-B, 133, 151; and Bus Ad 100 or equivalent.....	21
Mkt 10, 100, or 150; and Mkt 105 or Geog 3.....	6
Sec Ad 4	2
Elect from: Bus Ad 21, 22, Math 2, Sec Ad 5.....	2-3

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NOTE: Without reducing the basic business requirement to less than 25 units, students with a business management field of concentration may use Bus Ad 102, 118B, 133, and 151 to meet the requirements of that field in item 5 below; students with a merchandising field of concentration may use Mkt 10 or 100, 105, 150 to meet the requirements of that field in item 5 below.

5. Fields of Concentration: Twenty units must be selected from two of the following fields of concentration. One of the fields must be accounting or secretarial training.

	<i>Units</i>
<i>Accounting</i> : Sec Ad 15, 16, Acct electives (5-9 u.d.).....	8-12
<i>Business Management</i> : Bus Ad electives (see basic business requirements above).....	8-12
<i>Merchandising</i> : Mkt electives (see basic business requirements above).....	8-12
<i>Secretarial Training</i> : Sec Ad 14, 15, 23, 112, 114, 122A or B.....	12-15
(Sec Ad 23 and 112 may be met by examination)	

6. Professional Requirements

Ed 109, 133 (6 un), 173, 185, Bus Ed 154, 180	17
Elect from: Bus Ed 181, 182, 183.....	4

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JUNIOR HIGH SCHOOL CREDENTIAL

(For revised credential structure see *Education Division*)

The junior high school credential authorizes the holder to serve as a teacher in grades seven, eight, and nine of elementary and secondary schools. For general and professional requirements see *Education Division*.

The junior high school credential major in business education is the same as the special secondary credential major in this field; the minor is the same as the general secondary credential minor.

GENERAL SECONDARY CREDENTIAL(For revised credential structure see *Education Division*)

The general secondary credential authorizes the holder to teach in secondary schools and in grades seven and eight of elementary schools. For general and professional requirements see *Education Division*.

Credential Major in Business Education

Requirements for the general secondary credential major in business education, including professional requirements in business education, are the same as for the special secondary credential.

Credential Minor in Business Education*Units*

Sec Ad 4 _____	2
Elect from: Acct 1A; Bus Ad 8 or 118A; Bus Ad 10 or 110; Mkt 10, 100 or 150; Mkt 105 _____	6-9
(Secretarial students may elect 6 units; merchandising students incl. Mkt 150)	
Elect one field of concentration _____	10-15
<i>Accounting:</i> Acct 1B, Sec Ad 16, Acct electives (5 u.d.)	
<i>Business Management:</i> Bus Ad electives (10 u.d.)	
<i>Merchandising:</i> Mkt electives (10 u.d.)	
<i>Secretarial Training:</i> Sec Ad 14, 15, 23, 112, 114, 122A or B	
(Units in Sec Ad 23 and 112 may be reduced for demonstrated ability)	

21-23

MASTER OF ARTS DEGREE

The graduate program for the master of arts degree in business is based on the equivalent of the undergraduate major at Fresno State College. Twenty of the 30 units required for the degree must be in business and economics, including Bus 200 or 280, 282 and 299. For other specific requirements consult the head of the division; for general requirements, see *Degrees and Credentials—Master's Degrees*. For information on junior college teaching, see *Education Division* section.

MASTER OF SCIENCE DEGREE

The master of science degree is based on the equivalent of an acceptable undergraduate degree in business at Fresno State College. Thirty units are required, 14 of which must be in strictly graduate 200 courses, including Bus 200, 220, 223 and 291, and Acct 120A. In addition to the required courses, 6 approved units, including at least one 200 series course, must be in one of the following fields: accounting, business administration, or marketing.

A qualifying examination must be passed before admission to candidacy covering the fields of accounting, business law, business organization, finance, marketing, personnel administration and statistics. This examination must be passed before 20 units of work toward the degree have been acquired.

For other specific requirements consult the head of the division; for general requirements, see *Degrees and Credentials—Master's Degrees*. For information on junior college teaching, see *Education Division* section.

*Courses***ACCOUNTING****1A-B. Principles of Accounting (3-3)**

Not open to freshmen. Introduction to accounting and to business administration; theory of modern accounts; debit and credit; classification of accounts; procedures of recording transactions; preparation of balance sheets, profit and loss statements. (2 lecture, 2 lab hours.)

120A-B. Advanced Accounting (3-3)

Prerequisite: for 120A, Acct 1B; for 120B, Math 2 (may be taken concurrently). Preparation and analysis of balance sheet and income statements; partnership and corporation accounts; basic accounting theory; theory of current and fixed assets, investments, liabilities, funds, and reserves.

128. Managerial Accounting (3)

Not open to students with credit in Acct 120A or 132; not applicable for credit toward major in accounting. Prerequisite: Acct 1A-B. Uses of accounting data as an aid in business management; nature of accounting data, uses and limitations.

132. Cost Accounting (3)

Prerequisite: Acct 1A-B. Introduction to industrial cost accounting; general principles of job-order, process and standard cost systems; special problems.

133. Advanced Cost Accounting (2)

Prerequisite: Acct 132. Advanced study of process and standard costs; overhead costs; budgeting; use of cost accounting data in economic analysis and managerial control; problems illustrating course material.

144A-B. Federal Tax Accounting (2-2)

Prerequisite: Acct 120A. Tax laws of the United States as they affect business and accounting procedures; preparation of personal, partnership, and corporate income tax returns; computation of capital stock, excess profits, estate, gift, and excise taxes.

155. Governmental Accounting (3)

Prerequisite: Acct 120A or 132. Accounting and financial reporting for municipal, county, state, and federal governments and institutions; budgetary control; types of funds; interpretation of governmental reports.

162. Auditing (3)

Prerequisite: Acct 120A-B (120B may be taken concurrently). Verification of accounts of a business to determine financial condition, operating results, and financial integrity of those in charge; duties and responsibilities of the auditor, his function in the executive staff and relation to the accounting department; balance sheet audit.

167. Advanced Accounting Problems (3)

Prerequisite: Acct 120A-B, or 120A and senior standing. Advanced accounting theory and practice; type problems in partnerships, consignments, installment sales, insurance, annuities, receiverships, branches, parent and subsidiary accounting, estates and trusts.

190. Independent Study (1-3; max see reference)

See *Regulations and Procedures—Independent Study*.

199. Supervised Work Experience (1; max total 4)

Open only to accounting majors. Prerequisite: permission of instructor. Supervised work experience in business and industry; analyzed in weekly class meeting.

200 series. Graduate courses are listed under *Business*.

BUSINESS**GRADUATE COURSES**

(See *Course Numbering System—Definitions and Eligibility*)

200. Seminar in Business Research (2)

Research and scientific method; forms of scientific method applicable to business research; types of business research problems. Actual research procedure and application by student to a required research project.

203. Office Management (2)

Prerequisite: Bus Ad 110, 120, 151, or equivalent. Analysis of the office; function, control, coordination; application of principles of management.

220. The Administrative Process: Seminar in Business Policy (2)

Seminar in advanced problems in business policy; evaluation, determination, execution, administration, and control; policy objectives in integration of product, marketing, manufacturing, finance, and organization; analysis of administrative policy-making bodies and processes.

223. Human Relations and Business Leadership (2)

Prerequisite: Bus Ad 151 or equivalent. Problems of the individual and groups brought about by modern industrial organizations and techniques; motivations for work and cooperation between executives and different economic and social groups; analysis of effect of company policy on employee and public relations.

232. Money and Capital Markets (2)

Prerequisite: Bus Ad 133, 135. Seminar in the organization and functions of the major money and capital markets in the United States; analysis of impact of private and governmental financing operations upon these markets.

240. Seminar in Marketing (2)

Prerequisite: Mkt 108 or permission of instructor. Critical review of the literature of marketing, special reports and research dealing with marketing institutions and organization, and marketing functions.

242. Marketing Management (2)

Prerequisite: Mkt 106 or permission of instructor. Seminar in the analysis of basic problems of marketing management and alternative methods of approaching these problems; case studies; use of statistics, economics, psychology, and other tools in directing marketing activities; relation of marketing to other areas of business administration.

250. Seminar in Personnel and Industrial Relations (2)

Prerequisite: Bus Ad 152, 153, or Econ 150. Trends and problems in management-employee relationships; administrative action in selection, motivation, and development of personnel; relation of personnel administration to other areas of management; concentrated study by each student of a special phase of personnel work.

252. Advanced Problems in Management-Union Relations (2)

Prerequisite: Bus Ad 151, 152. Background and process of collective bargaining; strategy techniques in contract negotiations; analysis of provisions of labor contracts; problems of contract administration; arbitration procedures; pathways to peace in management-union relations; practice in negotiating a labor contract.

260. Seminar in Accounting Theory (2)

Prerequisite: Acct 120A, 132. Seminar in development of accounting theory; current accounting theory; areas of accounting theory where professional differences exist; AICPA research bulletins, governmental regulations, recent literature, and accounting classics.

265. Accounting Systems (2)

Prerequisite: Acct 132, 162. Seminar in principles of system design and installation; correlation of accounting records and business activity.

267A-B. CPA Problems (2-2)

Prerequisite: Acct 162, 167 or equivalent. Advanced study of accounting theory; analysis and solution of type of problems given in CPA certification examination.

280. Seminar in Business Education (2)

Prerequisite: Bus Ed 154 or equivalent; permission of instructor. Advanced study of instructional problems in business education.

282. The Business Curriculum (2)

Prerequisite: Bus Ed 154. Seminar in evaluation of the curriculum and trends in secondary schools; methods of reconstructing business curricula.

289. Workshop in Business Education (1-6; max total 6)

Credit may not exceed one unit per week of workshop activity. Open only to experienced teachers. Study and critical analysis of problems in content and teaching in secondary school business education.

290. Independent Study (1-3; max see reference)

See *Regulations and Procedures—Independent Study*.

291. Seminar in Business Theory and Practice (4)

Prerequisite: Acct 120A; Bus 220, 223; Bus Ad 124. For students in final semester of graduate program. Cases requiring the correlation and coordination of the several business functions; problems of management in terms of significance to over-all operation as distinguished from operation of component parts of the organization.

292. Readings in Business (2-3; max total 6)

Prerequisite: graduate standing and permission of instructor. Individually directed readings in a field of special concern to the student's graduate program; appropriate reports and evaluation required. Individual conferences; no formal class meetings.

299. Thesis (2-4; max total 4)

Prerequisite: see *Master's Degrees—Thesis Requirement*. Preparation, completion, and submission of an acceptable thesis for the master's degree. Required for master of arts, elective for master of science.

398. Business Internship (1-6; max total 6)

Designed for graduate students who need or desire supervised work experience.

BUSINESS ADMINISTRATION**8. Survey of Business Law (3)**

For nonbusiness students. Legal concepts common to all; rights, duties, and obligations in the law of contracts, sales and business torts; functioning of judicial institutions.

10. Introduction to Business (3)

American business enterprises and their functions; case studies and practical problems illustrating current practices in business organization for production, distribution, and finance.

15. Business and the Individual (2)

For nonbusiness students. Business enterprises; importance of business in American life; history, philosophy and growth of American business; the worker and job opportunities; functions and interrelationships of business enterprise; specialized developments.

21. Business Mathematics (2)

Not open to students with credit in Bus Ad 22 or 27, Math 2 or 10. Fundamental operations and arithmetical processes; equations and use of formulas; application to specialized fields.

22. Business Data (3)

Not open to students with credit in Bus Ad 102. Prerequisite: one year high school algebra. Application of mathematical processes to business; marketing, economics, finance; introduction to statistics; compilation and classification of data.

27. Agribusiness Mathematics (3)

Not open to students with credit in Bus Ad 21. Basic mathematics for agriculture. Fundamental operations, percentage and interest, bank account reconciliation, equations, ratio and proportion, averages, areas and volumes, square root, measurement systems; applications to milk mixtures, fields, rations, tanks, silos, soils, lumber, concrete, personal buying and loans.

50. Business Lectures (1; max total 2)

Not open to freshmen. Points of view of business executives on current business developments; problems of various businesses presented by visiting lecturers.

100. Business Economics (3)

Prerequisite: Bus Ad 133, 151; senior standing. Application of economic principles in business management; measure of profit, analysis of demand, cost analysis; price, wage, and public policies.

102. Business Statistics (3)

Primarily for juniors. Prerequisite: one year high school algebra; Econ 1A-B. Recommended: Sec Ad 16, Bus Ad 22. Principles and methods of statistical analysis; application to business and economic problems; collection of data, construction of tables and graphs, averages, measures of dispersion, statistical inference, index numbers, cycles, correlations; statistical methods in research, in analysis of business conditions, and in forecasting. (2 lecture, 2 lab hours.)

104. Business Forecasting (3)

Prerequisite: Bus Ad 102. Analysis of forecasting techniques currently utilized to estimate cyclical and secular-trend changes in both firm and industry output; correlation techniques, models, composite indexes; time series, lead-lag, and flow-of-funds analyses.

110. Principles of Management (3)

For juniors. Principles of business management; history and development, planning, organizing, directing, staffing, and controlling; applications to production, marketing, finance and personnel; ethics in business.

118A-B. Business Law (3-3)

Prerequisite: junior standing. (A) Sources, forms and expressions of law; general law of contracts; the law of agency, employment, and torts. (B) Law of bailments, shipments, sale of personal property and negotiable instruments.

119. Advanced Business Law (3)

Prerequisite: Bus Ad 118A-B. Law of partnerships, corporations, estates, real property acquisition, conveyances and transfers; encumbrances such as easements, leases, mortgages and liens; riparian rights and boundaries; wills, administration of estates, bankruptcy, debtor and creditor relations.

120. Management Problems and Policies (3)

Prerequisite: Bus Ad 100; senior standing. Analysis of business operations by case study, actual investigation, research and study; business policy, structural organization, and principles of management.

124. Production Management (3)

Prerequisite: Bus Ad 10 or 110. Problems of production management: production planning; production control; purchasing and procurement; materials planning and control; product development; plant location. Field trip required.

129. Association Management (3)

Prerequisite: Bus Ad 110. Principles of management and operational problems applicable to chambers of commerce, trade associations, and similar community organizations.

132. Financial Institutions (3)

Prerequisite: Econ 1A-B, Acct 1A-B. Nature and services of various financial institutions such as commercial banks, savings banks, trust companies, insurance companies, investment banking and government credit agencies; emphasis is given to these institutions as sources of business funds.

133. Business Finance (3)

Primarily for juniors. Prerequisite: Econ 1A-B; Acct 1A-B. Promotion and financing of business enterprises; obtaining permanent and temporary fixed and working capital; bank loans and commercial paper borrowing; credit and collection policies; stock market and stock speculation; management of earnings; administration policies; expansion and reorganization.

134. Investments (3)

Prerequisite: Bus Ad 133. Channels for investment of funds; investment characteristics of stocks, bonds, and real estate mortgages; fundamentals of investment analysis; investment safeguards and investment policies.

135. Money and Banking (3)

Prerequisite: Econ 1A-B. Types of monetary systems, exchange standards, the international exchange, stabilization of the price level; nature, development, functions and control of the banking system; recent monetary and banking experience in the United States.

137. Principles of Credit Management (3)

Nature and principles of mercantile and consumer credit in modern business; derivation of credit information from business data; credit agencies and credit bureaus; valuation and ratio analysis of financial statements; technical and legal aspects of collections.

139. Financial Management (3)

Prerequisite: Bus Ad 133. Case studies and analysis of financial policies of business enterprise from the executive viewpoint; principles of effective management of the flow of funds through the individual firm under changing economic conditions; evaluation of alternative methods of financing, capital budgeting, valuation problems.

143. Property and Casualty Insurance (3)

Prerequisite: Bus Ad 8 or 118A (may be taken concurrently). Fundamental principles of insurance; descriptive, nontechnical study of property and casualty insurance and insurance carriers.

144. Life Insurance (3)

Prerequisite: Bus Ad 8 or 118A (may be taken concurrently). Principles of life insurance, nature and use, scientific basis, types and forms; organization, management and supervision of life insurance companies.

151. Personnel Management (3)

Primarily for juniors. Human relations in industry; case studies of labor-management relationship; methods of recruitment, selection, training; wage-payment plans; employee services, labor laws and application; collective bargaining methods and policies.

152. Labor Relations and Collective Bargaining (3)

Prerequisite: Bus Ad 151 or Econ 150. Relations between employers and organized employee groups; organization, election, and certification procedures; techniques of collective bargaining; basic clauses in labor contracts and their economic significance; administration of the written agreement; mediation and arbitration of disputes; determinants of labor-management conflict and peace.

153. Supervisory Training and Leadership Development (3)

Prerequisite: Bus Ad 151. The framework of supervisor-employee relations in modern industry; management action to improve personnel relations; supervisory development programs; techniques of administrative leadership of employees; practice in dealing with personnel problems.

154. Wage and Salary Administration (3)

Prerequisite: Bus Ad 151. Interaction of economic forces and institutional factors in wage determination; techniques of establishing wage programs; theory and procedures of job evaluation; establishment of job classifications and pay structures; wage determination under collective bargaining; incentive wage plans; special problems in wage and salary administration.

156. Labor Law (3)

Prerequisite: Econ 1A-B; Bus Ad 118A-B, 151. Recommended: Bus Ad 152, Econ 150. State and federal labor statutes, workmen's compensation, social security; procedures and methods in handling labor problems; leading decisions of courts and other bodies in settling labor-management disputes.

159. Field Work in Labor Relations (2; max total 4)

Prerequisite: Bus Ad 152. Consultations with labor and management representatives; observation of union meetings, grievance hearings, National Labor Relations Board proceedings, and contract negotiations; participation in planning and publicizing educational conferences. Group meetings and individual conferences.

160. Automation and Data Processing (3)

Prerequisite: Bus Ad 102 or equivalent. Records, reports and information in business, governmental, and industrial organizations; analysis of procedures, charting, form design, and control necessary to automation; survey of data processing machines and computers, principles; impact of automation on business and society. One field trip required.

161. Principles of Operation Research (3)

Prerequisite: Math B, Bus Ad 102. Quantitative methods in solving business problems; applications by various industries in fields of linear programming, queuing problems, inventory control problems, cost-value models, and problem simulation.

165. Work Simplification (2)

Recommended: work experience. Basic principles of motion economy and industrial engineering applied to office and shop; flow process charts, man and machine charts; social and personnel problems involved in work simplification procedures.

180. Urban Land Economics and Real Estate Principles (3)

Prerequisite: Econ 1A-B. Real estate principles and urban land economics; processes and patterns of land utilization where man and his artifacts are assembled in communities; determination of urban land use in a market process; economic competition among alternative uses.

181. Valuation of Real Property (3)

Prerequisite: Bus Ad 180. Theory of real property value; historical development; methods used in urban and rural property appraisals; special purpose appraisals. Field work required.

183. Urban Real Estate Investment and Management (3)

Prerequisite: Econ 1A-B. Problems and practical approach in the acquisition, development, management, and sale of investment properties; for those interested in leasing, investing, or trading in real estate. Guest lecturers for certain specialized phases.

184. Real Estate Law (3)

Prerequisite: Bus Ad 118A-B or equivalent. Legal aspects of acquisition and ownership of real estate, especially in California; conveyances, mortgages, evidences of title; planning and zoning.

186. Land Use in Urban Areas (2)

Prerequisite: Bus Ad 180 or equivalent. Urban growth and development as a function of relative land values in different uses; real estate economics in relation to the use of land; urban growth as a result of investment decisions; analysis of such decisions.

190. Independent Study (1-3; max see reference)

See *Regulations and Procedures—Independent Study*.

199. Supervised Work Experience (1; max total 4)

Open only to business administration majors. Prerequisite: permission of instructor. Supervised work experience in business and industry; analyzed in weekly class meeting.

200 series. Graduate courses are listed under *Business*.

BUSINESS EDUCATION**117. Office Procedures for Teachers (2)**

Prerequisite: proficiency in typing. Application of office machines to classroom instruction; use of the typewriter and duplicators (mimeograph and fluid) as teachers' tools; basic filing rules and filing of instructional materials; use of calculators in preparation of records and grades.

154. Objectives and Curricula in Business Education (2)

Trends and objectives of business education in secondary schools; comparison of current curricula; relationships of general and technical courses in the curriculum.

180. Teaching Methods in Typewriting (1)

Prerequisite: Sec Ad 4. Modern methods in teaching of typewriting; application of psychological principles of skill building; evaluation of instruction.

181. Teaching Methods in Bookkeeping (2)

Prerequisite: Acct 1A-B or equivalent. Objectives, teaching procedures, and materials in teaching bookkeeping and related subjects, office and clerical practice, and business arithmetic; evaluation of instruction.

182. Teaching Methods in Secretarial Subjects (2)

Prerequisite: Sec Ad 23, 112, 114, or equivalents. Modern methods in teaching shorthand, secretarial practice, transcription, and business correspondence; understanding principles underlying acquisition of a skill subject; evaluation of instruction.

183. Teaching Methods in Basic Business Subjects (2)

Prerequisite: Bus Ad 10, 118A, or equivalents. Application of educational principles and methods to basic business subjects, including elementary business training, salesmanship, business law, and other merchandising and general business subjects; techniques of teaching; evaluation of instruction.

186. Teaching Methods in Office and Clerical Practice (2)

Theory and practice of presenting teaching-learning materials for nonstenographic clerical training courses in high school; organization of materials; necessary equipment; adapting instruction to pupil ability levels; evaluation of instruction.

190. Independent Study (1-3; max see reference)

See *Regulations and Procedures—Independent Study*.

200 series. Graduate courses are listed under *Business*.

MARKETING**10. Introduction to Marketing (3)**

Students with credit in Mkt 10 may not take Mkt 100 for credit. Distribution of goods and services from the producer to the consumer, with emphasis on the products of the San Joaquin Valley; marketing functions—buying, selling, transporting, storing, standardizing and grading, risking, and financing.

100. Principles of Marketing (3)

Primarily for juniors. Not open to students with credit in Mkt 10. Prerequisite: Econ 1A-B. Economic and social problems involved in moving goods and services from the producer to the consumer; major kinds of goods and services to be marketed; the institutions and agencies of distribution, and the series of functions involved.

102. Marketing of Agricultural Products (2)

Processing, transporting, and selling of farm produce, particularly fruits and vegetables; methods of selling; functions of the middleman; standardization of produce as prescribed by California law.

105. Economics of Consumption (2)

Prerequisite: Econ 1A-B. Theory of consumption and consumer demand; analysis of the relation of the consumer to the price system; survey of efforts to improve the position of the consumer.

106. Marketing Problems (3)

Prerequisite: Mkt 10 or 100; 108 or 130 (may be taken concurrently). Distribution of goods and the rendering of services; current thought on problems of marketing, institutions and practices, from the standpoint of theory and technique.

108. Marketing Research (3)

Prerequisite: Econ 1A-B; Mkt 10 or 100; Bus Ad 102 (may be taken concurrently). Fundamentals of market and marketing analysis, research procedure, methods of analysis, applications of statistical techniques to market analysis, and presentation of results.

130. Principles of Retailing (3)

Prerequisite: Mkt 10 or 100. Various kinds of retailing organizations, their structure and management; store policies, merchandise control, personnel, retail credit, and store management.

132. Retail Buying (2)

Prerequisite: Bus Ad 22, Mkt 130, or equivalent. Problems of buying merchandise for resale; sources and markets; basic factors in planning, selecting, buying, pricing and selling of retail merchandise.

134. Merchandise Information (2)

Composition and construction of various kinds of retail merchandise; raw materials; line, color and design.

140. Introduction to Advertising (3) (Same as Jour 140)

An informational course for nonadvertising majors and an overview for advertising specialists. Social and economic functions of advertising; copy, art, layout production methods, media, campaigns, and advertising research.

141. Advertising Production and Media (2) (Same as Jour 141)

Prerequisite: Mkt 140 or equivalent. Techniques of advertising production; letterpress, photoengraving, lithography, silk-screen, typography, multicolor processes, and television; advantages and disadvantages of major media—newspapers, magazines, outdoor and poster advertising, direct mail, radio, television. Field trips are required.

144. Advertising Campaigns (2) (Same as Jour 144)

Prerequisite: Mkt 140. Market research, selection of campaign themes, copy preparation, art, and layout in various media for selected products and services; creating advertisements.

150. Principles and Psychology of Salesmanship (3)

Personal factors and techniques influencing other people; personal development, types of customers, mental and emotional appeals; mechanics and techniques of salesmanship.

155. Sales Management (2)

Prerequisite: Mkt 100, 150, or equivalent. Sales administration, planning and execution; marketing policies; planning and promotion; department organization; selection, training and management of the sales force; choice of channels of distribution; market research and analysis; and budgetary control.

176. International Marketing (3)

Prerequisite: Mkt 10 or 100. Examination and evaluation of business policies and practices of firms engaged in world trade; the marketing area; organization, product, channels of distribution, marketing research, demand creation, and other management problems.

190. Independent Study (1-3; max see reference)

See *Regulations and Procedures—Independent Study*.

199. Supervised Work Experience (1; max total 4)

Open only to marketing majors. Prerequisite: permission of instructor. Supervised work experience in business and industry; analyzed in weekly class meeting.

200 series. Graduate courses are listed under *Business*.

SECRETARIAL ADMINISTRATION*** 1. Basic Typing (2)**

Not open to students who have had a typing course or who have learned the keyboard independently. Development of typewriting technique and its application to business situations. (5 lab hours)

*** 2. Intermediate Typing (1)**

Prerequisite: Sec Ad 1 or equivalent. Students with more than one year of high school typing should enroll in Sec Ad 4. Review of keyboard; development of typewriting technique and its application to business situations. (3 lab hours)

*** 4. Production Typing (2)**

Prerequisite: Sec Ad 1, 2, or equivalent, or permission of instructor. Improvement of techniques, speed, and accuracy in typewriting; practice in letter writing, tabulating, centering, manuscript writing, outline writing, and other business forms and reports; emphasis on production of quantities of mailable copy. (6 lab hours)

* Not more than six units of credit in typing will allowed toward any degree.

5. Business Correspondence (3) (Former Engl 5)

Prerequisite: Phil 3 or Engl 1A. Modern business correspondence; practice in writing letters used in business transactions.

14. Transcribing Machines (1)

Prerequisite: Sec Ad 4 or equivalent. Instruction and practice in use of recording and transcribing machines. (3 lab hours)

15. Duplicating Machines (1)

Prerequisite: Sec Ad 4 or equivalent. Instruction and practice in use of mimeograph, offset, fluid process duplicating machines, mimeoscope. (3 lab hours)

16. Machine Calculation (2)

Not open to entering freshmen. Basic operations in use of rotary calculators. (6 lab hours)

23. Gregg Shorthand (5)

Not open to freshmen. Not more than 10 units of credit in shorthand will be allowed toward any degree. Prerequisite: adequate typing ability. Acquisition of proficiency in writing and transcribing shorthand notes.

107. Records Management (2)

Basic principles, rules and procedures of filing; individual practice in alphabetic, geographic, numeric, and subject filing; study of records organization, management, and control.

112. Advanced Shorthand (3)

Prerequisite: Sec Ad 23 or one year high school Gregg or equivalent. Review of theory and development of proficiency in writing and transcribing shorthand notes; speed and endurance in writing and transcribing shorthand notes.

114. Dictation-Transcription (2)

Prerequisite: Sec Ad 14 or equivalent, 112 (may be taken concurrently). Training in transcribing from shorthand notes; development of production standard for transcription of office-type dictation. (4 lab hours)

122A-B. Secretarial Training (3-3)

Prerequisite: adequate shorthand and typing ability, and permission of instructor. (A) Adaptation of shorthand to business requirements; secretarial efficiency; office correspondence and filing; office conduct. (B) Keeping business records, payrolls, accounts, statistics; duties of a receptionist. (2 lecture, 4 lab hours)

190. Independent Study (1-3; max see reference)

See *Regulations and Procedures—Independent Study*.

199. Supervised Work Experience (1; max total 4)

Open only to secretarial administration majors. Prerequisite: permission of instructor. Supervised work experience in business and industry; analyzed in weekly class meeting.

200 series. Graduate courses are listed under *Business*.

EDUCATION DIVISION

Division Head and Director of Teacher

Education.....Richard K. Sparks

Department

Chairman

Elementary Education.....Glenn F. Leslie

Laboratory School.....David Haimbach

Guidance and Special Education.....Ben Kremen

Health Education.....Henry F. Fricker

School Administration.....Orley W. Wilcox

Secondary Education.....Stephen V. Ballou

The Education Division utilizes the resources of the college in the preparation of teachers, administrative officers, and special service personnel for elementary and secondary schools. Teacher education curricula are developed on the assumption that a teacher or administrative officer needs a broad and liberal education, and should be master of the subject or subjects he teaches. This training which is supplemented by professional education gives knowledge of pupils, familiarity with teaching problems, and meaning to the subjects of instruction.

The division offers majors and minors in education and health education for the bachelor of arts degree; the bachelor of education degree; the master of arts degree in education; and programs leading to various types of credentials for school service.

Education..... 118
Health Education..... 136

EDUCATION DIVISION

Professors: Sparks (Head), Ballou, Bigge, F. Brown, R. Evans, Harton, Hunt, Kremen, Murphy, Rippey

Associate Professors: Bathurst, Brewster, Gilbert, Lambert, Leslie, Wilcox

Assistant Professors: Avery, Dandoy, Fast, Fee, Griffiths, Henfling, Lundberg, Mach, J. Ch. Manning, Martin, McPherran, C. Miller, Phillips, T. Rea, Saville, C. Smith

Part-time: Crookshanks, Dick, Ecklund, Elder, Ham

Laboratory School

Principal: Haimbach

Teachers (grades): Bakkegard (music), Bowers (K), Cady (4), Dow (2), Gerard (1), Hunter (5), Meeker (6), Whalen (3)

Librarian: Berry

Nurse: Emmler

REVISED CREDENTIAL PROGRAM

A student who has completed two years of college and who is on July 1, 1963, enrolled in the teacher education curriculum, may continue in the programs described on the following pages provided he completes the requirements within established time limits. *Students who do not meet these requirements or who enter a program of teacher preparation on or after July 1, 1963, must qualify under the revised credential structure.*

The revised credential structure reduces the number of public school credentials to five types. (*Education Code Section 13187*)

- (a) A standard teaching credential with specializations in elementary teaching, secondary teaching, or junior college teaching.
- (b) A standard designated subjects teaching credential.
- (c) A standard designated services credential.
- (d) A standard supervision credential.
- (e) A standard administration credential.

Information regarding the revised credential program can be secured from the Education Division or from the division or department concerned.

MAJORS AND MINORS

A major in education for the bachelor of arts degree consists of 24 semester units of approved upper division work; a minor consists of 12 semester units of approved upper division work. Students who desire a major or minor in education without a teaching credential must consult the head of the division. *Under the revised credential structure the major in elementary education will no longer be the basis for granting the new standard teaching credential with specialization in elementary teaching.* Instead, a major and a minor are required, one of which shall be in an area classified as academic subject matter. Majors and minors related to elementary teaching are being developed by the various divisions and departments at Fresno State College. Information regarding such majors and minors can be secured from the Education Division or from divisions or departments concerned.

MASTER OF ARTS DEGREE

The graduate program for the master of arts degree in education must include within the 30 units required for the degree at least 18 in education. For specific requirements, consult the chairman of the division graduate committee; for general requirements, see *Degrees and Credentials—Master's Degrees*.

APPLICATION FOR ADMISSION TO CREDENTIAL PROGRAMS

Students planning to undertake a program of studies leading to a teaching credential must file with the Education Division an application for admission to a credential program. This should be done not later than the second semester of the sophomore year. Students entering the college at the end of the sophomore year should apply on entrance. Students entering the college as junior, senior, or graduate students, should make application prior to entrance. Filing of the application enables qualifications for school services to be evaluated. Enrollment in certain of the courses required for the teaching credentials is permitted only to students who have met the minimum standards set by the State Board of Education and by the college.

Application forms are available at the office of the Education Division.

Special committees on credential program candidacy carefully consider each application. Acceptance for one credential does not imply acceptance for another type of credential. A separate application must be made for each type of credential desired. Acceptance for a credential program does not guarantee the granting of the credential. Acceptable standards must be maintained throughout the college career of the student.

The following minimum requirements apply for acceptance to all types of credential programs:

1. *Academic Aptitude.* Students who fall below the percentile rank of 25 on the college aptitude and reading tests must demonstrate compensating strength in other qualities listed in the following sections.
2. *Scholarship.* The standards in effect at Fresno State College are as follows:
 - a. In the total college program (including at least a 2.0 grade-point average at Fresno State College) according to the credential sought:

Kindergarten-primary, general elementary, special secondary.....	2.25
Junior high, general secondary.....	2.50
 - b. In professional education courses candidates must earn at least a 2.0 grade-point average and a 2.0 in each student teaching assignment.
 - c. In the credential majors and minors students must demonstrate strong subject matter competence.
3. *Professional Aptitude.* Ability to work with pupils, parents, and school officials must be demonstrated in field work assignments.
4. *Physical Fitness.* All candidates for public school credentials must pass a special physical examination by the staff of the college Student Health Service. Each candidate must make an appointment with the college physician and have this examination completed before admission to a credential program is approved.
5. *Language Usage.* Habitual use of clear, correct and appropriate language, both oral and written, is required. A pleasing voice and good speech are essential. A special committee examines the oral and written language usage of each student and recommends further training if necessary. Each student must schedule himself to complete both examinations before beginning student teaching. Transfer students should take the speech proficiency test during orientation week.

English Mechanics of Expression Test Schedule for 1962-1963:
 Fall Semester, September 13, October 9, November 14, January 8.
 Spring Semester, January 31, February 18, March 19, April 30.
6. *Personality and Character.* Personal traits required in high-grade professional service are expected. These include appearance, dress, poise, force, vitality, social attitudes, cooperativeness, temperament, emotional stability, integrity, and such personal habits and manners as are not offensive to pupils, co-workers and school patrons. Such traits must be verified in writing by faculty members.

7. *Many-sided Interests.* Participation in community enterprises, discussions of social problems, reading, music, conversation, social contacts, clubs, hobbies, and travel are considered important.
8. *General Fitness for Teaching.* Weakness in the foregoing items or evidence of unfavorable traits of character or personality will disqualify a student from candidacy for a credential program. Each candidate must secure approval from the Credentials Committee to continue through any credential program. The committee grants full approval upon completion of all requirements listed above.

BACHELOR OF ARTS DEGREE AND ELEMENTARY CREDENTIALS

(See section on *Revised Credential Program*)

The kindergarten-primary credential authorizes the holder to teach in any kindergarten and in grades one, two, and three of any elementary school.

The general elementary credential authorizes the holder to teach in any kindergarten and in any elementary and junior high school through the eighth grade.

For general degree requirements see *Degrees and Credentials*.

<i>Curricula Leading to the BA Degree with Credentials</i>	KP	GE
General Education	45	45
Education Major	36	31
Ed 30, 101, 102, 103, 109, 171, 185		
Ed (for KP) 104, 131 (4 un), 132 (8 un), 175		
Ed (for GE) 130, 131 (3 un), 132 (8 un)		
Additional Requirements	23	23
Biol 101, 102, Geog 4, H Ed 123, Math 10		
Art 135, IA 130; Mus 9, 129, or 139; PE 152		
Piano test (for KP)		
Electives (minor recommended)	20	25
	124	124

BACHELOR OF EDUCATION DEGREE AND ELEMENTARY CREDENTIALS

Only holders of a California provisional kindergarten-primary or provisional general elementary credential are eligible for admission to candidacy for the bachelor of education degree and may qualify for the general elementary and kindergarten-primary credentials by including requirements for these credentials within the requirements for the degree. A minimum of 24 semester units must be completed at Fresno State College. At least 12 semester units must be in campus residence work subsequent to an accumulation of 90 semester units. Consult chairman of Elementary Education Department for program planning and information on effect of *Revised Credential Program*.

<i>Curricula Leading to BEd Degree with Credentials</i>	KP	GE
General Education	45	45
Education Major	32	32
Ed 101, 102, 103, 109, 171, 185		
Ed (for KP) 104, 175, elective (2 un)		
Ed (for GE) 130, electives (6 un)		
Ed 132 (8 un) or verification of two years' successful elementary teaching (a maximum of 8 units may be allowed for two years' experience)		
Additional Requirements	23	23
Biol 101, 102, Geog 4, H Ed 123, Math 10		
Art 135, IA 130; Mus 9, 129, or 139; PE 152		
Electives	24	24
	124	124

JUNIOR HIGH SCHOOL CREDENTIAL(See section on *Revised Credential Program*)

The junior high school credential authorizes the holder to teach grades seven, eight, and nine in elementary and secondary schools.

The minimum scholarship standards for the junior high school credential require a grade-point average of 2.5 on the total college record of applicants for admission to the credential program; a grade-point average of 2.0 in professional education courses and the assignment(s) in student teaching; and strong subject matter competence in teaching fields.

Curriculum leading to the bachelor of arts degree with the junior high school credential (select Option 1 or 2):

Option 1	<i>Units</i>
General Education	45
Education Major	33
Ed 30, 101, 102, 103, 109, 130, 131 (3 un), 133 (8 un), 171, 173, 185	
Minors required in two teaching fields from general secondary credential minors	*
Additional Requirements	14
Biol 101, 102, Geog 4, H Ed 123, Math 10, PE 152	
Electives to complete total of 124 units	*
	124

Option 2	<i>Units</i>
General Education	45
Major: complete degree major portion of one of the general secondary credential majors	*
Minor required in one teaching field from general secondary credential minors	*
Professional Requirements	20-22
Ed 102 or 215, 109, 123 or 171, 133 (6 un), 173, 185; methods in major or minor	
Electives to complete total of 124 units	*
	124

SPECIAL SECONDARY CREDENTIAL(See section on *Revised Credential Program*)

The special secondary credential authorizes the holder to teach the subject named in the credential in elementary and secondary schools. Fresno State College offers special secondary credentials in art, business education, homemaking education, industrial arts, music, physical education, public safety and accident prevention, and speech arts; and special secondary limited credentials in industrial arts education and music. See department concerned for details of various curricula.

A scholarship record of C or better is required in each of the following: the total program; professional education courses; student teaching.

* Choice of major and/or minor(s) determines units.

GENERAL SECONDARY CREDENTIAL(See section on *Revised Credential Program*)

The general secondary credential authorizes the holder to serve as a teacher in grades seven through fourteen.

Requirements

1. Bachelor's degree including 40 units of general education with a minimum of six units in each of the following areas:
 - a. Science and/or mathematics.
 - b. The practical arts and/or fine arts such as art, music, homemaking, health education, physical education, industrial arts, and similar fields.
 - c. Social studies (including U. S. Constitution and American History).
 - d. The communicative arts such as languages, literature, speech arts, and similar fields.
2. Full approval for admission to the credential program.
3. Thirty units of postgraduate work of upper division or graduate level including:
 - a. Six units in professional education courses.
 - b. Six units in subject field commonly taught in junior and senior high schools.

NOTE: A maximum of 8 units of upper division or graduate course work earned at Fresno State College during the session in which the bachelor's degree is granted may be applied toward the 30 units of postgraduate work, provided the work so applied is formally identified at the time of filing the application for the bachelor's degree, and provided neither the courses nor the units are used in any way to meet bachelor's degree requirements.

4. A credential major and a credential minor, or two credential minors from the list of approved majors and minors.
5. Twenty-two units of professional work in education distributed as follows:

	<i>Units</i>
Ed 109, 173, 174, 185	11
Ed 133	6-9
Methods	3-6
Electives	0-2

6. Scholarship requirement: 2.5 grade-point average in the total program; 2.0 in professional education courses and each of the assignments in student teaching; and strong subject matter competence in teaching fields.
7. At least one-half of the 30 units of postgraduate work must be completed in residence at Fresno State College.

JUNIOR COLLEGE CREDENTIAL

Students interested in teaching in a junior college should consult the Education Division or their master's degree major advisers who will assist in program planning. See also section on *Revised Credential Program*.

HEALTH AND DEVELOPMENT CREDENTIAL(See section on *Revised Credential Program* and *Health Education Department*)**CREDENTIAL TO TEACH EXCEPTIONAL CHILDREN**(See section on *Revised Credential Program*)

The credential to teach exceptional children authorizes the holder to serve as a teacher of exceptional children in special day classes or remedial classes in elementary and secondary schools in the area or areas of specialization named in the credential. Candidates for this credential must have a valid kindergarten-primary, general elementary, junior high school, or general secondary credential; have approval for admission to the credential program; and have completed 24 units in-

cluding the following requirements in the general area and one of the areas of specialization:

	<i>Units</i>
General Area	12
Psych 168, Ed 114, Sp Corr 150; Ed 134 or 135 (4 un)	
Specialized Areas	
<i>Speech Correction and Lip Reading in Remedial Classes</i>	18
Sp Corr 151, 152, 153, 154, 155, 160, 161	
<i>Mentally Retarded</i>	16
Psych 167, Ed 166, Art 135	
Elect 8 units from: Ed 174, 180, 208, 210, 218; Psych 111, 119, 120, 175; Soc 120, 121, 124, 181; Sp Corr 151, 152	

GENERAL PUPIL PERSONNEL SERVICES CREDENTIAL

(See section on *Revised Credential Program*)

The general pupil personnel services credential, with any of the specializations listed below, authorizes the holder to (1) perform any pupil personnel services in the fields of child welfare and supervision of attendance, psychology, psychometry, pupil counseling, and social work in any elementary or secondary school, except giving a child an individual examination for the purpose specified in *Education Code* Section 6908 or making a recommendation based upon any such examination; and (2) supervise other persons performing pupil personnel services.

Requirements

1. Bachelor's degree granted by an institution accepted for credentialing purposes by the State Board of Education.
2. Two years of successful teaching experience; or one year of successful teaching experience and one year of supervised field experience in pupil personnel activities with school-age pupils; or two years of supervised field experience in school social work, school psychometry, or school psychology, of which at least one year shall have been in a public school.
3. Approval for admission to the credential program.
4. Completion of one year of postgraduate work, including the following requirements of the general area and one of the specialized areas. (If any of the specified courses were taken in the undergraduate program, appropriate electives totaling an equal number of units, as approved by the program coordinator, must be substituted.)

	<i>Units</i>
General Area	22-23
Ed 164, 174, 202, Psych 168, Soc 127	
Ed 180 or Psych 175; Ed 218 or Psych 111; Psych 262 or Soc 124	
Specialized Areas	
<i>Pupil Counseling</i>	10
Ed 126, 155, Psych 224, 224F	
<i>Child Welfare and Attendance</i>	9-14
Psych 119 or 120, 161	
Psych 267 or Soc 181 (1-6 un)	
Electives (2 un) approved by program coordinator	
<i>School Psychometry</i>	9
Psych 104, 265, Ed 285	

SCHOOL ADMINISTRATION AND SUPERVISION CREDENTIALS(See section on *Revised Credential Program*)

Candidates for school administration and supervision credentials must be approved for admission to the credential programs. Evaluation will be made of the candidate's school experience and letters of recommendation for the credential, courses taken at other institutions, and all matters relative to eligibility and aptitude for administrative and supervisory work.

The general requirements are: (1) a certificate from the college physician that the applicant is physically and mentally fit to engage in school service; (2) verification of a valid California teaching credential of appropriate type; (3) verification of two years of successful teaching experience (experience must be in elementary school for the elementary school administration credential).

The course requirements for each type of credential follow.

ELEMENTARY SCHOOL ADMINISTRATION CREDENTIAL(See section on *Revised Credential Program*)

The elementary school administration credential authorizes the holder to serve as superintendent, deputy superintendent, assistant superintendent, principal, vice principal, and supervisor of instruction in elementary schools. Thirty semester units of upper division or graduate work in addition to all requirements for the general elementary credential are required as follows:

1. If any of the following required courses has been taken in undergraduate work toward the teaching credential, appropriate elective is to be substituted.

	<i>Units</i>
Ed 126, 152, 218, 250.....	10
2. The following courses are to be taken concurrently or subsequent to teaching experience: Ed 260, 261, 262, 263, 264, 266, 267, 268, 269.....	16
3. Electives from areas of general or professional education to complete total required pattern of training.....	4
	30

SECONDARY SCHOOL ADMINISTRATION CREDENTIAL(See section on *Revised Credential Program*)

The secondary school administration credential authorizes the holder to serve as superintendent, deputy superintendent, assistant superintendent, principal, vice principal, and supervisor of instruction in secondary schools. Specific course requirements must be met as indicated below. At least 18 semester units of upper division or graduate work beyond all requirements for the general secondary credential must be completed.

1. The following courses may be completed prior to teaching experience:

	<i>Units</i>
Ed 126, 152, 218, 253.....	10
2. Concurrently or subsequent to teaching experience, the graduate training shall include the following: Ed 260, 261, 262, 263, 264, 266, 267, 268, 269.....	16
3. Electives from areas of general or professional education to complete the required pattern of training.	

THE SUPERVISION CREDENTIAL(See section on *Revised Credential Program*)

The supervision credential authorizes the holder to supervise instruction in the field or on the grade level for which he holds a regular valid basic credential. The holder of the supervision credential is authorized to supervise, on any grade level, nonteaching certificated personnel and personnel in all service fields where no basic credential has been established.

Specific requirements include a bachelor's degree; full approval for admission to the credential program; five years of successful public school service; and completion of a minimum of 24 semester units of postgraduate work of upper division or graduate level taken concurrently or subsequent to public school service, including the following:

Ed 126, 172, 218, 250 or 253, 260, 261, 262, 263, 264, 266, 267, 268, 269..... 26

*Courses***EDUCATION****30. Introduction to Teaching (2)**

Recommended for students working for all credentials. Personal and professional traits, duties, and responsibilities of the teacher; observation of children at work and play.

100. School and Society (3)

The place of education in American culture; role of the teacher; impact of social conflicts on the school's function; relationship between the school and community; assignments with community youth groups.

101. Social Studies in the Elementary School (3)

Prerequisite: Ed 185; provisional approval for admission to a credential program. Recommended: Ed 102, 103; concurrently Ed 130, 131. Teaching the social studies; points of view, materials, unit planning, and procedures; contributions of other subjects to an adequate social studies program.

102. Reading in the Elementary School (3)

Prerequisite: Ed 185; provisional approval for admission to a credential program. Concept of reading as a process; foundations of reading instruction; methods, materials, and instructional aids for teaching reading in the elementary school.

103. Language in the Elementary School (2)

Prerequisite: Ed 185; provisional approval for admission to a credential program. Objectives, curriculum, materials, and procedures in language, spelling, and handwriting.

104. Children's Literature (3)

Prerequisite: Ed 185. Standards of selection for prose and poetry suitable for children from kindergarten through grade six; methods and practice in storytelling.

106. Directed Observation for Teachers (1-4; max total 6)

Does not duplicate and may not substitute for Ed 131. For teachers in service, primarily provisionally credentialed teachers. Directed observation to accompany theory classes.

107. Problems in Teaching Arithmetic (2)

For teachers in service. Points of view, curriculum, units, instructional material, and procedures; assistance in the solution of teaching problems in the elementary grades.

108. Problems in Teaching Social Studies (2)

For teachers in service. Points of view, curriculum, units, instructional material, and procedures; assistance in the solution of teaching problems in the elementary grades.

109. Audio-Visual Education (2)

Required for kindergarten-primary, general elementary, junior high school, special, and general secondary credentials. Prerequisite: Ed 185. Types and use of materials and equipment in the classroom. Laboratory work in operation of equipment and appraisal of materials.

111. Mental Hygiene (3) (See Psych 111)**112. School Public Relations (2) (See Jour 112)****114. Education and Guidance of Exceptional Children (3)**

Not open to students with credit in Ed or Psych 115. Prerequisite: Psych 168. Historical development, status and trends in education, and legal provisions for atypical children; guidance of the handicapped. (2 lecture, 2 supervised field hours)

115F. Field Work With Exceptional Children (1) (See Psych 115F)**116. Problems in Teaching Reading (2)**

Prerequisite: Ed 102; teaching experience or permission of instructor. Diagnostic and remedial techniques; improvement of comprehension, recall, skimming, organization, reading speed; provisions for individual differences in ability and interest.

119. Child Psychology (3) (See Psych 119)**120. Adolescent Psychology (3) (See Psych 120)****122. Outdoor Education (2)**

Prerequisite: Ed 185, Biol 157, or PE 155. Philosophy of outdoor education; operation of school programs in outdoor education, school camping, and conservation education. At least one weekend at an outdoor school site.

122F. Field Work in Outdoor Education (1-2; max total 2)

Prerequisite: Ed 185, Biol 157, or PE 155; permission of instructor. Practice at camp with responsibilities of counseling, camp leadership, curriculum planning and evaluation, and utilization of resource people from several disciplines.

123. The Junior High School (2)

Aims, functions, organization, and instructional program of the junior high school.

125. Elementary Statistics (3)

Not open to students with credit in Ed or Psych 25. Methods of collecting, organizing, interpreting, and applying data in quantitative studies.

126. Measurement in Education (3)

Objective measurement of capacities and achievement of pupils; construction of informal, objective examinations and criteria for selection of standardized measuring instruments; planning and administering a measurement program.

127. Cultural Foundations of Education (5)

Prerequisite: Soc 1A, Anthro 2, or permission of instructor. Education in the United States: philosophical influences; socio-economic factors; educational developments and trends; professional bases of teaching; scope, function, and desirable outcome of public education; current educational issues; assignment with community youth group.

128. Psychological Foundations and Guidance (5)

Not open to students with credit in Ed 184, 185. Prerequisite: Ed 127 or permission of instructor, admission to a credential program. Educational psychology; theories of growth and learning; concepts of growth, learning, mental hygiene, and personality development; implications for instruction and guidance programs. Minimum of 1 hour per week or 20 hours per semester of guided observation and participation.

129. Curriculum and Instruction (5)

Not open to students with more than 3 units credit in Ed 109, 126, 159, 253. Prerequisite: Ed 127, 128. Theory and practice of curriculum development; principles and organization of instruction; audio-visual education, classroom management and discipline, measurement and evaluation. Minimum of 1 hour per week or 20 hours per semester of guided observation and participation in public schools. (5 lecture, 2 lab hours)

130. Extra-Instructional Activities in Elementary Schools (2)

Prerequisite: sixth semester, Ed 185. Recommended: Ed 102, 103; concurrently Ed 101, 131. Activities of teachers outside the curricular fields.

131. Observation and Participation (1-4)

Prerequisite: provisional approval for admission to a credential program; 6 units in education and/or concurrently 5 units from Ed 101, 102, 103. Directed exercises in observation and participation to prepare for teaching, develop traits and qualities which make for success in teaching, and provide basic experiences for interpreting theories developed in parallel education courses.

132. Student Teaching: Elementary (2-12)

Prerequisite: Ed 131 or equivalent; one semester residence; full approval for admission to a credential program. Directed teaching, participation, and teaching in public schools under supervision. Weekly conference with college supervisor.

133. Student Teaching: Secondary (1-9)

Prerequisite: completion of credential major and minor prior to, or concurrently with, final student teaching assignment; one semester residence; full approval for admission to a credential program. Directed observation, participation, and teaching in public schools under supervision. Weekly conference with college supervisor.

134. Student Teaching: Speech Correction and Lip Reading (1-4)

Prerequisite: 4 units of Sp Corr 155; completion of student teaching requirement for a basic teaching credential; one semester residence; full approval for admission to the credential program. Directed observation, participation, and teaching in classes for speech correction and lip reading in public schools under supervision. Weekly conference with college supervisor.

135. Student Teaching: Mentally Retarded (1-4)

Prerequisite: completion of student teaching requirement for a basic teaching credential; one semester residence; full approval for admission to the credential program. Directed observation, participation and teaching in classes for the mentally retarded in public schools under supervision. Weekly conference with college supervisor.

136. Methods in Speech Education (3) (See Spch 136)**137. Dramatization in Elementary Education (2) (See Drama 137)****143. Radio and Television in Education (2) (See R-TV 143)****143L. Radio and Television Education Laboratory (1) (See R-TV 143L)**

148. History of Education in the United States (3)

Sources and development of modern American educational theory and practice; understanding and appreciation of educational development and reorganization now in progress.

150. Introduction to Speech Correction (2) (See Sp Corr 150)**152. Educational Sociology (2)**

Scope and methods of educational sociology; basic sociological concepts; problems involving child, school, and teacher in their cultural settings; social role of schools in a democratic society.

153. Curriculum of the Elementary School (2)

For in-service teachers only. Does not duplicate and may not substitute for Ed 250. Principles, backgrounds, and organization of curriculums; scope, grade placement, selection, and teaching of subject matter.

155. Vocational and Educational Information (2)

Prerequisite: Ed 174 or permission of instructor. Procedures for collecting, evaluating, filing, and disseminating occupational and educational information in the guidance program.

157. Conservation of Natural Resources (3) (See Biol 157)**158. Speech for the Classroom Teacher (3) (See Spch 158)****159. General Methods of Teaching (2)**

Basic principles of teaching and application to the classroom; implications of methods for classroom management, motivation, pupil behavior, and reporting to parents; preparation of instructional plans and evaluation instruments.

160. Methods and Materials in Secondary Teaching (2)

Prerequisite: Ed 185; provisional approval for admission to a credential program. Psychological and social foundations of methods; instructional aids and resources for teaching in student's major and/or minor fields; comparison of newer and traditional practices; classroom organization and management; evaluative techniques.

161. Lip Reading and Auditory Training (2) (See Sp Corr 161)**164. Laws Relating to Children (2)**

May not substitute for Ed 264. *The Education Code, Labor Code, and Welfare Code* of the State of California; federal legislation applicable to children.

165. Methods in Special Education (1-4; max total 4)

Prerequisite: Ed 185 or Psych 168; teaching experience or permission of instructor. Materials and methods for teaching the learning deviates commonly found in regular classrooms, especially the rapid and slow learners; case studies.

166. Curriculum and Methods: Mentally Retarded and Slow Learner (2)

Methods of instructing the mentally retarded child and slow learner, examination and demonstration of materials. Field trips.

167. Education of the Emotionally Disturbed (2)

Prerequisite: Ed 185 or Psych 168. Materials and methods for teaching emotionally disturbed children commonly found in regular classrooms; case studies, referral procedures, and working with parents.

170. Driver Education and Training (3) (See H Ed 170)**171. Elementary Education (2)**

Prerequisite: Ed 185. Nature and functions of public elementary education; role of the teacher in the community centered school; framework for education in California.

172. Philosophy of Education (2)

Educational significance of present philosophical outlooks; educational, psychological, and sociological implications of major philosophies of education.

173. Secondary Education (2)

Prerequisite: Ed 185 or permission of instructor. Development of secondary education in America; objectives, administrative characteristics, curricular and extra-curricular features, articulation with other school divisions, types of students served, methods of instruction, guidance, community relationships.

174. Principles and Techniques in Guidance (3) (Same as Psych 174)

Recommended for both elementary and secondary credential candidates. Prerequisite: provisional approval for admission to a credential program. Discovering and meeting needs of students; guidance as an integral phase of instruction; principles, procedures, and techniques in counseling, and in individual and group guidance.

175. Childhood Education (3)

Prerequisite: Ed 185. Development of young children; methods of teaching in the kindergarten and primary grades; unification of nursery school, kindergarten, and primary grades.

176. Modern Trends in Education (1-4; max total 4)

Recent trends in educational objectives; selection and revision of curricular materials; methods of instruction.

177. Issues in Educational Theory (2)

Relation of major philosophical positions to educational trends, issues, and procedures.

178. Workshop in Elementary Education (1-4; max total 4)

Practical assistance in solution of classroom problems in elementary school teaching; problems determined by in-service teachers enrolled.

179. In-Service Curriculum Development (1-4; max total 4)

Prerequisite: Ed 171 or 173, 185; teaching experience. Methods of evaluating and improving curriculum on problems identified by the participants. Problems may be systemwide or involve only one subject in one school.

180. Child Welfare, Parent Education, and Counseling (2)

Techniques, procedures, and materials for teacher use in facilitating effective home-school relationships.

184. Lectures in Development and Learning (2)

Not open to students with credit in Ed 185. Prerequisite: a course in educational psychology or learning, or in child or adolescent development; approval of division head. Lectures on principles of learning, or on aspects of child and adolescent development. Does not include field work.

185. Development and Learning (4)

Not open to students with credit in Ed 113. Facts, ideas, and principles fundamental to an understanding of educational procedures in teaching and learning, and to the growth and development of children. (3 lecture, 2 observation hours)

186. In-Service Child Study (1-2; max total 4)

Prerequisite: Ed 185 or Psych 119, teaching experience. Child-study skills and techniques adaptable for use by the regular classroom teacher; methods of studying individuals in classroom groups; case studies.

190. Independent Study (1-3; max see reference)

(See *Regulations and Procedures—Independent Study.*)

GRADUATE COURSES*(See Course Numbering System—Definitions and Eligibility)***202. Organization and Administration of Guidance Services (3)**

Prerequisite: completion of 10 or more units in the pupil personnel services credential sequence or in the master of arts degree program with a concentration in guidance, including Ed 155, 174, 224. Organization, administration, and evaluation of guidance services.

208. Diagnostic Testing and Remedial Teaching (3)

Prerequisite: Ed 126, 185. Tools and procedures in a diagnostic and remedial program in arithmetic, reading, language, spelling, handwriting, health, and social studies.

210. Classroom Practice in Diagnostic Testing and Remedial Teaching (3)

Prerequisite: Ed 208. Work with individual pupils and small groups in diagnosing learning difficulties and providing remedial work.

212. Education and Guidance of the Gifted (3)

Prerequisite: Ed 185 or equivalent; teaching experience. Nature and needs of the gifted; program planning; field work. (2 lecture hours; 2 field-study hours arranged.)

215. Secondary School Reading (2)

Prerequisite: Ed 185, teaching experience or permission of instructor. Recommended: Ed 174 and educational measurements course. Nature of reading; observation and analysis of reading behavior and needs of secondary school pupils; development of reading materials and techniques for specific needs.

218. Mental Hygiene and Guidance of Children (3) (Same as Psych 218)

Prerequisite: Ed 185. Seminar on emotional and social problems of children in their adjustments to school and home practices and pressures; critical evaluation of tests, tools, techniques, and procedures in the guidance practices for parents and teachers.

220. Research in Education (2) (Same as Men's PE 220)

Prerequisite: graduate standing and 15 units of education. Seminar in research methodology; identification of educational research problems; use of library resources, data gathering and processing, writing a research report.

224. Counseling Techniques (3) (See Psych 224)**224F. Field Work in Counseling (2) (See Psych 224F)****250. Elementary School Curriculum Development (2)**

Prerequisite: general elementary teaching credential. Seminar on foundations of modern curriculum construction; operating principles, processes, trends, and staff organization for curriculum development; problems in and resources for planning significant elementary school experiences; evaluation of outstanding courses of study.

253. Secondary School Curriculum Development (2)

Prerequisite: Ed 173 and teaching experience or permission of instructor. Seminar on curriculum development for secondary schools; purposes of and trends in contemporary secondary schools for American democracy; problems in and resources for planning significant secondary school experiences.

255. Individual Mental Testing (3) (See Psych 265)

260. Introduction to Educational Administration (2)

Prerequisite: possession of valid regular teaching credential. Principles and practices underlying educational administration at the various levels; introduction to the literature; techniques for studying administrative problems.

261. Organization for Administration and Support of Education (2)

Prerequisite: teaching experience; Ed 260 or equivalent. Interrelationships of federal, state, county, city, and district units in the administration and promotion of programs of education.

262. School Principalship (2)

Prerequisite: teaching experience; Ed 260 or equivalent. Seminar on problems, procedures, and organizational relationships of elementary and secondary schools; principal's responsibilities in areas of organization and control; teacher personnel, pupil personnel, noncertificated personnel; special and auxiliary agencies; guidance; supervision; community relationships.

263. Supervision for the Improvement of Instruction (2)

Prerequisite: teaching experience; Ed 250 or 253, 260, or equivalents. Seminar for the clarification and application of modern concepts and techniques of supervision; practice in leadership roles, promoting productive human relationships, developing communication skills, and evaluation of teaching; ways of helping teachers in their credential fields.

264. Legal Aspects of Education (2)

Prerequisite: teaching experience; Ed 260 and 261, or equivalents. The legal provisions governing public education, with special attention to the California Education Code.

266. School Finance and Business Administration (2)

Prerequisite: Ed 260 and 261, or equivalents. Principles and practices of school finance and business administration; local, state, and federal responsibility for financial support of education.

267. School-Community Relations and School Housing (2)

Prerequisite: Ed 260, 261, and 266, or equivalents. Seminar on instructional aspects of school plants and equipment; planning and utilization; citizens committees; school surveys; school-community relations.

268. Field Work in School Administration (1)

For in-service teachers working toward administration and/or supervision credentials. Prerequisite: full approval for admission to the credential program and permission of instructor. On-the-job participation in the solution of problems in administration; written report required. A minimum of three meetings on campus during the semester.

269. Field Work in School Supervision (1) (Former Ed 139)

For in-service teachers working toward administration and/or supervision credentials. Prerequisite: full approval for admission to the credential program and permission of instructor. On-the-job participation in the solution of problems in supervision; written report required. A minimum of three meetings on campus during the semester.

270. School Business Administration I (3)

Prerequisite: Ed 266; 12 units of business administration and accounting or permission of instructor. Theoretical and practical treatment of school budget management; accounts, audits and reports, personnel administration, management of service functions including transportation and cafeterias; relationship of business management to the effectiveness of public education.

271. School Business Administration II (3)

Prerequisite: Ed 270. Theoretical and practical treatment of school capital outlay and debt service administration; protection and financing of capital outlay programs; bonding and management of bonded debt; management of school plant insurance programs; relationship of school plant to effective education.

273. The Junior College (2)

The junior college movement in America, with emphasis upon California; role of junior colleges; characteristics of junior college students and programs; problems of general and terminal education.

278. Workshop in Curriculum Development (1-6; max total 6)

Practical assistance in solving curriculum problems; problems determined by in-service teachers enrolled.

283. Current Problems in Education (3)

Prerequisite: possession of a regular teaching credential or permission of instructor. Problems of teaching and administration of the public school; recent reports of national professional groups; newly developed research; significant movements in elementary and secondary education.

285. Advanced Educational Psychology (3)

Prerequisite: Ed 185. Seminar on the psychological foundations of education; nature and characteristics of development, learning process, forces which affect educational growth.

286. Advanced Educational Sociology (3)

Prerequisite: Ed 152; or course in sociology or anthropology and permission of instructor. Seminar for analysis of effect of institutional and ideological trends and problems on the role and operation of the school in American society.

287. History of Educational Thought (3)

Prerequisite: Ed 172; or philosophy course and permission of instructor. Seminar on historical foundations of educational theory; growth of thought regarding teaching and learning; relationship of educational theory and practice in the United States.

290. Independent Study (1-3; max see reference)

See *Regulations and Procedures—Independent Study*.

295. Seminar in Health Education (4)

Prerequisite: completion of 24 units of the master's degree program, including Ed 220; B average or better; advancement to candidacy for master of arts degree. Research methods in solution of problems involving health education; experiences in gathering, organizing, interpreting, evaluating, and presenting data; instructor and student evaluation of accomplishments of seminar participants; written report required.

296. Seminar in Administration and Supervision (4)

Prerequisite: completion of 24 units of the master's degree program, including Ed 220; B average or better; advancement to candidacy for master of arts degree. Research methods in solution of educational problems; experiences in gathering, organizing, interpreting, evaluating, and presenting data; instructor and student evaluation of accomplishments of seminar participants; leadership and managerial roles of school administrators and supervisors; written report required.

297. Seminar in Counseling and Guidance (4)

Prerequisite: completion of 24 units of the master's degree program, including Ed 220; B average or better; advancement to candidacy for master of arts degree. Research methods in solution of problems involving counseling and guidance; experiences in gathering, organizing, interpreting, evaluating, and presenting data; instructor and student evaluation of accomplishments of seminar participants; written report required.

298. Seminar in Teaching Theory and Practice (4)

Prerequisite: completion of 24 units of the master's degree program, including Ed 220; B average or better; advancement to candidacy for master of arts degree. Research methods in solution of problems involving teaching theory and practice; experiences in gathering, organizing, interpreting, evaluating and presenting data; instructor and student evaluation of accomplishments of seminar participants; written report required.

299. Thesis (2-4; max total 4)

Prerequisite: see *Master's Degrees—Thesis Requirement*. Preparation, completion, and submission of an acceptable thesis for the master's degree.

315. Case Study and Interview Techniques (2; max total 4)

Prerequisite: teaching experience. Fundamentals of interviewing and case study; case conference techniques for classroom teachers.

362. Adult Education (2; max total 4)

Prerequisite: teaching experience. Problems of adult education: basic methods for adults; principles and purposes; programs and sponsoring agencies, organization and financing, public relations and community involvement.

380. Planning and Organizing Outdoor Education (2)

Prerequisite: teaching experience. Role of the public school in promoting learning opportunities outside the classroom: outdoor science, conservation education, health and safety, group living, camp work experience, and nature study; responsibilities of classroom teachers for outdoor leadership. (seminars, lab, field trips)

382. Supervision of Student Teachers (2; max total 4) (Former Ed 2925)

Prerequisite: graduate standing; teaching experience. Supervision and evaluation of student teachers; role of the supervising classroom teacher, college supervisor, and other personnel.

383. Problems in Child Study (2; max see below)

Maximum total credit in Ed 383 and 186 combined, 12 units provided no study area repeated. Methods of studying children; relationship of child study groups; review of research findings in child development and adolescent behavior.

PROFESSIONAL EDUCATION COURSES IN OTHER DEPARTMENTS

(See departments concerned for course descriptions)

Agriculture

186. Methods of Teaching General Agriculture (3)

Art

- 100A-B. Art for Teachers in Service (1-1)
- 103. Art Education in Elementary Grades (2)
- 104. Art Education in Secondary Schools (3)
- 135. Creative Art for Children (3)

Biology

- 149. Elementary Science for Teachers in Service (3)
- 157. Conservation of Natural Resources (3)

Business Education

- 154. Objectives and Curricula in Business Education (2)
- 180. Teaching Methods in Typewriting (1)
- 181. Teaching Methods in Bookkeeping (2)
- 182. Teaching Methods in Secretarial Subjects (2)
- 183. Teaching Methods in Basic Business Subjects (2)
- Bus 280. Seminar in Business Education (2)
- Bus 282. The Business Curriculum (2)
- Bus 289. Workshop in Business Education (1-6)

Foreign Language

- F Lang 130A-B. Foreign Language in the Elementary School (2-2)

Health Education

- 123. School Health (3)
- 156. Source Materials (2)
- 205. Safety Education for Teachers (2)
- 210. Administration of the School Health Program (3)
- 280. Problems in Health Education (2)

Home Economics

- 140. Methods of Teaching Home Economics (3)

Industrial Arts

- 123. Methods of Teaching Industrial Arts (3)
- 125. Curriculum Development in Industrial Education (2)
- 126. Teaching Aids in Industrial Education (2)
- 224. Industrial Education Philosophy and History (2)
- 270. Graduate Technical Problems in Industrial Arts (2-9)
- 280. Problems in Industrial Arts Research (2)
- 285. School Shop Planning and Organization (2)
- 287. Seminar on the General Shop (2)
- 288. Administration and Supervision of Industrial Arts (2)

Journalism

- 131. Principles of High School Journalism (2)

Music

- 106. Basic Instrumental Techniques for Teachers (2)
- 129. Elementary School Music Activities (2)
- 139. Elementary Music Education (3)
- 188. Teaching Piano in Public Schools (3)
- 189. Secondary Music Education (3)
- 239. Seminar in Music Education (2)

Physical Education—Men

- 125A-B-C-D. Fundamentals and Methods of Teaching Sports (2-2-2-2)
- 151. Curriculum Development of Physical Education in Secondary Schools (3)
- 152. Elementary School Physical Education (2)
- 154. Organization and Administration of Physical Education in Secondary Schools (3)
- 201. Physical Education Facilities and Equipment (2)
- 209. Problems in Secondary School Physical Education (2)
- 254. Seminar in Physical Education Administration (2)

Physical Education—Women

- 115A. Methods of Teaching Modern Dance (2)
- 115B. Methods of Teaching Team Sports (2)
- 115C. Methods of Teaching Tennis and Swimming (1)

- 151. Curriculum Development of Physical Education in Secondary Schools (3)
- 152. Elementary School Physical Education (2)
- 154. Organization and Administration of Physical Education in Secondary Schools (3)
- 201. Physical Education Facilities and Equipment (2)
- 209. Problems in Secondary School Physical Education (2)
- 254. Seminar in Physical Education Administration (2)

Speech Arts

- Drama 137. Dramatization in Elementary Education (2)
- R-TV 143. Radio and Television in Education (2)
- R-TV 143L. Radio and Television Education Laboratory (1)
- Spch 136. Methods in Speech Education (3)
- Sp Corr 150. Introduction to Speech Correction (2)
- Sp Corr 152. Methods in Correction of Speech Defects (2)
- Sp Corr 161. Lip Reading and Auditory Training (2)

HEALTH EDUCATION DEPARTMENT

(In the Education Division)

Professor: Lindly

Associate Professors: Fricker (Chairman), Fikes

Assistant Professor: Kimberly

Part-time: Faber, Koontz, Mortensen, Reich

MAJOR AND MINOR

A health education major for the bachelor of arts degree consists of 30 units of which 18 are upper division; a minor consists of 18 units of which nine are upper division. One-half of the major or minor requirements must be selected from courses carrying a health education designation. The remaining units may be selected from the courses in the basic biological sciences, family life education, nutrition, and mental health. Consult the department adviser for program planning.

MASTER OF ARTS DEGREE

A special interest area in health education may be incorporated in the master of arts degree in education. For specific requirements consult the department graduate adviser; for general requirements see *Degrees and Credentials—Master's Degrees*. For information on junior college teaching, see *Education Division*.

JUNIOR HIGH SCHOOL CREDENTIAL

(For revised credential structure see *Education Division*)

The junior high school credential authorizes the holder to serve as a teacher in grades seven, eight, and nine of elementary and secondary schools. For general and professional requirements, see *Education Division*.

The junior high school credential major in health education is the same as the portion of the general secondary credential major in this field which is required for the degree major; the minor is the same as the general secondary credential minor.

GENERAL SECONDARY CREDENTIAL

(For revised credential structure see *Education Division*)

The general secondary credential authorizes the holder to teach in secondary schools and in grades seven and eight of elementary schools.

For general and professional requirements see *Education Division*.

Credential Major in Health Education

[Admission to the credential program and completion of 30 units (including 18 upper division) of the major below constitute a major in health education for the bachelor of arts degree.]

	<i>Units</i>
H Ed 48, 90, 105, 123, 148, 155, 156, 157, 170.....	20
H Ed 210 or 280.....	2-3
H Ec 40, 131; Physio 1, Psych 111, Soc 127.....	14
—	—
	36

For further information and additional recommended courses, see credential adviser.

Credential Minor in Health Education

	<i>Units</i>
H Ed 90, 105, 123, 155, 156, 157, 170.....	17
Elect from: H Ec 40, 131; Psych 111.....	4-5
—	—
	21

Additional requirement: Physio 1.

**SPECIAL SECONDARY CREDENTIAL IN PUBLIC SAFETY
AND ACCIDENT PREVENTION**

Including Driver Education and Driver Training

(For revised credential structure see *Education Division*)

This credential authorizes the holder to teach public safety and accident prevention, including driver education and driver training, in elementary and secondary schools. Candidates for this credential, on the basis of college recommendation, must have a valid regular day school California teaching credential, other than a provisional credential; have approval for admission to the credential program and have completed the following courses: H Ed 105, 170. For further information, consult the credential adviser.

HEALTH AND DEVELOPMENT CREDENTIAL

(For revised credential structure see *Education Division*)

The health and development credential authorizes the holder to serve in the capacity of school nurse in the elementary and secondary schools. Candidates for this credential must possess a valid California State Registered Nurse's license; have possession of a bachelor's degree; and complete the following suggested courses totaling 39 units: Ed 111, 171, 173, 174, 185; H Ed 123, 153, 154, 155, 156, 161, 210. Students who qualify should apply directly to the California State Department of Education for this credential. For further information, consult credential adviser.

Courses

HEALTH EDUCATION

48. First Aid (2)

Standard and Advanced Red Cross First Aid courses; safety factors in daily living; civil defense programs. Certificates issued when requirements are met.

90. Principles of Healthful Living (2)

Meets general education requirements. Significance of basic health problems applicable to the young adult and to society.

91. Health Information (1)

Meets general education requirements. Not open to students with credit in H Ed 90. A synthesis of scientific knowledge from the contributing disciplines which relate to an understanding of health problems.

105. Safety Education (2)

Prevention of accidents in the home, school, industry, traffic, and community; fire prevention.

110. Alcohol and Narcotics Education (2) Summer only

Problems of alcohol and narcotics education; scientific data on effects of overuse of alcohol and narcotics on adolescents and adults. Teachers, nurses, and social workers develop material appropriate to their work.

123. School Health (3)

Prerequisite: Ed 185. The health program in elementary and secondary schools; administration of eye screening tests.

148. Teaching First Aid (1)

Prerequisite: Current Standard and Advanced Red Cross First Aid Certificates. Preparation for Red Cross Standard and Advanced First Aid Instructor's certificates. Certificates issued when requirements are met.

153. Public Health Nursing (3)

History and development of public health nursing; basic principles and practices; responsibility of public health nurse in community programs, including maternal and child health, disease control and health promotion.

154. School Nursing (3)

Role of the nurse in relation to needs of children and the community; knowledge and understanding of current school health practices.

155. Prevention and Control of Disease (3)

Nature, transmission, prevention and control of communicable and noncommunicable disease from a public health approach; historical background, current problems and trends in disease control.

156. Source Materials (2)

Prerequisite: H Ed 123. Exploration, evaluation, and teaching materials in health.

157. Community Health (2)

Public health services as they affect the community; investigation and analysis of community health problems.

158. Public Health Statistics and Epidemiology (2)

Prerequisite: Bact 54 or H Ed 155, or permission of instructor. Public health statistics and principles of epidemiology; methods of investigating epidemics, collecting of data, analysis and reports.

159. Environmental Sanitation (3)

Prerequisite: H Ed 158 or permission of instructor. Fundamentals of housing, heating, ventilation, lighting, water supply, waste disposal; insect and rodent control; control of milk and other food supplies.

160. Audiometry and Hearing Conservation (3) (See Sp Corr 160)**161. Observation or Field Experience in School Nursing (2-8; max total 8)**

Prerequisite: full approval for admission to credential programs. Observation or experience in school nursing practices.

163. Public Health Administration (3)

Principles of public health administration; fundamentals of organization and administration in public health.

165. Directed Group Study in Sanitation (3)

Prerequisite: H Ed 159, permission of instructor. Problems of sanitation and sanitary inspections studied through field trips, observations, demonstrations, and seminars.

170. Driver Education and Training (3) (Same as Ed 170)

Prerequisite: H Ed 105, senior standing, valid California driver's license. Materials, equipment, and procedures for driver education and training in secondary schools. (2 lecture, 2 lab hours)

190. Independent Study (1-3; max see reference.)

See *Regulations and Procedures—Independent Study*.

GRADUATE COURSES

(See *Course Numbering System—Definitions and Eligibility*)

205. Safety Education for Teachers (2)

Prerequisite: H Ed 105. Programs, methods, and materials in safety education for elementary and secondary schools.

210. Administration of the School Health Program (3)

Prerequisite: H Ed 123. Organization, administration, and legal aspects of the school health program.

220. Physical Handicaps (2)

Prerequisite: H Ed 123. Cause, treatment, and educational implication of crippling conditions, including cerebral palsy of preschool and school-age children; rehabilitation and adjustment problems.

223. Advanced School Health Education (2)

Prerequisite: H Ed 123; 223F concurrently; teaching experience or permission of instructor. Critical analysis and evaluation of the total school health program; curriculum materials, and special techniques relating to instruction, services, and environment.

223F. Field Work in Advanced School Health (1; max total 2)

Prerequisite or concurrently: H Ed 223. Field experiences in school health; planning, implementation, and evaluation of at least one major area of health.

257. Community Health Education (2)

Prerequisite: H Ed 123, 157; 257F concurrently. Planning educational aspects of community health programs; group procedures; community organization; selection, development, and use of media.

257F. Field Work in Community Health Education (1)

To be taken concurrently with H Ed 257. Field experience in community health education; planning, participation, and evaluation of programs.

280. Problems in Health Education (2)

Prerequisite: permission of instructor. Problems in health education studied through observation of school situations; review of the literature; trends.

FINE ARTS DIVISION

Division Head.....Ralph C. Rea

Department.....*Chairman*

Art.....John Ed Herbert

Music.....Ralph C. Rea

The Fine Arts Division includes the departments of art and music whose curricula admit students as majors or minors for the bachelor of arts degree; professional, semiprofessional, and technical careers; junior high school, special, and general secondary teaching credentials; and the master of arts degree in music and art.

The scope and variety of offerings in the division provide excellent opportunity for general education to prepare students for fuller cultural living and appreciation of the arts.

Art 142
Music 148

ART DEPARTMENT
(In the Fine Arts Division)

Professors: Herbert (Chairman), E. Odorfer
Associate Professors: Musselman, A. Odorfer (p-t)
Assistant Professors: Laury, Lucas, S. Williams, W. Williams
Instructor: Aikens
Part-time: R. Pickford

The Art Department aims to develop appreciation, judgment, understanding; to develop technical facility in order to teach and practice art professionally or avocationally; to realize the importance of art in cultural development and to look for ways to improve visual environment.

The department offers majors for those who plan professions or avocations as painters, decorators, advertising and display artists, illustrators, photographers, ceramists, and industrial designers. Students may choose with guidance, areas of experience to satisfy their special needs. For those who intend to make the teaching of art their profession the department offers the special secondary, junior high, and general secondary credentials.

MAJOR

A major in art for the bachelor of arts degree consists of 30 units of which 15 are upper division, including Art 119A-B, and approval by chairman of department. Two years of one foreign language in high school or one year in college is recommended for the major in art. See also special, junior high, and general secondary credential major.

Students interested in qualifying for the general elementary credential while concurrently completing a major in art for the bachelor of arts degree should consult the department chairman. See also revised credential structure, *Education Division*.

MINORS

Art Minor	<i>Units</i>
Art 1, 2, 3, 4, 8, 119A-B, 145A	20
Elect from: Art 11, 144A-B	2
	—
	22
Art Minor for Elementary Education	
Art 1, 2, 3, 4, 103, 119A-B, 135	19
Art 8 or 145A; Art 10 or 45	4
	—
	23

(See also general secondary credential minor.)

Art-Music Minor

The art-music minor consists of 18 units of which at least 6 are upper division courses. From 8 to 10 units are to be taken in each of the fields of art and music with the advice and approval of the chairman of each department concerned.

MASTER OF ARTS DEGREE

The graduate program for the master of arts degree in art must include, within the 30 units required for the degree, at least 14 units in art. For specific requirements consult the department chairman; for general requirements see *Degrees and Credentials—Master's Degree*. For information on junior college teaching, see *Education Division* section.

SPECIAL SECONDARY CREDENTIAL IN ART

(For revised credential structure see *Education Division*)

The special secondary credential in art authorizes the holder to teach art subjects in elementary and secondary schools. Candidates for this credential must complete

the requirements for a bachelor's degree, have full approval for admission to the credential program, and complete the following major and professional requirements.

Credential Major in Art	<i>Units</i>
Art 1, 2, 3, 4, 7, 8, 9, 11	17
Art 107, 112, 114, 115, 116, 118A, 119A-B, 145A	22
Art 131 A or B, 144 A or B	4
Elect from: Art 40, 50, 55A-B, 101, 111A-B, 118B-C-D, 121, 131A-B, 144A-B	2
	—
	45

For further information and additional recommended courses, see the department credential adviser.

Professional Requirements	<i>Units</i>
Ed 109, 133, 173, 185, elective (3 un)	17
Art 103, 104	5
	—
	22

JUNIOR HIGH SCHOOL CREDENTIAL

(For revised credential structure see *Education Division*)

The junior high school credential authorizes the holder to serve as a teacher in grades seven, eight, and nine of elementary and secondary schools. For general and professional requirements, see *Education Division*.

The junior high school credential major in art is the same as the special secondary credential major in this field; the minor is the same as the general secondary credential minor.

GENERAL SECONDARY CREDENTIAL

(For revised credential structure see *Education Division*)

The general secondary credential authorizes the holder to teach in secondary schools and in grades seven and eight of elementary schools. For general and professional requirements see *Education Division*.

Credential Major in Art

Requirements for the general secondary credential major in art are the same as for the special secondary credential major. See also requirements for the bachelor of arts degree major in art.

Credential Minor in Art	<i>Units</i>
Art 1, 2, 3, 4	10
Elect from: Art 8, 10, 45, 112, 145A	3-6
Elect from: Art 11, 50, 107, 111B, 144A, 144B	4-6
Elect from: Art 18A, 55A, 114, 115, 116	3-5
Elect from: Art 119A, 119B	2-4
	—
	22-25

Courses

ART

1. Materials and Expression (3)

Not open to students with credit in Art 6A or 6B and Art 12. Taken concurrently with Art 2. Required of all art majors and minors. Studio investigation of the artist's processes and media; effect on the art products of historical periods and contemporary forms. (3 2-hour lecture-labs)

2. Man and Expression (2)

Not open to students with credit in Art 6A or 6B and Art 12. Taken concurrently with Art 1. Personal, social, and economic influences on the creative work of artists; relationship of innovation to the creative process and its role in art.

3. Materials and Expression in Contemporary Art (3)

Not open to students with credit in Art 12. Open to general education students. Relationships of materials, media, expression and ideas and their effects on contemporary art. (3 2-hour lecture-labs; field trips)

4. Contemporary Influences in Art (2)

Not open to students with credit in Art 76. Open to general education students. Function and character of art as an integral force in contemporary society; critical appreciation of aesthetic factors and contemporary trends in painting, sculpture, graphic arts, architecture, design for mass production, and arts of individual craftsmen.

7. Perspective (1)

Scheduled first eight weeks of semester. Theory and practice of representing three-dimensional objects on a two-dimensional surface with both one- and two-point perspective; problems in fields of architecture, interior decoration, fine and commercial art.

8. Costume Design (3)

Prerequisite: Art 3. Individual types, colors, proper line, choice and planning costumes; history of costume for appreciation, source of ideas for modern design; costumes for the stage and dance; fashion illustrating and advertising. (3 2-hour lecture-labs)

9. Lettering (1)

Not open to students with 2 units credit in Art 7. Begins second eight weeks; students register at beginning of semester. Development of appreciation and technical facility in fine lettering in design for posters, books, magazines. (2 2-hour lecture-labs)

10. Costume Appreciation (1)

Open to women only. Line, color and texture; effective hairdressing; appropriate make-up; grooming and care of clothes. Specialists participating; lecture, demonstration.

11. Pottery (2)

Pottery of all civilizations and ages; development of proper design criteria and application; elementary building processes, decoration and firing.

18A-B. Figure Drawing (2-2)

Drawing from the model. (2 2-hour lecture-labs)

40. Visual Presentation and Display Concepts (1)

Prerequisite: sophomore standing. Current problems of effectively displaying all types of two- and three-dimensional material in the gallery and classroom; installing exhibits in the Art Department gallery.

45. Appreciation of Interior Design (1)

Appreciation and understanding of design in home planning and replanning for contemporary and period style. Lectures, demonstrations, field trips.

50. Sculpture (2)

Producing sculpture for a variety of uses; creative experimentation with materials and processes; design quality. (2 2-hour lecture-labs)

55A-B. Introduction to Print Making (2-2)

Prerequisite: Art 3 or permission of instructor. Exploration in various media in print making; appreciation and techniques by experience and study of present and past examples. (2 2-hour lecture-labs)

100A-B. Art for Teachers in Service (1-1) Summer only

Drawing, painting, and crafts for children; adjusted to needs of students enrolled.

101. Photography (2)

Not open to students with credit in Jour 17A. Outdoor and indoor photography; developing films and prints; composition and creative approach. Camera equipment provided. (2 2-hour lecture-labs)

103. Art Education in Elementary Grades (2)

Prerequisite: Art 135 or equivalent. Development of creative attitudes and philosophy of teaching art research in the development of creative thinking as applied to art education; understanding children's creative expression; guiding children in art situations; art activities in all grades of elementary school.

104. Art Education in Secondary Schools (3)

Development of creative attitudes and philosophy of teaching art; research in the development of creative thinking and its implication for art education at the secondary level; current problems, adolescent and teenage art expressions, curriculum planning, observations, laboratory.

107. Stage Design (2)

Prerequisite: Art 3. Recommended: Art 7. Designing stage scenes; modern trends in scene design; work with light and color, drawing, and model sets. (2 2-hour lecture-labs)

108. Advanced Costume Design (2)

Prerequisite: Art 8. Designing advanced seasonal styles; sketching from draped material; fashion illustration; construction from original designs; historic costume; leaders in fashion field. (2 2-hour lecture-labs)

111A. Pottery (2)

Prerequisite: Art 11. Advanced work in pottery design and construction. (2 2-hour lecture-labs)

111B. Ceramic Sculpture (2)

Prerequisite: permission of instructor. Modeling with clay, stressing good design; building, decorating, and firing of clay sculpture. (2 2-hour lecture-labs)

112. Composition and Design (2)

Prerequisite: Art 3. Advanced problems in textile design and screen printing with dyes; three-dimensional design in advertising, exhibits. (2 2-hour lecture-labs)

114. Drawing and Painting: Oil (3)

Prerequisite: Art 3. Selecting, arranging and composing still life material; picture building in both traditional and contemporary methods; use of color and variety of techniques; head and figure painting. (3 2-hour lecture-labs)

115. Illustration (3; max total 6, for credential 3)

Prerequisite: Art 3, Art 18A-B or 118A-B-C-D. Advanced advertising and illustration; problems from rough layouts to finished renderings for all phases of commercial art, book and magazine illustration; methods of reproduction and printing. (3 2-hour lecture-labs)

116. Water-color Painting and Composition (3)

Prerequisite: Art 3. Exploration of contemporary water-color techniques; approaches to picture building with still life, flowers, figures and other indoor material. (3 2-hour lecture-labs)

118A-B-C-D. Life Drawing (2-2-2-2)

Figure composition and drawing from nude and costumed figures; charcoal, ink, and paint. (2 2-hour lecture-labs)

119A-B. Art Appreciation and History (2-2)

119A is not prerequisite to 119B. Motion pictures and multiple slide projectors illustrating the arts of different countries and periods; architecture, sculpture, painting, crafts, and modern mass-produced articles in relation to past art.

121. Color Photography (2)

Prerequisite: Art 101 or equivalent. Exposing and processing color slides, making color prints by the negative-positive system; color theory, harmonious color combinations. (2 2-hour lecture-labs)

131A. Outdoor Painting: Oil (2)

Prerequisite: Art 114. Landscape composition and painting from local motifs on location and in the studio; various approaches and techniques. (2 3-hour lecture-labs)

131B. Outdoor Painting: Water Color (2)

Prerequisite: Art 116. Similar to 131A. (2 3-hour lecture-labs)

135. Creative Art for Children (3)

Not open to students with credit in Art 5 and 130. Recommended: Ed 185. Creative and mental development of children in relation to school, home, and community; exploring art materials, significance to children; observation, laboratory work with children. (3 2-hour lecture-labs)

141. Motion Picture Photography (2)

Use of amateur motion picture equipment for production of simple instructional and experimental films in black and white and color; planning, lighting, exposing, editing, titling, and synchronizing sound. (2 2-hour lecture labs)

144A. Crafts (2)

Prerequisite: Art 3. Experimenting with various materials; hand and machine tools; two- and three-dimensional inventive and functional design in leather, silk-screen and block printing, mosaics, enamel, metal, and plastics. Materials cost approximately \$10. (2 2-hour lecture labs)

144B. Crafts (2)

Prerequisite: Art 3. Similar to Art 144A in wood-carving, weaving, jewelry. Materials cost approximately \$10. (2 2-hour lecture-labs)

145A-B. Interior Design (3-3)

Prerequisite: Art 3. Recommended: Art 7. (A) Contemporary interior; designing, selecting and arranging furniture, color and texture, to create a functional and congenial atmosphere for modern living; period furniture styles in relation to present trends. (B) Advanced design problems in decoration of rooms for restaurants, offices and stores; decoration of rooms in home and school social rooms. (3 2-hour lecture-labs)

190. Independent Study (1-3; max see reference)

See *Regulations and Procedures—Independent Study*.

GRADUATE COURSES

(See *Course Numbering System—Definitions and Eligibility*)

220. Research Techniques in Art (2)

Prerequisite: minor in art. Seminar in research procedures: location and evaluation of research materials; application to a current problem or sample experience; selection, limitation, and statement of topic; outline of research.

225. Seminar in Art Education (2; max total 4)

Prerequisite or concurrently: Art 220. Psychology and philosophy in art education; recent developments in the field.

229. Advanced Problems in Art Materials and Processes (2)

Exploration and experimentation with a variety of art media, materials, and processes suitable for secondary school art teaching. Lectures, laboratory, and field work in public schools.

240. Seminar in Plastic Arts (2; max total 6)

Prerequisite: permission of instructor. Relationships of two- and three-dimensional expression in space, form, and function; attitudes, techniques, and skills of the artist. Research and laboratory experiences in a wide variety of media.

260. Seminar in Art History (2; max total 6)

Prerequisite: Art 119A, 119B, or equivalent. Critical analysis of selected works from movements in architecture and area planning; painting; graphic arts; sculpture; art in industry; art in commerce; art in the home. Individual topics of study selected with approval of instructor.

290. Independent Study (1-3; max see reference)

See *Regulations and Procedures—Independent Study*.

299. Thesis or Project (2-4; max total 4)

Prerequisite: Art 220; see *Master's Degrees—Thesis Requirement*. Preparation, completion, and submission of an acceptable thesis or project for the master's degree.

MUSIC DEPARTMENT**(In the Fine Arts Division)**

Professors: R. Rea (Chairman), Berdahl, Bryon, Delaney, Howland, Lundkvist, J. Winter, Withrow

Associate Professors: Baddin, Dempster

Assistant Professors: Bakkegard, Barnes, Bennett

The Music Department offers the following curricula leading to the bachelor of arts degree with a major or a minor in music, with or without a teaching credential. In addition to curricula designed to prepare the student for a professional career in the performance or teaching of music, courses are offered to satisfy general education requirements and avocational objectives for the non-music major.

The department also offers courses leading to the master of arts degree with music education, composition, history and literature, or performance as major areas of concentration.

Students should consult with the department chairman before registering for the major in music.

SPECIAL MUSIC REQUIREMENTS

1. Music majors are required, with the approval of the department chairman, to declare a major area of performance and to perform a satisfactory senior recital before being approved for graduation. (See Mus 10 for applied music areas)
2. Music majors are required to participate in a music laboratory each semester. Voice majors will satisfy this requirement by enrolling in a cappella choir; string majors by enrolling in orchestra; brass, woodwind, and percussion majors by enrolling in band; others by enrolling in one of the instrumental or choral organizations. Credential majors, in addition to the above requirements, should participate in each of the above musical organizations.
3. Students enrolled in music laboratories in the fall semester are expected to re-enroll for the spring semester. The nature of the work in music organizations (band, orchestra, chorus, etc.) makes it essential that constant personnel be maintained throughout the year.
4. Music majors are expected to attend all departmental concerts and recitals.
5. All students enrolled in applied music courses must attend the monthly departmental student recitals.
6. Music majors enrolled in intermediate or advanced applied music classes and all students enrolled in advanced applied music courses are expected to appear in student recitals.
7. Credential candidates are required to take Mus 106 in the areas of strings, woodwinds, brasses, and percussion.
8. Music majors should include Physics 55 in the general education program.

BACHELOR OF ARTS DEGREE

Each student desiring a bachelor of arts degree with a major or minor in music must fulfill all the requirements listed under *General Degree Regulations* and *General Education*, and complete one of the curricula listed below.

MUSIC MAJOR

The major in music for the bachelor of arts degree includes the completion of the following music requirements, participation in one of the laboratory organizations each semester (see *Special Music Requirements*), and a satisfactory senior recital.

	<i>Units</i>
Theory	24
Mus 4A-B, 14A-B, 114A-B	
Elect 6 units from: Mus 104, 116, 124, 134, 136, 154A-B	
Literature, History and Appreciation.....	10
Mus 11A-B, 111A-B	
Applied Music	8
Mus 110 (major instrument or voice, at least 4 units in advanced class)	
Music Laboratory	8
Senior Recital	x
	50

SUGGESTED SEQUENCE OF COURSES FOR MUSIC MAJOR

1st Year: Mus. 1, 4A-B, 10 (major performance area), 11A-B.

2nd Year: Mus 1, 10 (major performance area), 14A-B.

3rd Year: Mus 101, 110 (major performance area), 111A-B, 114A-B.

4th Year: Mus 101, 110 (major performance area); elect 6 units from 104, 116, 124, 134, 136, 154A-B.

MUSIC MINOR

The minor in music requires the completion of 18 units, 6 of which must be in upper division courses. It permits a maximum of freedom to explore the area in music of the student's special interest. Courses in music literature and applied music in the student's special field of performance are particularly recommended. Not more than 6 units of credit in music laboratories may be counted toward the minor. See also secondary credential minors.

ART-MUSIC MINOR

The art-music minor consists of 18 units of which at least 6 are in upper division courses. From 8 to 10 units are to be taken in each of the fields of art and music with the approval of the chairman of the department concerned.

MUSIC MAJOR FOR ELEMENTARY EDUCATION

(For revised credential structure see *Education Division*)

This major is available only for students who are concurrently completing the requirements in the general elementary credential program and who have a background in the study and performance of music. The completion of one of the following programs in music is required, including at least 12 units in upper division courses.

Voice	<i>Units</i>
Mus 9, 11A-B, 116, 129, 139, 154A	16
Mus 10-110 (6 un voice, 6 un piano).....	12
Electives (2 un music lab, 2 un music).....	4
	32
Piano	
Mus 9, 11A-B, 116, 129, 139, 154A.....	16
Mus 10-110 (4 un voice, 6 un piano).....	10
Electives (2 un music lab, 4 un music).....	6
	32

Instrumental	<i>Units</i>
Mus 9, 11A-B, 106 (6 un), 116, 129, 154A.....	19
Mus 10-110 (4 un voice, 4 un piano).....	8
Electives (2 un music lab, 3 un music).....	5
	—
	32

SPECIAL SECONDARY CREDENTIAL IN MUSIC

(For revised credential structure see *Education Division*)

The special secondary credential in music authorizes the holder to teach all music subjects in elementary and secondary schools. Candidates for this credential must complete the requirements for a bachelor's degree, have full approval for admission to the credential program, and complete the following major and professional requirements.

Credential candidates must participate in one of the laboratory organizations each semester (see *Special Music Requirements*); perform a satisfactory senior recital; demonstrate basic skills in piano and voice either by private audition or by enrolling in the appropriate classes until the required competence is achieved. The minimum levels of achievement are:

Piano. Ability to play a Bach two-part invention; an artistic accompaniment; and at sight four-part hymns.

Voice. Ability to sing one song each from the Classical, Romantic, and Modern periods; and at sight any part of a four-part hymn.

Credential Major in Music	<i>Units</i>
Theory.....	24
Mus 4A-B, 14A-B, 114A-B, 116, 136	
Elect 2 units from: Mus 104, 124, 134, 154A-B	
Literature, History and Appreciation.....	10
Mus 11A-B, 111A-B	
Applied Music.....	8
Mus 110 (major instrument or voice, at least 4 units in advanced class)	
Music Laboratory.....	8
Senior Recital.....	x
	—
	50

Professional Requirements

Ed 109, 133 (6 un), 173, 185.....	14
Mus 106, 129, 189.....	13
Piano and voice tests.....	x
	—
	27

Note: For limited voice and limited piano credentials, substitute 3 units of electives in music for Mus 129; also, for limited piano credential, substitute Mus 188 for 189.

SPECIAL SECONDARY LIMITED CREDENTIAL IN MUSIC

(For revised credential structure see *Education Division*)

The special secondary limited credential in music authorizes the holder to teach the special subject group or subjects named in the credential and in addition theoretical music, music appreciation, dictation, and music reading in the elementary and secondary schools. This credential is limited to one or more of the following special subjects—voice and choral, piano, and special instruments including band and orchestra. For requirements see department chairman.

JUNIOR HIGH SCHOOL CREDENTIAL(For revised credential structure see *Education Division*)

The junior high school credential authorizes the holder to serve as a teacher in grades seven, eight, and nine of elementary and secondary schools. For general and professional requirements, see *Education Division*.

The junior high school credential major in music is the same as the special secondary credential major in this field; the minor is the same as the general secondary credential minor.

GENERAL SECONDARY CREDENTIAL(For revised credential structure see *Education Division*)

The general secondary credential authorizes the holder to teach in secondary schools and in grades seven and eight of elementary schools. For general and professional requirements see *Education Division*.

Credential Major in Music

Requirements for the general secondary credential major in music are the same as for the special secondary credential major.

Credential Minors in Music

Voice	Units
Mus 1-101 (2 semesters), 116.....	4
Mus 10-110 (4 un voice, 4 un piano).....	8
Elect from: Mus 4A-B, 14A-B.....	6
Elect from: Mus 11A-B, 111B.....	2
	—
	20
Instrumental	
Mus 1-101 (2 semesters), 106 (4 un), 116.....	8
Mus 10-110 (piano or instrument).....	4
Elect from: Mus 4A-B, 14A-B.....	6
Elect from: Mus 11A-B, 111B.....	2
	—
	20

MASTER OF ARTS DEGREE

The graduate program for the master of arts degree in music is based upon the equivalent of the undergraduate major in music at Fresno State College. Of the 30 units required for the degree, 18 must be in music. For specific requirements, consult the chairman of the department; for general requirements, see *Degrees and Credentials—Master's Degrees*. For information on junior college teaching, see *Education Division* section.

Courses**MUSIC****1. Music Laboratory (1-2; max see below) (Same as Mus 101)**

Maximum total credit 12 units, not more than 8 of which can be in any one activity. Freshmen and sophomores (fewer than 60 units) register for Mus 1; others (more than 60 units) register for Mus 101. May apply on general education requirement in the arts for non-music majors. Group performance of music literature for interpretative and creative experience. (See *Special Music Requirements*, 2 and 3)

A cappella choir, college chorus, male chorus, women's chorus, orchestra, band, dance band, AFROTC band, band workshop, opera workshop, chamber music ensembles, small vocal ensembles (single and double duets, trios, quartets, quintets, sextets, octets), small instrumental ensembles (brass and woodwind choirs, string and mixed ensembles).

4A-B. Fundamentals of Music (3-3)

Fundamentals of musical theory; ear training and sight singing. (5 lecture-lab hours)

9. Music Fundamentals for Elementary Teachers (3)

Recommended for elementary credential students. Basic skills and fundamentals for teaching music in the elementary school; piano keyboard; writing and reading music; singing unison and part songs; playing simple melodic and rhythmic instruments; listening to recorded music.

10. Class Instruction in Applied Music (2; max total 8 each area) (Same as Mus 110)

Freshmen and sophomores (fewer than 60 units) register for Mus 10; others (more than 60 units) register for 110. Instruction according to level of student performance ability. (See *Special Music Requirements*, 5 and 6) Applied music areas: flute, oboe, clarinet, bassoon, saxophone, French horn, trumpet, trombone, baritone, tuba, percussion, violin, viola, cello, bass, organ, piano, voice. (Special fee for organ)

11A-B. Music Appreciation (2-2)

Open only to music majors and minors except by permission of instructor; may apply on general education requirement in the arts for non-music majors. Music from the late fifteenth century to the present; directed listening; explanations and analysis.

14A-B. Harmony (3-3)

Prerequisite: Mus 4A-B or equivalent. Fundamentals of harmony; diatonic and simple chromatic harmony of the eighteenth and early nineteenth centuries.

76. Listeners' Guide to Music (2)

For students untrained in music; may not count on music major except by special arrangement. May apply on general education requirement in the arts for non-music majors. Practical approach to hearing music with understanding and pleasure.

101. Music Laboratory (1-2) (See Mus 1)**104. Counterpoint (2)**

Prerequisite: Mus 14A-B. Modal polyphony of the late sixteenth century; analysis; composition of single lines, simple counterpoint, all types of imitation; writing of three-voice motets with text.

106. Basic Instrumental Techniques for Teachers (2; max total 8)

Basic techniques for teaching instrumental music in public schools; procedures, methods and materials for conducting beginning instrument classes in woodwinds, brass, percussion, violin-viola-cello-bass. See *Special Music Requirements*, 7. (3 lecture-lab hours)

110. Class Instruction in Applied Music (2; max total 8 each area) (See Mus 10)**111A-B. History of Music (3-3)**

Chronological survey and analysis of the development of music.

114A-B. Advanced Theory (3-3)

Prerequisite: Mus 14A-B. Analysis and application of traditional and contemporary harmonic practices.

116. Conducting (2)

Candidates for teaching credentials should take this course prior to student teaching. Instrumental and choral conducting; essential personal traits and baton techniques. Individual participation; supplementary reading with observation of successful conductors.

119. Classroom Music for Elementary Teachers (2; max total 4)

Prerequisite: Mus 9 or equivalent. Workshop approach to acquaint the classroom teacher with state text materials; methods of developing a varied program of singing, rhythmic, instrumental, listening, and creative activities within the classroom.

121A-B. Survey of Music Literature (2-2)

May apply on general education requirement in the arts for non-music majors. Introduction to musical styles, periods, and important composers for historical perspective through listening to music.

124. Form and Analysis (2)

Prerequisite: Mus 14A-B. Analysis of the principal music forms.

128. Accompanying (1; max total 4)

Prerequisite: advanced standing in piano; permission of instructor. Accompanying under supervision.

129. Elementary School Music Activities (2)

Recommended for elementary credentials and students with limited music experience. Prerequisite: Mus 9 or 4A. Singing, rhythmic, instrumental, listening, and creative activities, using state textbooks and supplementary materials. Group observations.

134. Composition (2; max total 8)

Prerequisite: Mus 14A-B, permission of instructor. Original composition in various forms, styles, and techniques.

136. Orchestration (2; max total 4)

Prerequisite: Mus 14A-B. Technical aspects of orchestral instruments, their use in achieving various tone colors; problems in scoring for school instrumental ensembles.

138. Piano Skills for Teachers in Service (2; max total 4)

Open only to teachers in service. Basic keyboard skills needed by elementary teachers.

139. Elementary Music Education (3)

Prerequisite: Mus 129 (except for secondary credential candidates). Philosophy of elementary school music education; organization of music curriculum materials and activities into lesson plans and projects. Observation and practice of teaching methods.

154A-B. Keyboard Harmony (2-2)

Recommended to students needing additional harmonic drill at the keyboard to increase sensitiveness to music and its structure. Application at the keyboard of all the harmonic materials studied in previous courses.

156. Appreciation of Opera (2)

Primarily for the general college student. May apply on general education requirement in the arts for non-music majors. Selected master works in the standard operatic repertory; phonograph recordings; plot, characterization, period, style, and expressive methods of composers.

166. Appreciation of Symphonic Music (2)

Primarily for the general college student. May apply on general education requirement in the arts for non-music majors. Selected master works from the standard orchestral repertory; phonograph recordings; periods, style, techniques and expressive methods of selected composers.

188. Teaching Piano in Public Schools (3)

Required of students taking the special secondary limited credential in piano. Modern methods of piano teaching; classes in public schools; individual and class teaching; application of methods in Laboratory School.

189. Secondary Music Education (3)

Place and function of music in the high school curriculum; survey of teaching methods and materials; band, orchestra and choral problems.

190. Independent Study (1-3; max see reference)

See *Regulations and Procedures—Independent Study*.

GRADUATE COURSES

(See *Course Numbering System—Definitions and Eligibility*)

206. Advanced Instrumental Techniques (2; max total 4) Summer only

Prerequisite: Mus 106 or equivalent; permission of instructor. Teaching and playing techniques for brass, woodwind, string, and percussion instruments; reed making; acoustical principles and application in teaching; materials and literature.

210. Studies in Performance (1-2; max total 4)

Prerequisite: permission of department chairman. Individual lessons on instrument or in voice; historical, analytical, and practical study of standard literature of all periods in major performance area; preparation for public recitals. (Special fee)

214. Theory Seminar (2; max total 4) Summer only

Prerequisite: permission of instructor. With approval of instructor, each student elects a project of analysis, arranging, composing, or study according to his special capabilities and interests.

220. Research Methods and Bibliography (2)

Prerequisite: undergraduate history of music. Basic bibliography, literature, and research techniques necessary for graduate study in music. Required of all graduate students working for the master's degree in music.

221. Seminar in Music History (2; max total 6 if no era repeated)

Seminar in critical and analytical study of selected works by composers of an era: Renaissance and Baroque; Classic and Early Romantic; Romantic and Contemporary.

224. Studies in Musical Analysis (2; max total 4)

Analysis of selected works; form, thematic and motive development, harmonic structure, compositional devices and their significance.

234. Studies in Composition (2; max total 6)

Prerequisite: permission of instructor. Critical examination of student composition; reference to works of acknowledged composers; development of contemporary technique in structural and harmonic methods. One work in a given classical form required with choice of harmonic and rhythmic style.

236. Studies in Orchestration (2)

Prerequisite: permission of instructor. Studies in writing for the modern symphony orchestra; preparation of scores based on models from Ravel, Bartok, Rous-sel, and Stravinsky; development of the symphony orchestra and classical scores.

239. Seminar in Music Education (2; max total 4)

Advanced problems in music education according to needs of students enrolled; administration, supervision, vocal, and instrumental fields.

290. Independent Study (1-3; max see reference)

See *Regulations and Procedures—Independent Study*

299. Thesis or Project (2-6; max total 6)

Prerequisite: see *Master's Degrees—Thesis Requirement*. Preparation, completion, and submission of an acceptable thesis or project for the master's degree.

307. Musical Instrument Repair (1; max see below)

Maximum total credit 3 units, provided instrumental groupings are not repeated. Criteria for selection; techniques for care and repair of musical instruments. Instrumental groupings: brass and percussion; woodwind and strings; piano.

HONORS PROGRAM

The Honors Program is established to enrich the college experience of students who have proved themselves capable of superior academic performance.

Honors Courses..... 158

HONORS PROGRAM

The honors colloquia are open by invitation of the college to all qualified students regardless of major field. Qualification of students will be determined upon the basis of proven capacity for outstanding academic performance as indicated by entrance test scores, scholastic record, and faculty recommendations.

The colloquia are departmental and interdepartmental in the areas of humanities, social science, natural science, and fine arts. The course titles and subject matter will vary from semester to semester. The colloquia may be repeated by a student for the maximum credit indicated below. For the colloquia to be offered in any particular semester, see the *Schedule of Courses*.

Courses

Note: Titles of courses offered each semester will be indicated in the Schedule of Courses.

Honors 70. (1-2; max total 3)
(Course title)

Honors colloquia open by invitation to lower division students.

Honors 170. (1-2; max total 3)
(Course title)

Honors colloquia open by invitation to upper division students.

HUMANITIES DIVISION

Division Head..... Herbert H. Wheaton

Department..... *Chairman*

English..... Earl D. Lyon

Foreign Language..... Carlos A. Rojas

Journalism..... Paul V. Sheehan

Philosophy..... A. Wayne Colver

The Humanities Division offers instruction in literature, language, and philosophy for students seeking a liberal education, including those who expect to enter the professions. Majors and minors in literature, language, and philosophy are among those recommended as preparation for graduate schools of business, law, medicine, and theology; for the postgraduate managerial training conducted by certain corporations and governmental agencies; and for college teaching. Students interested in such professions are invited to seek detailed advice about the preparation recommended and required by consulting the catalogs of the professional schools, the bulletins collected in the college placement office, the summaries under *Preprofessional Preparation* in this catalog, and the counselors in the office of the Dean of Students.

Further, the division offers special majors and minors in English, language arts, journalism, and foreign languages for students preparing for teaching; programs leading to newspaper work, magazine writing, and translating for foreign-trade companies and governmental agencies; and the master of arts degree in English.

English	160
Foreign Language.....	167
Journalism	175
Philosophy	180

ENGLISH DEPARTMENT

(In the Humanities Division)

Professors: Lyon (Chairman), Larrabee

Associate Professors: Shafer, D. Smith

Assistant Professors: Billings, Brengelman, Chittick, Leavenworth, Levine, Logan, Poss, Zumwalt

Instructors: Long, O'Neil, Weihs

The English Department offers majors and minors in literature and language; credential majors and minors in English and language arts; and a master of arts degree. For students majoring in other departments it provides courses of general interest in reading, composition of various kinds, literature, and linguistics. Further, it provides remedial courses in grammar and reading and tutorials in grammar and composition. Tutorial hours are announced in the *Schedule of Courses*.

MAJORS IN ENGLISH

The general major in English for the bachelor of arts degree is designed to accommodate students preparing for postgraduate training in business, law, medicine, theology, civil service, college teaching, and the other vocations that recommend a grounding in the liberal arts as preparation for occupational training. See also the credential majors designed for students preparing to teach English.

Requirements for the majors are in addition to general education requirements and are exclusive of English A, 6, and 76.

Foreign Language Requirement

Two years of satisfactory collegiate study (or equivalent) in one foreign language are required for the general major in English but not the credential majors. *This requirement applies to students who will be graduated in June of 1963 and thereafter.* See the general statement under *Degrees and Credentials—Foreign Language Requirement* for equivalents and alternative ways of meeting the requirement.

General Major in English

The general major in English consists of 33 units in English and related fields in patterns designed individually. It consists of 24 units in English, linguistics, or both, of which at least 12 are upper division; and 9 units in these or related fields outside the department. The student proposes a program which, upon recommendation of the adviser and approval by the chairman of the department, becomes his major.

Preparation for Advanced Graduate Work in English

Students planning to take advanced graduate work in English are advised to elect a pattern of courses like that listed for the general secondary credential. Normally this will provide the most appropriate preparation. They should also take into account the foreign language requirements of graduate schools they may attend.

MINORS

The general minor in English requires 18 units as listed below. Phil 3 or Engl 1A is prerequisite to all other English courses (except Engl A, 6, and 76, which do not count toward any minor, and Engl 14). See also credential minors.

	<i>Units</i>
Engl 1B, 61A or B, 105.....	8
English electives (at least 3 ud).....	10
	—
	18

JUNIOR HIGH SCHOOL CREDENTIAL(For revised credential structure see *Education Division*)

The junior high school credential authorizes the holder to serve as a teacher in grades seven, eight, and nine of elementary and secondary schools. For general and professional requirements, see *Education Division*.

The junior high school credential majors in English and language arts are the same as the portions of the general secondary credential majors in these fields which are required for the bachelor of arts degree; the minors are the same as the general secondary credential minors in these fields.

GENERAL SECONDARY CREDENTIAL(For revised credential structure see *Education Division*)

The general secondary credential authorizes the holder to teach in secondary schools and in grades seven and eight in elementary schools. For general and professional requirements, see *Education Division*.

Credential Major in English

[Admission to the credential program and completion of 33 units (including 12 upper division) of the major below constitute a major in English for the bachelor of arts degree.]

	<i>Units</i>
Ling 100, 131	6
Engl 120 or, with permission of instructor, 110 or 111	3
Engl 100, 162A or B, 200A or B	9
Elect from: Engl 101, 102, 103, 104, 105	9
Elect from: Engl 140-145, 160, 220, 230, 250, 280	3
English electives	6

36

For further information and additional recommended courses, see the department credential adviser.

Credential Minor in English

	<i>Units</i>
Engl 1B, 61A or B, 105	8
Ling 100, 131	6
Engl 120 or, with permission of instructor, 110 or 111	3
English electives (ud)	7

24

Credential Major in Language Arts

[Admission to the credential program and completion of 33 units of the major below constitute a major in language arts for the bachelor of arts degree. For the language arts major, journalism option, see *Journalism Department*.]

	<i>Units</i>
Engl 61A or B, 103, 104, 105, 120	14
Ling 100, 131	6
Jour 8A	3
Spch 22, 121, 124, 126, Drama 62, Sp Corr 150	16

39

For further information and additional recommended courses, see the department credential adviser.

Credential Minor in Language Arts(For language arts minor, journalism option, see *Journalism Department*.)

	<i>Units</i>
Engl 1B, 61A or B; 103 or 104; 105; 120.....	14
Ling 100, 131.....	6
Spch 20, 21, or 24.....	3
Spch 22, 121, 124 or 126.....	9
	32

MASTER OF ARTS DEGREE

The graduate program for the master of arts degree in English is based on the equivalent of the undergraduate major at Fresno State College. For specific requirements consult the *Graduate Bulletin* and the departmental adviser for the master of arts degree; for general requirements, see *Degrees and Credentials—Master's Degrees*. For information on junior college teaching, see *Education Division* section.

Foreign Language Requirement

After September 1, 1962, advancement to candidacy for the master of arts degree with a major in English will require the passing of an examination demonstrating a reading knowledge of one foreign language.

Courses**ENGLISH**

Note: Courses in linguistics, formerly carried under anthropology, English, and foreign languages, are listed under Linguistics following the courses in English below.

A. Elementary Composition (2)

Required of all students who have not passed the entrance examination in English; not applicable on English and language arts majors and minors; not open to students with credit in Engl 1A or equivalent. A remedial course in the fundamentals of writing. (2 lectures, 1 section)

1A. Composition and Reading (3)

The one-semester course in composition; see also Engl 3 and 4, the year sequence in composition. Engl 1A is not open to students with credit in Phil 3 or Engl 4. Prerequisite: passing grade on the English entrance examination. Theory and practice of composition; reading as a stimulus to thoughtful writing. Themes, chiefly expository; one long paper based upon the investigation of a selected topic.

1B. Introduction to Literature (3)

Prerequisite: Phil 3 or Engl 1A. Reading of literary masterpieces of various types, ages, and countries as the basis for class discussion of content, form, and theme and as a stimulus to critical writing.

3. Language and Logic (3) (Same as Phil 3)

Engl (or Phil) 3 and Engl 4 constitute a year's sequence in composition, intended primarily for academic majors and other majors preparing for the professions. Meets general education requirement either in philosophy (if followed by Engl 4) or in written English (if followed by Engl 1B). Prerequisite: passing grade on English entrance examination or equivalent; Psych 7 (preferably concurrently). An investigation of language, its uses in scientific contexts; elementary deductive logic; philosophical problems in formation and validation of scientific theories. Ten themes assigned on philosophical and cultural problems posed by the development of science.

4. Composition and Reading (3)

Meets general education written English requirement. Phil 3 and Engl 4 taken in sequence constitute a year course in composition. Prerequisite: Phil 3; Hist 10, preferably concurrently. Analytical and expository writing based on critical reading; investigative papers—interpretation of evidence supporting historical statements, civic policies, judgments.

6. Improvement in Reading Technique (2)

For students whose scores on the entrance examination in reading are significantly lower than their scores on the entrance aptitude test. Not applicable on English and language arts majors and minors. Analysis of reading practices leading to efficient methods of reading and studying.

10. Writing of Poetry (3)

Prerequisite: Phil 3 or Engl 1A; Engl 1B; or permission of instructor. The writing of exercises and the study of professional poetry in simple poetic forms.

11. Writing of Fiction (3)

Prerequisite: Phil 3 or Engl 1A; Engl 1B; or permission of instructor. The writing of short stories and exercises in scene construction, dialogue, description, narration, and exposition; reading and analysis of short stories.

14. English as a Foreign Language (3)

Not open to students with credit in Engl X. Limited to students from non-English-speaking countries. Reading, writing, and speaking the English language.

60. Gods and Heroes (1; max total 4 if no topic repeated)

Analysis and comparison of myths, heroic legends, tales, necromantic literature of various cultures.

61A-B. Shorter Shakespeare (2-2)

Not open to English majors. Engl 61A is not prerequisite to 61B. Prerequisite: Engl 1B or permission of instructor. Eight plays typifying the variety of Shakespeare's drama, one poem, and selected sonnets.

62. Introduction to Theatre (2) (See Drama 62)**72. Report Writing (3)**

Prerequisite: Phil 3 or Engl 1A. Methods of explaining processes and theories, reporting special investigations, preparing technical and business reports; general practices of good writing.

76. Mechanics of Expression (2)

Required of credential candidates who have failed to meet requirements in the written English test; open to other students. Not applicable on English and language arts majors and minors. Prerequisite: Phil 3 or Engl 1A. Principles of English usage, with intensive drill in grammar, punctuation, capitalization, diction, and spelling.

84. The Literature of Protest (3)

Prerequisite: Engl 1B. Literature of social and moral reform.

93. Understanding Poetry (3)

Prerequisite: Engl 1B. Reading and close analysis of a selection of lyric poetry in English.

100. Beowulf to Marlowe (3)

Open to second-semester sophomores. Prerequisite: Engl 1B, 4; or equivalent. Epic and romance, Chaucer, drama, other poetry and prose.

101. More to Milton (3)

Prerequisite: Engl 1B, 4; or equivalent. Elizabethan, Jacobean, and Puritan drama, poetry, and prose; Milton.

102. Dryden to Burns (3)

Open to second-semester sophomores. Prerequisite: Engl 1B, 4; or equivalent. Restoration and Eighteenth Century poetry and prose; the novel; the drama.

103. Wordsworth to Shaw (3)

Not open to students with credit in Engl 56B. Prerequisite: Engl 1B, 4; or equivalent. Romantic, Victorian, and *fin de siècle* poetry and prose; the novel; Shaw.

104. American Literature to 1914 (3)

Open to second-semester sophomores. Prerequisite: Engl 1B, 4; or equivalent. Survey of American literature; analysis of major works, relationship to literary and ideological movements.

105. Twentieth Century Literature (3)

Open to second-semester sophomores. Prerequisite: Engl 1B, 4; or equivalent. Major trends in British and American literature from World War I to the present.

110. Advanced Writing: Poetry (3; max total 6) (Former Engl 110A)

Prerequisite: Engl 10 or permission of instructor. Exercises in the more difficult poetic forms, individual projects, reading and analysis of related poetry.

111. Advanced Writing: Fiction (3; max total 6) (Former Engl 110B)

Prerequisite: Engl 11 or permission of instructor. Individual projects in the short story and the novel; reading and analysis of related material.

120. Rhetoric (3)

For credential majors and minors in English and language arts; open to other qualified students. Prerequisite: Engl 1A or 4; Ling 100, 131. Expository writing and analysis in relation to traditional and contemporary theories of composition.

124. Magazine Feature Writing (3) (See Jour 124)**140. Studies in Medieval Literature (3; max total 6)**

Prerequisite: Engl 100 or equivalent. Intensive study of an important literary topic in the period.

141. Studies in Renaissance Literature (3; max total 6)

Prerequisite: Engl 101 or equivalent. Intensive study of an important literary topic in the period.

142. Studies in Restoration and Eighteenth Century Literature (3; max total 6)

Prerequisite: Engl 102 or equivalent. Intensive study of an important literary topic in the period.

143. Studies in Nineteenth Century Literature (3; max total 6)

Prerequisite: Engl 103 or equivalent. Intensive study of an important literary topic in the period.

144. Studies in American Literature (3; max total 6)

Prerequisite: Engl 104 or equivalent. Intensive study of an important literary topic in the period.

145. Studies in Twentieth Century Literature (3; max total 6)

Prerequisite: Engl 105 or equivalent. Intensive study of an important literary topic in the period.

160. Chaucer (3)

Prerequisite: Engl 100 or permission of instructor. Chaucer and his age; *The Canterbury Tales* and other selected poems.

162A-B. Shakespeare (3-3) (Same as Drama 162A-B)

Engl 162A is not prerequisite to 162B. Prerequisite: Engl 1B, 100; or permission of instructor. Each course covers half the plays of Shakespeare, from his earliest to his latest; relation of his works to the Elizabethan theater and to contemporary thought and literature; (A) includes the Sonnets, (B) includes "Venus and Adonis" and "The Rape of Lucrece."

176. Current Books (3)

Lectures upon the latest books—fiction, drama, poetry, biography, and modern problems.

180. World Literature: Ancient and Medieval (3)

Prerequisite: Engl 1B. Greek, Roman, and medieval literature in English translations.

181. World Literature: Renaissance and Modern (3)

Prerequisite: Engl 1B. Modern literatures of continental Europe; literary forms, movements, and relationships; reading of masterpieces in English translation.

182. The Bible as Literature (3)

Selected prose and poetry in the King James translation.

183. Living Philosophies in World Literature (3) (Same as Phil 183)

Ways in which the world's great literature has attempted to deal with basic philosophical problems.

184. Readings in Dramatic Literature (2) (See Drama 184)**185. Studies in Literature (3; max total 6)**

Prerequisite: Engl 1B. Special studies in literature varying from semester to semester.

190. Independent Study (1-3; max see reference)

See *Regulations and Procedures—Independent Study*.

191. Literary Criticism (3)

Prerequisite: Engl 1B, 4; or equivalent. Major documents in literary criticism from Plato to the present.

192. Theory of Language (3) (See Phil 192)**GRADUATE COURSES**

(See *Course Numbering System—Definitions and Eligibility*)

200A-B. Graduate Survey (3-3)

Open only to second-semester seniors and graduates majoring in English. Extensive, individually directed readings in literature and related subjects.

220. Studies in Rhetoric (3; max total 9 if no topic repeated)

Prerequisite: advanced composition or equivalent. Seminar in rhetorical theory in relation to social history; critical analysis of current rhetorical doctrine.

**230. Studies in the English Language (3; max total 9 if no topic repeated)
(Former Engl 206)**

Prerequisite: Ling 100 or permission of instructor. Seminar in English and American linguistics.

250. Studies in Literary History (3; max total 9 if no topic repeated)

Prerequisite: Engl 100-105, or equivalent; permission of instructor. Seminar in an aspect of literary history: type, period, movement, or an individual author.

280. Studies in Criticism (3; max total 9 if no topic repeated)

Prerequisite: Engl 100-105, or equivalent; permission of instructor. Seminar in literary criticism.

290. Independent Study (1-3; max see reference)

See *Regulations and Procedures—Independent Study*.

299. Thesis or Project (2-4; max total 4)

Prerequisite: see *Degrees and Credentials—Master's Degrees*. Preparation, completion, and submission of an acceptable thesis or project for the master's degree.

300. English Colloquium (2; max total 6)

Credit is not applicable to degrees or major requirements in credentials. Prerequisite: experience in teaching. Problems in composition, literature, or linguistics in relation to teaching.

LINGUISTICS**Ling 13. Foreign Elements of the English Vocabulary (3) (Former F Lang 13)**

Prerequisite or concurrently: Phil 3 or Engl 1A. Control of English vocabulary through study of principles of formal and semantic word relationships and of derivation of words from major contributing languages; emphasis upon increasing linguistic perceptiveness. No knowledge of foreign languages required.

Ling 100. Introduction to Linguistics (3) (Former Engl 130)

Introduction to descriptive and historical linguistics; relationships between language and culture.

Ling 131. Applied Linguistics: English (3) (Former Engl 131)

Prerequisite: Ling 100 or permission of instructor. Pragmatic, empirical study of the grammar of current American English, with reference to regional, institutional, and occasional variations.

Ling 132. Applied Linguistics: Spanish (3)

Prerequisite: Span 101 or concurrent enrollment; Ling 100. Phonological, morphological, syntactical and lexical structure of Spanish; conflicts with English structure; linguistic problems in design of teaching materials.

Ling 133. Applied Linguistics: French (3)

Prerequisite: Fr 101 or concurrent enrollment; Ling 100. Phonological, morphological, syntactical and lexical structure of French; conflicts with English structure; linguistic problems in design of teaching materials.

Ling 134. Applied Linguistics: German (3)

Prerequisite: Germ 101 or concurrent enrollment; Ling 100. Phonological, morphological, syntactical and lexical structure of German; conflicts with English structure; linguistic problems in design of teaching materials.

Ling 150. Descriptive Linguistics (3)

Prerequisite: Ling 100. Theory and practice of descriptive linguistics.

FOREIGN LANGUAGE DEPARTMENT

(In the Humanities Division)

Professors: Rojas (Chairman), Bird, Brenninger

Assistant Professors: Chambers, Cord, Ensslin, Jasuryte, List

Part-time: Bland, Nagy, Poytress, Revilla

The Foreign Language Department aims to teach students to understand, speak, read, and write the foreign languages offered, with varying degrees of emphasis upon those objectives according to their needs and interests; to promote an interest in and an understanding of foreign civilizations and of the problems of foreign nations as they arise day by day; to contribute to students' knowledge of English through comparative study of a foreign language; to prepare students to teach foreign languages in the elementary and secondary schools; and to give specialized professional training for positions such as interpreter, translator, consular representative, and foreign trade specialist.

CREDIT ALLOWANCE IN FOREIGN LANGUAGE

Normally each year of high school study in a foreign language is the equivalent of one semester of college study. However, with the prior approval of the chairman of the Foreign Language Department, students who need review may enroll in and receive credit for one semester of collegiate study that repeats one year of high school foreign language. Students who, because of lapse of time or other circumstance, wish to take a placement test to determine whether or not they need review of a language begun in high school should consult the calendar in the *Schedule of Courses* for dates of placement tests. See also the general statement in *Degrees and Credentials—Foreign Language Requirement*.

MAJORS AND MINORS

Foreign languages completed satisfactorily in high school and not duplicated in college may be offered in partial satisfaction of major and noncredential minor requirements. However, of the total units required under specific degree majors and minors listed below, a minimum of 24 units must be completed in college for the major and a minimum of 12 units for the minor. Latin 1A-B or equivalent preparation is required of noncredential majors in French, Spanish, and Romance Languages.

See also Latin-American studies major and secondary credential majors and minors.

MAJORS

	<i>Units</i>
French	
Fr 1A-B, 2A-B	14
French electives (u.d.)	14
	28
German	
Germ 1A-B, 2A-B	14
German electives (u.d.)	14
	28
Romance Languages	
Fr 1A-B, 2A-B; 109A-B or 112A-B	20
Span 1A-B, 2A-B; 107A-B or 103A-B	20
	40
Spanish	
Span 1A-B, 2A-B	14
Spanish electives (ud)	14
	28

MINORS

	<i>Units</i>
French	
Fr 1A-B, 2A-B	14
French electives (ud)	6
	—
	20
German	
Germ 1A-B, 2A-B	14
German electives (ud)	6
	—
	20
Latin	
Lat 1A-B, 3A-B	12
Latin electives (ud)	8
	—
	20
Russian	
Russ 1A-B, 2A-B	18
Russian electives (ud)	6
	—
	24
Spanish	
Span 1A-B, 2A-B	14
Spanish electives (ud)	6
	—
	20

Minors for Elementary Education

French	
Fr 1A-B, 2A-B, 101	16
F Lang 130A-B: French	4
	—
	20
Spanish	
Span 1A-B, 2A-B, 101	16
F Lang 130A-B: Spanish	4
	—
	20

LATIN-AMERICAN STUDIES MAJOR

Anthro 105; Geog 142, 143	9
Hist 8A-B, 160A-B, 163, 164; Pol Sc 146	19
Port 1A-B; Span 2A-B, 104A-B	18
	—
	46

Additional Requirements: Anthro 2, Pol Sc 1A-B.

JUNIOR HIGH SCHOOL CREDENTIAL

(For revised credential structure see *Education Division*)

The junior high school credential authorizes the holder to serve as a teacher in grades seven, eight, and nine of elementary and secondary schools. For general and professional requirements, see *Education Division*.

The junior high school credential majors in French, German, and Spanish are the same as the portions of the general secondary credential majors in these fields which are required for the degree majors; the minors in French, German, Latin, Russian, and Spanish are the same as the general secondary credential minors in these fields.

GENERAL SECONDARY CREDENTIAL

(For revised credential structure see *Education Division*)

The general secondary credential authorizes the holder to teach in secondary schools and in grades seven and eight of elementary schools. For general and professional requirements, see *Education Division*.

Credential Majors in French, German, and Spanish

[Admission to the credential program and completion of 33 units (including 14 upper division) of the French, German, or Spanish major below constitute a major in that field for the bachelor of arts degree. In addition, the 1A-B courses or equivalent are required for French, German, and Spanish majors.]

French	<i>Units</i>
Fr 2A-B, 50A-B, 101 (4 un), 109A-B, 112A-B, 150	30
Ling 100, 133	6
	<hr style="width: 100%;"/>
	36
 German	
Germ 2A-B, 50A-B, 101 (8 un), 115A-B, 116A-B	30
Ling 100, 134	6
	<hr style="width: 100%;"/>
	36
 Spanish	
Span 2A-B, 50A-B, 101 (4 un), 103A-B, 104A-B	26
Ling 100, 132	6
Elect from: Span 101, 107A-B; F Lang 201	4
	<hr style="width: 100%;"/>
	36

For further information and additional recommended courses, see the department credential adviser.

Credential Minors in French, German, Latin, Russian, Spanish

Note: Units required dependent upon amount of high school language credit.

French	<i>Units</i>
Fr 1A-B	0- 8
Fr 2A-B, 101 (4 un)	10
Elect from: Fr 101, 109A-B, 112A-B	12- 4
	<hr style="width: 100%;"/>
	22
 German	
Germ 1A-B	0- 8
Germ 2A-B, 101 (4 un)	10
Elect from: Germ 50A-B, 101, 115A-B, 116A-B	12- 4
	<hr style="width: 100%;"/>
	22
 Latin	
Lat 1A-B	0-6
Lat 3A-B, 101A-B, 131, 132	16
Lat 190	4-0
	<hr style="width: 100%;"/>
	20-22

Russian	<i>Units</i>
Russ 1A-B, 2A-B	18
Russ 101A-B	6
	<hr/>
	24
Spanish	
Span 1A-B	0-8
Span 2A-B, 50A-B	10
Ling 100	3
Span 101	8-6
Spanish elective	2-0
	<hr/>
	23-27

Courses

FOREIGN LANGUAGE

130A-B. Foreign Language in the Elementary School (2-2)

130A may be repeated once in each language; 130B may not be repeated. Not open to students with credit in Span 120A-B. (A) Intensive drill on phonetics through individual attention, audio-lingual-visual aids; pronunciation, enunciation, intonation. (B) Methods, materials, bibliography for foreign languages in the elementary school.

GRADUATE COURSES

(See Course Numbering System—Definitions and Eligibility)

201. Foreign Language Linguistics (2; max total 4 if no language repeated)

Prerequisite: major or minor in language of specialization; permission of instructor. Oppositions in language; phonetic and phonemic description; allophonic and phonemic perturbations; speech levels; dialects.

202. Seminar in Historical Linguistics (2; max total 4 if no language repeated)

Prerequisite: major or minor in language of specialization; permission of instructor. Historical method; diachronic and synchronic considerations; language change; articulatory oppositions; Latin phonology and distributions; morphology, syntax; dialects; comparison with other Romance languages.

210. Seminar in Literary Studies (3; max total 12 if no topic repeated)

Prerequisite: equivalent of undergraduate major in language of specialization. Seminar in critique and analytical study of selected topics, periods, or specific literary figures.

290. Independent Study (1-3; max see reference)

See Regulations and Procedures—Independent Study.

301. Conversation and Composition Review (2; max total 4 if no language repeated)

For elementary and secondary school teachers or those planning to travel abroad. Prerequisite: bachelor's degree or teaching credential; permission of instructor. Conversation and composition to improve audio-lingual and writing skills in the foreign language.

FRENCH

1A-B. Elementary French (4-4)

(A) Grammar and pronunciation. Written composition; oral practice with simple phrases and idioms. (B) Grammar review; irregular verbs; common French idioms. Reading of simple prose; compositions based on texts; outside reading and reports. Conducted in French. (4 lecture, 1 lab hour)

2A-B. Intermediate French (3-3)

(A) Prerequisite: Fr 1B or two years of high school French. Grammar review; modern short stories or plays. Sight reading; weekly compositions; outside reading and reports. (B) Prerequisite: Fr 2A or three years of high school French. French civilization; selected poems, prose or dramatic works and one novel by French men of letters. Class discussion; occasional compositions; sight reading. Conducted in French.

50A-B. Oral French (2-2)

Prerequisite: Fr 1B; 2A or 2B (must be taken concurrently). Oral drill for pronunciation; conversation on assigned topics; brief talks; extemporaneous discussions. (2 lecture, 1 lab hour)

101. Prose Composition (2; max total 8)

Prerequisite: Fr 2B. Idioms of modern French. Translation of short narratives into French; free composition on assigned topics.

109A-B. Survey of Literature, Earlier Period (3-3)

Prerequisite: Fr 2B. History of French literature, principal documents and authors from Chanson de Roland to André Chenier; renaissance, seventeenth and eighteenth centuries. Lectures and discussions; one paper each semester.

112A-B. Survey of Literature, Nineteenth Century (3-3)

Prerequisite: Fr 2B. Chief movements, works and authors from 1789 to the present; Romanticism, Realism, the Parnasse, Naturalism and Symbolism. Lectures and discussions; one paper each semester.

120. Classical Drama (2)

Prerequisite: Fr 2B. Interpretation of plays of Corneille, Racine, and Moliere. Outside readings and lectures on background of literature in seventeenth century France.

150A-B. The French Novel (2-2)

Prerequisite: Fr 2B. History of the novel in France from its origin to the present.

190. Independent Study (1-3; max see reference)

See *Regulations and Procedures—Independent Study*.

200 series. Graduate courses are listed under *Foreign Language*.

GERMAN

1A-B. Elementary German (4-4)

(A) Grammar; reading; simple composition. (B) Systematic study of grammar; reading easy prose and poetry; dictation and composition. (4 lecture, 1 lab hour)

2A-B. Intermediate German (3-3)

Prerequisite: Germ 1B or two years of high school German. Translation; sight-reading; conversation; grammar review.

50A-B. Oral German (2-2)

Prerequisite: Germ 1B. May be taken concurrently with Germ 2A. Conversation on assigned topics; brief talks by students; short scenes from plays. (2 lecture, 1 lab hour)

61. Literature of the Physical Sciences (2)

Prerequisite: Germ 1B. Selected readings in chemistry, geology, physics and mathematics for scientific vocabularies; use of standard periodicals.

101. Conversation and Composition (2; max total 8)

Prerequisite: Germ 2B. Advanced prose composition and conversation adapted to majors and teacher candidates.

115A-B. Survey of Literature, Earlier Period (3-3)

Prerequisite: Germ 2B. Reading and discussion of representative selections from the *Nibelungenlied*, Wolfram, Gottfried, Luther, Lessing, Goethe, Schiller.

116A-B. Nineteenth Century Literature (3-3)

Prerequisite: Germ 2B. Reading and discussion of representative selections from Tieck, Eichendorff, Hoffmann, Grimm, Kleist, Heine, Grillparzer, Keller, Hauptmann, Sudermann.

190. Independent Study (1-3; max see reference)

See *Regulations and Procedures—Independent Study*.

200 series. Graduate courses are listed under *Foreign Language*.

ITALIAN

1A-B. Elementary Italian (3-3)

(A) Grammar and pronunciation; written composition; oral practice with phrases and idioms; provides for special needs of music and art majors. (B) Grammar review and extensive reading of typical Italian prose and poetry with compositions based on texts and occasional reports. Conducted in Italian. (3 lecture, 2 lab hours)

LATIN

1A-B. Elementary Latin (3-3)

(A) Elements of Latin grammar; rapid acquisition of reading ability. (B) Prerequisite: Lat 1A or 1 year of high school Latin. Continued emphasis upon reading ability; selections primarily from medieval Latin writers.

3A. Latin Composition (3)

Prerequisite: Lat 1B or 2 years of high school Latin. Active command of grammar and syntax.

3B. Medieval Latin (3)

Prerequisite: Lat 3A. Selections from the *Carmina Burana*, *Patrologia Latina*, *Anthologia Latina*, Medieval Hymns, *Gesta Romanorum*, Einhard, and others.

101A-B. Advanced Grammar and Composition (2-2)

Prerequisite: Lat 3B or 4 years of high school Latin. Review of grammatical principles; exercises in prose composition.

131. Classical Latin (3)

Prerequisite: Lat 3B. Recommended: Lat 101A concurrently. Readings in Latin from representative Roman authors supplemented by readings in English on political and cultural backgrounds.

132. Renaissance Latin (3)

Prerequisite: Lat 131. Recommended: Lat 101B concurrently. Readings in Renaissance Latin.

190. Independent Study (1-3; max see reference)

See *Regulations and Procedures—Independent Study*.

PORTUGUESE

1A-B. Elementary Portuguese (3-3)

(A) Pronunciation, grammar and syntax; oral and written composition; prose reading. (B) Oral and written composition; reading of Brazilian and Portuguese selections. (3 lecture, 2 lab hours)

RUSSIAN

1A-B. Elementary Russian (5-5)

(A) Grammar and pronunciation; oral practice with simple phrases and idioms; written compositions. (B) Grammar; oral practice; reading of simple prose. Conducted in English and Russian. (4 lecture, 1 lab hour)

2A-B. Intermediate Russian (4-4)

Prerequisite: Russ 1B or equivalent as determined by examination. (A) Review of grammar and syntax; composition; oral practice; reading of short stories. (B) Oral and written composition; reading of modern stories and novels. Conducted in Russian.

101A-B. Conversation and Composition (3-3)

Prerequisite: Russ 2B or equivalent. Continuation of prose composition and oral-aural practice for mastery of the finer points in grammar and syntax.

190. Independent Study (1-3; max see reference)

See *Regulations and Procedures—Independent Study*.

SPANISH

1A-B. Elementary Spanish (4-4)

(A) Pronunciation; grammar; composition; writing from dictation; conversation; reading prose descriptive of Spain and Latin America. (B) Prerequisite: Span 1A. Grammar; composition; oral expression; reading of modern Spanish stories. (4 lecture, 1 lab hour)

2A-B. Intermediate Spanish (3-3)

Prerequisite: Span 1B or two years of high school Spanish. (A) Review of grammar; tenses with emphasis upon subjunctive mood and irregular verbs; prose composition; reading of typical modern novels and plays. Outside and sight reading. (B) Composition; conversation; forms of correspondence; talks on Spanish civilization; modern prose and drama. Written report on private reading. Conducted in Spanish.

50A-B. Oral Spanish (2-2)

Prerequisite: Span 1B. May be taken concurrently with Span 2A-B. Enrollment limited. Common idioms; correct expression; simple dialogues and plays. (2 lecture, 1 lab hour)

55A-B. Practical Conversation (2-2)

Prerequisite: Span 1B or two or more years of high school Spanish. More advanced than Span 50A-B. Common idioms and correct usage; expression and gestures; practical vocabulary for daily life and travel. (2 lecture, 1 lab hour)

101. Conversation and Composition (2; max total 8)

Prerequisite: Span 2B or equivalent. Finer points of expression in oral and written composition; commercial correspondence.

103A-B. Survey of Nineteenth Century Literature (3-3)

Prerequisite: Span 2B. (A) Poetry; drama; prose of Romanticism. Reading of typical authors; oral reports and discussion; one written report; *costumbristas*. (B) Realism in novel and drama. Oral reports and discussion; one written report. Conducted in Spanish.

104A-B. Ibero-American Literature (3-3)

Prerequisite: Span 2B. (A) Colonial period: historical; epics of conquest; poetry of outstanding figures such as Sor Juana Inez, Jose Basilio da Gama, Santa Rita Durao; oral reports and discussion; one written report. (B) Republican period: Romanticism in poetry; indigenous novel; realism in rural and urban novel and short story; Parnassian and symbolist schools in Brazil; *modernista* movement in Spanish America; contemporary fictional novel.

105. Contemporary Spanish Drama (3)

Prerequisite: Span 2B. Typical plays of Benavente, Martinez Sierra, Alvarez Quintero brothers, Marquina, Grau, Casona and Garcia Lorca. Reading and reporting on at least one play from each; three plays in class for laboratory. Lectures in Spanish.

107A-B. Survey of Literature, Earlier Period (3-3)

Prerequisite: Span 2B. (A) Beginnings of Spanish language and literature. Epic; lyrical and didactic poetry; beginnings of prose and national drama; picaresque, chivalric, and pastoral novel. Reports and discussion. (B) Cervantes and other prose writers; national drama with Lope de Vega, Tirso de Molina, Ruiz Alarcón, and others. Oral reports and discussion; one written report. Lectures in Spanish.

190. Independent Study (1-3; max see reference)

See *Regulations and Procedures—Independent Study*.

200 series. Graduate courses are listed under *Foreign Language*.

JOURNALISM DEPARTMENT

(In the Humanities Division)

Professors: Sheehan (Chairman), Duke, Shepard
 Assistant Professor: Margosian
 Part-time: Dowell

The program leading to a bachelor of arts degree in journalism prepares students for communications and editorial employment with newspapers, magazines, radio and television stations, and for related types of work in public relations, industrial journalism, technical journalism, general publishing, advertising, and teaching.

The Journalism Department is accredited by the American Council on Education for Journalism. The news editorial sequence is specifically accredited by the Council. The department is a member of the American Association of Schools and Departments of Journalism and the American Society of Journalism School Administrators.

MAJOR

All journalism majors are required to complete the following 22 units: Jour 8A-B, 109A-B, 110A-B, 114, and 115. They must also pass Engl 1A or 3 with a minimum grade of C and pass a typing test. The remaining journalism courses needed to meet major requirements may be chosen in one of the following areas of specialization: general journalism, public relations and advertising, radio and television news communication, and technical writing and editing. A credential major and minor in language arts with emphasis on journalism is offered for persons planning to teach journalism in secondary schools.

General Journalism

	<i>Units</i>
Jour 8A-B, 109A-B, 110A-B, 114, 115.....	22
Jour 104, 126, 181.....	8
Elect from: Jour 1, 2, 17A, 17B, 102, 108, 117, 124, 149, 150.....	6

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Additional Requirements (beyond general education requirements): IA 26;
 6 units (incl. 3 u.d.) social science; 6 units literature.

Journalism with Emphasis on Public Relations and Advertising

Jour 8A-B, 109A-B, 110A-B, 114, 115.....	22
Elect from: Jour 106, 113, 145A-B, 145A-BF.....	8-11
Elect from: Jour 1, 2, 17A, 17B, 117, 149, 150, 181 to bring total number of units to 36.....	3-6

36

Additional Requirements: IA 26; Psych 145; 6 units marketing.

Journalism with Emphasis on Radio and Television News Communication

Jour 8A-B, 109A-B, 110A-B, 114, 115.....	22
Jour 128.....	3
Elect from: Jour 1, 2, 17A, 17B, 108, 117, 126, 149, 150, 181.....	5

30

Additional Requirements: R-TV 40, 41 or 44, 142, 147.

Journalism with Emphasis on Technical Writing and Editing

Jour 8A-B, 109A-B, 110A-B, 114, 115.....	22
Jour 106, 124, 126.....	8
IA 26.....	3
Electives in related areas approved by department chairman.....	12

45

MINOR

	<i>Units</i>
General Journalism	
Jour 8A-B, 109A, 110A, 114.....	15
Journalism elective	3
	18
Journalism with Emphasis on Public Relations and Advertising	
Jour 8A-B, 106, 113, 145A, 145AF.....	15
Journalism elective	3
	18
Journalism with Emphasis on Radio and Television News Communication	
Jour 8A-B, 108, 128.....	11
Journalism electives (4 ud)	7
	18

Additional Requirements: R-TV 40, 41 or 44, 144.

JUNIOR HIGH SCHOOL CREDENTIAL

(For revised credential structure see *Education Division*)

The junior high school credential authorizes the holder to serve as a teacher in grades seven, eight, and nine of elementary and secondary schools. For general and professional requirements, see *Education Division*.

The junior high school credential major in language arts with emphasis on journalism is the same as the portion of the general secondary credential major in this field which is required for the degree major; the minor is the same as the general secondary credential minor.

GENERAL SECONDARY CREDENTIAL

(For revised credential structure see *Education Division*)

The general secondary credential authorizes the holder to teach in secondary schools and in grades seven and eight in elementary schools. For general and professional requirements, see *Education Division*.

Credential Major in Language Arts, Journalism Option

[Admission to the credential program and completion of 33 units of the major listed below constitute a major in language arts, journalism option, for the bachelor of arts degree. A minimum of one semester of work on the staff of the college newspaper is also required. For an alternative credential major in language arts, see *English Department*.]

	<i>Units</i>
Engl 61A or B; 103, 104, 105.....	11
Ling 100, 131.....	6
Jour 8A-B, 114, 131, 145A.....	13
Journalism electives	3
Spch 22, R-TV 142.....	5
	38

For further information and additional recommended courses, see the department credential adviser.

Credential Minor in Language Arts, Journalism Option

(For an alternative credential minor in language arts, see *English Department*.)

	<i>Units</i>
Engl 1B; 61A or B; 103 or 104; 105.....	11
Ling 100, 131.....	6
Jour 8A-B, 114, 131, 145A.....	13
	<hr style="width: 100%; border: 0.5px solid black;"/>
	30

Courses

JOURNALISM

1. Introduction to Mass Communications (2)

Survey of the mass media of communication, including newspapers, magazines, radio and television; related agencies and fields of communicative enterprise, such as press associations, feature syndicates, advertising, and public relations.

2. Interpreting the News (2)

Analysis, from the reader's point of view, of current information in news media; what constitutes news, breadth and depth of news coverage of various media, reliability of sources, influence of policy, methods of emphasis, objectivity and coloration.

8A-B. Reporting (3-3)

Prerequisite: Engl 1A or 3, sophomore standing. Preparation of varied stories used by newspapers; analysis of news sources; techniques of interviewing; problems encountered by reporters; ethical and legal considerations; coverage of some campus and community functions. (2 lecture, 1 lab hour)

17A. Introduction to Photography (2)

Not open to students with credit in Art 101. Still-photography; use of a variety of camera equipment for black-and-white pictures; pictures taken and films and prints processed in laboratory sessions. (1 lecture, 3 lab hours)

17B. Press Photography (2)

Prerequisite: Jour 17A or permission of instructor. Use of news cameras for photographic reporting; evaluation of pictures for publication; laboratory experience in use of flash and extension lighting, filters, and high-speed processing methods. (1 lecture, 3 lab hours)

102. The Press and World Affairs (3)

The role of the international press in collecting and disseminating national and foreign news.

104. Journalism in American Society (3)

Historical backgrounds of American press; development from colonial to modern times; newspapers and allied media as political and social forces.

106. Industrial Journalism (2)

Survey and analysis of internal and external publications produced by business and industry.

108. Reporting of Public Affairs (2)

Prerequisite: Jour 8A-B or permission of instructor. Methods of reporting the courts and municipal, county, state, and federal governments.

109A-B. Advanced Reporting Techniques (2-2)

Prerequisite: Jour 8B or permission of instructor. Advanced reporting problems; handling news in depth; news policies and ethics; and specialized reporting.

110A-B. Newspaper Production (4-4)

Not open to students with credit in Jour 109A-B prior to fall 1962. Prerequisite: Jour 8A-B; Jour 109A-B must be taken concurrently. Practice in handling advanced news writing and reporting assignments in the environment of a newsroom. College newspaper used as a laboratory. (8 hours arranged)

112. School Public Relations (2) (Same as Ed 112)

Organization and analysis of a public relations program for elementary and secondary schools.

113. Public Relations (3)

Role of public relations in business and industry, education, and other fields; public relations programs and problems.

114. Editing of Publications (3)

Prerequisite: Jour 8A. Editing copy; writing headlines; using type effectively; handling telegraph copy; making up newspapers, trade and industrial publications, house organs and magazines. (2 lecture, 2 lab, 2 hours arranged)

115. Copyreading (1)

Not open to students with credit in Jour 114B. Reading copy and writing headlines. College newspaper used as a laboratory.

117. Advanced Press Photography (2)

Prerequisite: Jour 17B or permission of instructor. Field and laboratory work in the production of the picture story, magazine and advertising illustrations on assignment; advanced processing methods including use of color materials. (1 lecture, 3 lab hours)

124. Magazine Feature Writing (3) (Same as Engl 124)

Writing and marketing varied kinds of feature material used by magazines, Sunday newspaper supplements, and syndicates.

126. Interpretative Writing (3)

Critical analysis of structure and content of newspaper editorials; practice in writing editorials and interpretative articles; make-up of editorial pages; study of columns, cartoons, and special editorial features.

128. Radio and Television News Writing (3)

Prerequisite: Jour 8A or permission of instructor. Gathering and preparing news for broadcasting and telecasting; work with local stations.

131. Principles of High School Journalism (2)

Instruction in methods of advising and preparing high school newspapers and yearbooks.

132A-B. Yearbook Production (1-1)

Layout practice, writing of copy, and organization of yearbook. College annual used as a laboratory. (1 lecture, 1 hour arranged)

140. Introduction to Advertising (3) (See Mkt 140)**141. Advertising Production and Media (2) (See Mkt 141)****142. Radio and Television News Broadcasting (2) (See R-TV 142)****144. Advertising Campaigns (2) (See Mkt 144)****145A-B. Newspaper Advertising Procedures (2-2)**

Newspaper advertising; management of advertising department, production of copy, layouts, and servicing accounts.

145A-BF. Field Work in Newspaper Advertising Procedures (2-2)

Practice in selling and servicing advertising accounts for newspapers with the college newspaper used as a laboratory. (2 lab, 2 field hours)

149. Public Opinion and Propaganda (3)

Use of propaganda to motivate public opinion on national and international levels in such areas as business, politics, and communities.

150. Media of Communication (3)

Motivation of large numbers of people through the control of such mass media as newspapers, magazines, motion pictures, radio and television.

181. Laws of Communication (2)

Libel, right of privacy, right of confidence, contempt by publications, property rights in manuscripts, infringement, copyright, postal laws.

190. Independent Study (1-3; max see reference)

See *Regulations and Procedures—Independent Study*.

198. Newspaper Practice (2-4; max total 6) Summer only

Prerequisite: permission of instructor. Internship on San Joaquin Valley newspapers and radio and television stations. Reports made regularly to instructor.

199. Newspaper Advertising Practice (2-4; max total 6) Summer only

Prerequisite: Jour 145A-B, 145A-BF; permission of instructor. Internship in advertising departments of San Joaquin Valley newspapers. Reports made regularly to instructor.

PHILOSOPHY DEPARTMENT**(In the Humanities Division)**

Associate Professor: Uphold

Assistant Professors: Colver (Chairman), Mathers, Pitt

Instructors: Passell, J. M. Smith

The courses in philosophy seek to exhibit the role and function of philosophical principles and methods implicit in any discussion or field of learning which pursues its aim systematically. A critical appreciation of the utility of philosophy will aid the student to develop criteria by which to analyze and seek solutions of the problems of his age and civilization. The general prerequisite for all other philosophy courses is successful completion of Phil 3, or Engl 1A, or an equivalent in composition. In special circumstances, students lacking the prerequisite may be admitted by permission of the instructor.

PHILOSOPHY MAJOR	<i>Units</i>
Phil 10A-B	6
Elect from: Phil 102, 110, 130, 140	6
Elect from: Phil 152, 153, 155	6
Elect from: Phil 162, 165, 183, 190, 192	6
Electives in philosophy (ud)	3-6
Approved elective outside department (ud)	3-0
	30

Note: Students intending to pursue graduate study in philosophy should seek the adviser's help in planning adequate preparation.

PHILOSOPHY-PSYCHOLOGY MAJOR	<i>Units</i>
Psych 11	3
Phil 10A (10B recommended)	3
Phil 152 or 153; 155 or 162; 165	9
Elect from: Psych 108, 110, 133	3
Elect from: Psych 103, 116, 117, 141, 145, 152, 161	6
Elect from: Psych 131, 135, 137, 139	3
Elect from: Phil 102, 140, 141	3
	30

Additional Requirements: Psych 25 or equivalent; Math 110 or 130; Anthro 2, 103, or 104.

PHILOSOPHY MINOR	<i>Units</i>
Elect from: Phil 102, 110, 130, 140	3
Elect from: Phil 152, 153, 155	3
Elect from: Phil 162, 165, 183, 190, 192	3
Electives in philosophy	6
	15

CREDENTIAL PROGRAM

For information on credential programs consult the department chairman and see the *Education Division* section.

*Courses***PHILOSOPHY****1. Introduction to Philosophy (3)**

Discussion of problems arising out of human conduct and the pursuit of knowledge.

3. Language and Logic (3) (Same as Engl 3)

Phil (or Engl) 3 and Engl 4 constitute a year's sequence in composition intended primarily for academic majors and other majors preparing for the professions. Meets general education requirement either in philosophy (if followed by Engl 4) or in written English (if followed by Engl 1B). Prerequisite: passing grade on English entrance examination or equivalent; Psych 7 (preferably concurrently). An investigation of language, its uses in scientific contexts; elementary deductive logic; philosophical problems in formation and validation of scientific theories. Ten themes assigned on philosophical and cultural problems posed by the development of science.

5. Logic (3)

A study of the types of reasoning, both sound and fallacious, used in practical affairs and in the sciences.

10A-B. History of Philosophy (3-3)

(A) Ancient philosophy; development of scientific and philosophical thought in its social context from Thales to St. Augustine. (B) Medieval and modern philosophy; impact of the scientific revolution on development of philosophical systems from Descartes to Kant.

101. Contemporary Conflicts in Morals (3)

Philosophical basis for current views concerning individual morality, individual rights, use of violence, and other moral issues; readings selected from literary and journalistic, as well as philosophical and political sources.

102. Ethics (3)

Analysis and discussion of concepts in moral discourse; investigation of the nature of moral reasoning and of claims to moral knowledge.

110. Symbolic Logic (3) (Same as Math 110)

Prerequisite: Phil 3, Math 3, or permission of instructor. Rigorous development of deduction; sentential logic, a natural deduction system for the predicate logic, logic of relations; applications to mathematics and the empirical sciences.

130. Aesthetics (3)

Philosophy of criticism: analysis of problems involved in talking about the arts, and of theories of interpretation and evaluation of the arts such as music, painting, literature.

140. Philosophy of Religion (3)

Prerequisite: 3 units of philosophy. Theories of religious knowledge, religious values, the concept of God, and the problem of evil.

141. Comparative Religions (3)

Analysis and comparison of answers to basic philosophical questions raised by Hinduism, Buddhism, Taoism, Confucianism, Shinto, Zoroastrianism, Mohammedanism, Judaism, and Christianity.

152. Ancient Philosophy (3; max total 6)

Intensive study of the writings of a philosopher or philosophers: the pre-Socratics, Plato, Aristotle, Hellenistic philosophy, Plotinus.

153. Medieval and Modern Philosophy (3; max total 6)

Intensive study of the writings of a philosopher or philosophers: scholastic philosophy, Hobbes, Descartes, Spinoza, Locke, Leibniz, Berkeley, Hume, Kant.

155. Twentieth Century Philosophy (3; max total 6)

Intensive study of an influential philosopher or philosophical movement of this century.

162. Metaphysics and Theory of Knowledge (3)

An inquiry into the nature of reality, and an evaluation of our methods of knowing it; concepts traditional to such a study include Being, freedom, perception, and memory.

165. Philosophy of Science (3)

Prerequisite: 9 units of science. Assumptions and methods of scientific inquiry—law, causality, verification, scientific explanation; relation of these concepts to other branches of philosophy.

183. Living Philosophies in World Literature (3) (See Engl 183)**190. Independent Study (1-3; max see reference)**

See *Regulations and Procedures—Independent Study*.

192. Theory of Language (3) (Same as Engl 192)

The study of language viewed as containing the origin and the solution of philosophical disputes.

199. Great Books (1-3; max total 6)

May not apply on philosophy major. Prerequisite: permission of instructor. Independent reading of selected great books in the sciences and the humanities; discussion with interdepartmental faculty group.

GRADUATE COURSE

(See *Course Numbering System—Definitions and Eligibility*)

200. Introduction to Graduate Mathematics (3) (See Math 200)

LIFE SCIENCE DIVISION

Division Head Lloyd G. Ingles

Department *Chairman*

Biology Lloyd G. Ingles

Nursing Fannie L. Sample

Psychology Edward V. Tenney

The Life Science Division provides basic training in those disciplines concerned with the organic world and animal and human behavior. This includes experiences in fundamental techniques in the manipulation of equipment; familiarization with problems, facts, theories, and principles in the life sciences; methods employed in problem solving; and experiments with mental processes, methods of testing and measuring personality, clinical procedures and evaluations, and group dynamics.

The division offers majors and minors for the bachelor of arts degree and bachelor of science degree; teaching and pupil personnel services credentials; master of arts degree majors in biology and in psychology; and preprofessional preparation in related fields.

Biology	184
Bacteriology	
Biology	
Botany	
Entomology	
Physiology	
Zoology	
Nursing	194
Psychology	197

BIOLOGY DEPARTMENT**(In the Life Science Division)**

Professors: Ingles (Chairman), Hadsall, Hawbecker, McCoy, C. Quibell, B. Rees
 Associate Professors: J. Carr, D. Falk, McClintic, Staebler
 Assistant Professors: Arce, Broseghini, Burdick, Latimer, P. N. Smith, Standing,
 Stocking, Woodwick
 Part-time: Middleton, Mizote, Shipman, H. Williams

The Biology Department includes the following fields: bacteriology, biology, botany, entomology, physiology, and zoology. Courses in each of these fields may be found under these headings. Courses are provided for general students, for those who are training for vocational and preprofessional work in biological fields, for students planning to become teachers, and for those who plan to enter the biological services of government agencies.

In addition to the general education offerings, the department offers majors and minors for the bachelor of arts degree; the bachelor of science degree; teaching credentials; and the master of arts degree.

PREPROFESSIONAL PREPARATION

For preprofessional program in dentistry and medicine, see *Preprofessional Preparation* section following *Degrees and Credentials*.

FOREIGN LANGUAGE REQUIREMENT

Two years of satisfactory collegiate study (or equivalent) in one foreign language are required for the bachelor of arts degree majors in biology, botany, zoology, and life science-general science, and the bachelor of science degree major in microbiology. *This requirement applies to students who will be graduated in June of 1963 and thereafter. See the general statement under Degrees and Credentials—Foreign Language Requirement for equivalents and alternative ways of meeting the requirement. Any student planning advanced study is advised also to meet the foreign language requirement of the school he plans to attend.*

BACHELOR OF ARTS DEGREE MAJORS

The Biology Department offers majors for the bachelor of arts degree in biology, botany, and zoology for students planning to enter graduate schools and research, professional schools, and biological field work. These majors consist of 36 to 40 units of which 24 must be upper division. Students must be reasonably prepared in physics, inorganic, and organic chemistry.

See also credential major and bachelor of science degree in biology and microbiology.

Biology Major for BA	Units
Bot 1 or equivalent.....	3-5
Zool 1 or equivalent.....	3-5
Biol 120 or 151.....	3
Field course in biological science.....	3
Biological science electives (incl 8 units each in plant and animal science).....	24-28

40

Additional Requirements: 12 units physical science including chemistry and physics. (Recommended: Chem 2A-B, 8, 109; Physics 2A-B; Geol 1.) See foreign language requirement.

Botany Major for BA	<i>Units</i>
Bot 1, 104, 106, 107, 134, 135, 136.....	27
Biol 120 or 151.....	3
Biological science electives.....	6
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	36

Additional Requirements: Zool 1; Chem 1A or 2A-B; Physics 2A-B or Phy Sc 10. Recommended (one or more of the following): Ag 130, 136; OH 3. See foreign language requirement. Students with fewer than 4 units of general zoology must take an upper division course in zoology.

Zoology Major for BA	<i>Units</i>
Bot 1, Zool 1, 160, 164; Zool 114 or Ent 101.....	21
Biol 120 or 151.....	3
Biological science electives (at least 6 units animal science).....	12
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	36

Additional Requirements: at least 8 units chemistry, 6 physics, 3 statistics. See foreign language requirement. Students with fewer than 4 units of general botany must take an upper division course in botany.

BACHELOR OF SCIENCE DEGREE

The bachelor of science degree in biology and in microbiology is offered for students preparing for careers such as medical technologist and bacteriologist. This degree requires a total of 128 units, including one of the majors listed below. The general degree regulations and general education requirements must also be fulfilled.

Biology Major for BS	<i>Units</i>
Bact 54, 117, 118, 185, 185L.....	18
Physio 1, Biol 116.....	7
Zool 1, 108, 157, 158.....	14
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	39

Additional Requirements: Biol 1A; Chem 2A-B, 8, 105, 109, 150A-B.

Microbiology Major for BS	<i>Units</i>
Bact 54, 117, 118, 161, 164, 185, 185L.....	26
Chem 109, 128A-B.....	9
Biological science electives from: Bact 130, 151; Ent 107, 107L; Zool 108, 114.....	6
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	41

Additional Requirements: Biol 1A or Bot 1; Chem 1A-B, 105; Physics 2A-B. See foreign language requirement.

SUGGESTED SEQUENCE OF COURSES FOR BACHELOR OF ARTS DEGREE MAJORS

In addition to the specific courses listed below, general education requirements and electives should be included to bring total to 15-17 units per semester. A total of 124 units must be completed for the bachelor of arts degree. Electives may include minor and credential requirements. (See *Degrees and Credentials*.)

Biology

1st Year: Chem 2A-B, Bot 1, F Lang

2nd Year: Physics 2A, Zool 1, F Lang

(Recommended: Geol 1, Chem 8, Physics 2B)

3rd & 4th Years:

Biol 120 or 151; complete major requirements

(Recommended: Chem 109)

Botany

1st Year: Bot 1, Zool 1, Chem 1A or 2A-B, F Lang

2nd Year: Physics 2A-B or Phy Sc 10, F Lang

3rd & 4th Years:

Bot 104, 106, 107, 134, 135, 136, Biol 120 or 151, Biol Sc electives

Zoology

1st Year: Zool 1, Chem 1A or 2A-B

2nd Year: Bot 1, Physics 2A-B, Chem 8, Biol 120 or 151, F Lang

3rd & 4th Years:

Major electives (animal), Ent 101 or Zool 114, F Lang, statistics,
Zool 160, 164**SUGGESTED SEQUENCE OF COURSES FOR BACHELOR OF SCIENCE DEGREE MAJORS**

In addition to the specific courses listed below, general education requirements and electives should be included to bring total to 15-17 units per semester. A total of 128 units must be completed for the bachelor of science degree. (See *Degrees and Credentials*.)

Biology

1st Year: Zool 1, Physio 1, Biol 1A, Chem 2A-B

2nd Year: Bact 54, Zool 108, Chem 8, 109

3rd & 4th Years:

Bact 117, 118, 185, 185L, Zool 157, 158, Biol 116, Chem 105, 150A-B

Microbiology

1st Year: Bot 1 or Biol 1A, Chem 1A-B, F Lang

2nd Year: Bact 54, Chem 128A-B, 109, F Lang, Physics 2A-B

3rd & 4th Years:

Bact 117, 118, 161, 164, 185, 185L, Chem 105, Biol Sc major electives

BIOLOGY MINOR

The biology minor consists of 20 units of which 6 must be upper division. See also general secondary credential minor.

	<i>Units</i>
Biol 1A-B or 2A-B.....	6
Biol 112 or an approved field course.....	3
Biological science elective (3 units u.d.).....	11
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	20

Additional Requirements: physical science including chemistry and physics. (Recommended: high school chemistry or Chem 2A-B; high school physics or Phy Sc 10.)

JUNIOR HIGH SCHOOL CREDENTIAL

(For revised credential structure see *Education Division*)

The junior high school credential authorizes the holder to serve as a teacher in grades seven, eight, and nine of elementary and secondary schools. For general and professional requirements, see *Education Division*.

The junior high school credential major in life sciences-general science is the same as the portion of the general secondary credential major in this field which is required for the degree major; the minor is the same as the general secondary credential minor.

GENERAL SECONDARY CREDENTIAL(For revised credential structure see *Education Division*)

The general secondary credential authorizes the holder to serve as a teacher in grades seven through fourteen. For general and professional requirements see *Education Division*.

The general secondary credential program for the life sciences must include a major in life sciences-general science and a minor in physical science-general science. The credential major and minor consist of 38-40 units in the life sciences-general science major combined with 25-35 units in the specified physical science-general science minor for a total of 63-75 units.

Completion of 38 units (exclusive of units used in general education) constitutes a major in life sciences-general science for the bachelor of arts degree. The 38 units must include a minimum of 30 units (including 12 u.d.) from the credential major in life sciences-general science and 8 units from the remaining major and/or minor requirements. Courses listed in the specified physical science-general science minor for life science majors should be completed prior to graduation and may apply on general education requirements as appropriate.

**GENERAL SECONDARY CREDENTIAL LIFE SCIENCES-GENERAL SCIENCE MAJOR
COMBINED WITH PHYSICAL SCIENCE-GENERAL SCIENCE MINOR**

Credential Minor in Physical Science-General Science (for Life Science Major only)

	<i>Units</i>
Chem 2A-B, 8; or Chem 1A, 8	8-9
Physics 2A-B or Physics 4A-B-C	8-12
Geol 1, 20, or Math 21	3
Math 3, or Math B*, C*, 40	3-9
Biol 2A, 1A, or Bot 1	3-5
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	25-35

Credential Major in Life Sciences-General Science

General Biology	3-5
Select from: Biol 2B, 1B, or Zool 1.	
Plant and Animal Physiology and Anatomy	8
Select at least one plant and one animal course from:	
Biol 66, Bot 104, 134, 136, Physio 1, Zool 103, 114.	
Ecology and Conservation	7
Select from: Biol 112, 157, 208, Bot 107, Ent 101, Zool 108, 113, 134, 135, 137, 138, 140, 165.	
Developmental Anatomy and Genetics	5
Select from: Biol 120 or 151, 120L, Bot 135, Zool 160, 164, 175.	
Biological Principles and Materials: Biol 162, 200	5
Microbiology or Biochemistry	4
Select from: Bact 20, 54, Chem 150B.	
Taxonomy, History, and Current Research	6
Select from: Biol 173, 204, 206, 208, 225, 281, 290, 299, Bot 106.	
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	38-40
Total, Credential Major and Minor Combined	63-75

* Units may be adjusted for work taken in high school.

**CREDENTIAL MINOR IN LIFE SCIENCES-GENERAL SCIENCE (FOR MAJORS
OTHER THAN CHEMISTRY, PHYSICS, OR LIFE SCIENCES)**

	<i>Units</i>
Biol 2A-B; or Biol 1A or Bot 1, and Biol 1B or Zool 1.....	6-10
Physio 1	4
Biol 120, 162.....	6
Bot 106	4
Chem 2A	3
Physics 2A	4
Geol 1, 20, or Math 21.....	3

30-34

MASTER OF ARTS DEGREE

The graduate program for the master of arts degree in biology is based on the equivalent of a Fresno State College undergraduate major in biology, botany, microbiology, or zoology. Eighteen of the 30 units required for the degree must be in biological science and must include Biol 200 or 206. For specific requirements consult the department graduate adviser; for general requirements, see *Degrees and Credentials—Master's Degrees*. For information on junior college teaching, see *Education Division* section.

FOREIGN LANGUAGE REQUIREMENT

After September 1, 1962, advancement to candidacy for the master of arts degree with a major in biology will require the passing of an examination demonstrating the ability to read materials of the major in one appropriate foreign language.

Courses

BACTERIOLOGY

20. General Microbiology (4) (Same as Ag 20)

Not open to students with credit in Bact 54. Not applicable for credit on botany or microbiology major; or the biology major for bachelor of science degree. Prerequisite: Chem 2A-B; one of the following—Biol 1A, 2A-B, Bot 1 or Physio 1. General survey of the field of microbiology; principles and selected practical applications. (2 lecture, 6 lab hours)

54. Bacteriology (5)

For majors. Prerequisite: organic chemistry; Biol 1A or Bot 1. Morphological and physiological consideration of the Schizomycetes and selected unicellular Eumycetes; techniques, illustration of principles, and determinative bacteriology in the laboratory. (3 lecture, 6 lab hours)

117. Serology and Immunology (4)

Prerequisite: Bact 54, Chem 8. Principles and applications of plasma changes in presence of antigens. (2 lecture, 6 lab hours)

118. Bacteriology of Human Disease (5)

Prerequisite: Bact 54, 117, Chem 8. Bacterial, mycotic and viral etiological agents of human disease. (3 lecture, 6 lab hours)

130. Plant Pathology (4) (See Ag 130)

151. Dairy Bacteriology (3) (See DI 151)

161. Microbial Physiology (4)

Prerequisite: Bact 54. Structure and physiological functions in the bacterial cell. (2 lecture, 6 lab hours)

164. Topics in Bacteriology (2; max total 6 if topic not repeated)

Prerequisite: Bact 20 or 54; permission of instructor. Topics of bacteriology not included in courses offered; experimental pathology, bacterial anatomy, immunochemistry, microbial genetics, bio-assay. (lecture-lab)

185. Virology (2) (Former Biol 210)

Prerequisite: permission of instructor. Biological and chemical aspects of viruses.

185L. Virology Laboratory (2) (Former Biol 210L)

Prerequisite or concurrently: Bact 185. Techniques of viral cultivation, detection, and assay; illustration of principles. (6 lab hours)

190. Independent Study (1-3; max see reference)

See *Regulations and Procedures—Independent Study*.

200 series. Graduate courses are listed under *Biology*.

BIOLOGY

1A. Plant Biology (3)

Not open to students with credit in Biol 2A-B or Bot 1. Structure, function, ecology, and economic study of plants including heredity and evolution. (2 lecture, 2 lab hours)

1B. Animal Biology (3)

Not open to students with credit in Biol 2A-B or Zool 1. Structure, function, ecology and economic study of animals; physiology as applied to man. (2 lecture, 2 lab hours)

2A. Life Science (3)

Not open to students with credit in Biol 1A, 1B, Bot 1 or Zool 1. Principles of biology related to the cell, maintenance, and relation of living organisms, heredity and elementary processes of evolution. (2 lecture, 2 lab hours)

2B. Life Science (3)

Prerequisite: Biol 2A. Principles of biology related to reproduction, mechanisms of evolution, diversity of life, populations and communities, biogeography, history of life. (2 lecture, 2 lab hours)

66. General Human Anatomy (3)

For general students. Recommended: Physio 1 or Biol 1B. Structure of the human body. (2 lecture, 3 lab hours)

101. Nature Study (2)

Concurrently with Biol 102. Prerequisite 9 units of natural science including a biology course. Choice and development of natural science materials for elementary schools.

102. Nature Study Laboratory (1)

Concurrently with Biol 101. Problems and projects for elementary school. (3 lab or field hours)

112. Field Biology (3)

Not open to students with credit in more than two field courses in the Biology Department. Prerequisite: Biol 1A-B or equivalent. Local environmental and biotic interdependencies. (2 lecture, 3 lab or field hours)

116. Microscopic Technique (3)

Prerequisite: one of the following—Biol 1A, 1B, Zool 1, Bot 1. Preparation of plant and animal tissues for microscopic study. (9 lab hours)

120. Genetics (3)

Not open to students with credit in Biol 151. Prerequisite: one of the following—Biol 1A, 1B, 2A-B, or equivalent. Principles of biological inheritance.

120L. Genetics Laboratory (2)

Prerequisite or concurrently: Biol 120. Experimental studies on inheritance in *Drosophila*, Maize, and *Neurospora*. (6 lab hours)

149. Elementary Science for Teachers in Service (3)

Prerequisite: permission of instructor. The development of an elementary science unit under supervision. (2 lecture, 3 lab hours)

151. Heredity and Evolution (3)

Not open to students with credit in Zool 175 or Biol 120. Prerequisite: Biol 1B or equivalent. Heredity of man and principles of organic change.

157. Conservation of Natural Resources (3) (Same as Ed 157)

Prerequisite: biological and physical science. Problems in conservation of natural resources in the United States; water supply, soils, minerals, metals, petroleum, natural gas, grasslands, forests, fisheries, wild life, and recreational areas; local, state, and national plans and organizations for conservation; educational implications and techniques.

162. Biological Techniques (3)

Prerequisite: upper division in biology, permission of instructor. Collection and preparation of biological materials and specimens for secondary schools. (9 lab or field hours)

173. Great Men of Science (2)

Prerequisite: one of the following—Biol 1A-B, 2A-B, Zool 1, Bot 1. Men from all fields of science and their contributions.

190. Independent Study (1-3; max see reference)

See *Regulations and Procedures—Independent Study*.

GRADUATE COURSES

(See *Course Numbering System—Definitions and Eligibility*)

200. Principles and Great Experiments in Biology (2)

Development and influence of current biological thought.

204. Biology of Speciation (2)

Prerequisite: biology or zoology major, Biol 120, and a field course. Evolution as a process with emphasis on evolutionary mechanisms in plants.

206. Principles of Taxonomy (2)

Zoological nomenclature and related fields.

208. Field Work in Biology (1-6; max total 6)

Prerequisite: upper division course in specialized area; permission of instructor. Botanical and zoological field studies.

220. Insect Toxicology (3)

Prerequisite: Ent 101, Chem 8. Mode of action of insecticides and other toxicants in insects and other animals; physical and chemical properties. (2 lecture, 3 lab hours)

225. Insect Taxonomy (2; max total 4)

Prerequisite: Ent 101, 115. Identification and classification of major and specific groups of family and generic status. (6 lab hours)

250. Scientific Research Reporting (2)

Prerequisite: Zool 1, Bot 1, or equivalent. Techniques of scientific drawing and writing. (1 lecture, 3 lab hours)

281. Seminar in Biological Science (1; max see below)

Maximum total credit 5 units; not more than 2 units in each field. Prerequisite: one of the majors in the Biology Department. Reviews and reports on recent literature and problems in biology, botany, entomology, microbiology, and zoology.

290. Independent Study (1-3; max see reference)

See *Regulations and Procedures—Independent Study*.

299. Thesis (2-4; max total 4)

Prerequisite: see *Master's Degrees—Thesis Requirement*. Preparation, completion, and submission of an acceptable thesis for the master's degree.

BOTANY

1. General Botany (5)

For majors and preprofessional students. Prerequisite to most upper division botany courses. Fundamentals of structure and function in seed plants; survey of plant kingdom. (3 lecture, 6 lab hours)

104. Plant Physiology (4)

Prerequisite: Biol 1A or Bot 1, Chem 1A or 2A-B. General metabolism and related processes. (2 lecture, 6 lab hours)

106. Plant Taxonomy (4)

Prerequisite: Bot 1 or Biol 1A. Principles of plant classification; local flora. (1 lecture, 9 lab or field hours)

107. Plant Ecology (3)

Prerequisite: 6 units of biology, including 3 units in botany. Interrelations of plants and environment. (2 lecture, 3 lab or field hours)

134. Plant Anatomy (4)

Prerequisite: Bot 1 or Biol 1A. Initiation, development and structure of cells, tissues and tissue systems in roots, stems and leaves. (2 lecture, 6 lab hours)

135. Morphology of Non-vascular Plants (3) (Former Bot 50)

Prerequisite: Bot 1. Comparative structure and phylogeny of the fungi, algae, mosses, and liverworts. (2 lecture, 3 lab hours)

136. Morphology of Vascular Plants (4)

Prerequisite: Bot 1. Comparative structure and phylogeny of ferns and seed plants. (2 lecture, 6 lab hours)

190. Independent Study (1-3; max see reference)

See *Regulations and Procedures—Independent Study*.

200 series. Graduate courses are listed under *Biology*.

ENTOMOLOGY

101. General Entomology (3)

Prerequisite: Biol 1B or Zool 1. Anatomy, physiology, life history, and classification of insects and other arthropods. (2 lecture, 3 lab or field hours)

106. Economic Entomology (3) (See Ag 106)

107. Medical Entomology (3)

Prerequisite: junior standing. Arthropod-borne diseases of man and animals and arthropod vectors of the diseases.

107L. Medical Entomology Laboratory (1)

Prerequisite or concurrently: Ent 107. (3 lab hours)

110. Insect Physiology (3)

Prerequisite: Ent 101. Principles of physiology as applied to insects; functions of insect body, tissues, and organs. (2 lecture, 3 lab or demonstration hours)

115. Insect Morphology (3)

Prerequisite: Ent 101. Comparative study of the form and structure of insects; external and internal anatomy. (1 lecture, 6 lab hours)

190. Independent Study (1-3; max see reference)

See *Regulations and Procedures—Independent Study*.

200 series. Graduate courses are listed under *Biology*.

PHYSIOLOGY

1. Human Physiology (4)

General concepts of human physiology. (3 lecture, 3 lab hours)

170. General Physiology (4)

Prerequisite: organic chemistry. Physico-chemical phenomena common to all living material; osmosis, food requirements, respiration, metabolism, pH, permeability, colloids. (3 lecture, 3 lab hours)

185. Topics in Physiology (2; max total 4 if no topic repeated)

Not open to students with credit in Physio 150 or 153 if comparative physiology or endocrinology is the topic. Prerequisite: Physio 170 or permission of instructor. Review of selected areas in the field of physiology.

190. Independent Study (1-3; max see reference)

See *Regulations and Procedures—Independent Study*.

200 series. Graduate courses are listed under *Biology*.

ZOOLOGY

1. General Zoology (5)

Prerequisite to most upper division courses in zoology. Survey of major phyla and principles of animal biology. (3 lecture, 6 lab hours)

103. Vertebrate Zoology (3)

Prerequisite: Biol 1B or Zool 1. Study of the vertebrates. (2 lecture, 3 lab hours)

108. Parasitology (4)

Prerequisite: Zool 1; Chem 1A or 2A-B. Biology of parasites living in human beings. (2 lecture, 6 lab hours)

113. Natural History of Vertebrates (4)

Prerequisite: Biol 1B or equivalent; permission of instructor. Vertebrate classes; natural history of local species. (3 lecture, 3 lab or field hours)

114. Advanced Invertebrates (3)

Prerequisite: Zool 1. Invertebrates exclusive of insects, parasitic protozoa and helminths. (2 lecture, 3 lab or field hours)

134. Wildlife Management (3)

Prerequisite: Zool 1 or Biol 1B. Relation of vertebrates to human affairs. (2 lecture, 3 lab or field hours)

135. Mammalogy (4)

Prerequisite: Zool 1 or Biol 2A-B. Mammals of the world with emphasis on local species. (3 lecture, 3 lab or field hours)

137. Herpetology (4)

Prerequisite: Zool 1. Reptiles and amphibians of the world with emphasis on local species. (3 lecture, 3 lab or field hours)

138. Animal Ecology (3)

Prerequisite: 6 units of biology, including 3 units in zoology; or permission of instructor. Environmental relationships of local vertebrates. (2 lecture, 3 lab or field hours)

140. Ichthyology (4)

Prerequisite: Zool 1 or permission of instructor. Identification, natural history, distribution, ecology, and management of fishes; fresh-water fishes of California, native and introduced. (3 lecture, 3 lab or field hours)

157. Histology (4)

Prerequisite: Zool 1. Identification and study of vertebrate tissues. (2 lecture, 6 lab hours)

158. Elementary Hematology (3)

Prerequisite: Physio 1 or Zool 157. Identification of blood cells and practice in hematological procedures. (1 lecture, 6 lab hours)

160. Comparative Embryology of Vertebrates (4)

Prerequisite: Zool 103 or 164. Principles of development in amphioxus, frog, chick, pig, human. (2 lecture, 6 lab hours)

164. Comparative Anatomy of Vertebrates (4)

Prerequisite: Zool 1. Comparison of structures in selected vertebrates. (2 lecture, 6 lab hours)

165. Ornithology (4)

Prerequisite: Biol 1A-B or equivalent, permission of instructor. Introduction to the identification and natural history of birds with emphasis on local species. (3 lecture, 3 lab or field hours)

175. Vertebrate Evolution (2)

Not open to students with credit in Biol 151. Prerequisite: Biol 120 and a biology field course. The course of evolution of the higher vertebrates including present concepts of speciation.

190. Independent Study (1-3; max see reference)

See *Regulations and Procedures—Independent Study*.

200 series. Graduate courses are listed under *Biology*.

NURSING DEPARTMENT**(In the Life Science Division)**

Associate Professor: F. Sample (Chairman)

Assistant Professors: Ahern, Bergey, Boghosian, Coyle, M. Davis, Greene, Mathwig, Matthes, Nishio, Piccone, Welch

Part-time: Ermoian, Rapp

The Nursing Department offers a bachelor of science degree with a major in nursing. Upon completion of the program the graduate will be eligible to take the examination required by the State Board of Nurse Examiners for licensure to practice as a registered professional nurse. It also qualifies the graduate for the California certificate in public health nursing and provides a foundation for graduate study and advancement in the nursing profession.

The bachelor of science degree with a major in nursing is also available under an alternate major program for students who are registered nurses.

The Nursing Department is fully accredited by the California State Board of Nurse Examiners.

BACHELOR OF SCIENCE DEGREE WITH MAJOR IN NURSING

The bachelor of science degree curriculum consists of 128 units, 62 of which are in the nursing major. The general requirements for the bachelor of science degree must be completed (see *Degrees and Credentials*). Completion of both Nurs 5 and 15 will meet general education requirements in health education.

NURSING MAJOR		<i>Units</i>
Nurs 1, 5, 15, 25.....		18
Nurs 105, 110, 115, 116, 120, 125, 130, 135.....		44
		62

Additional Requirements: Bact 20, H Ec 31, Psych 111, 119, H Ed 163, Chem 2A-B, Biol 66, Physio 1, Soc 1A.

Alternate Program for Students Who Are Registered Nurses

Applicants must meet the admission standards of the college, have graduated from an accredited school of nursing, and be currently registered in one or more states (see *Regulations and Procedures—Advanced Standing Credit for Registered Nurses*).

A maximum of 45 units credit in nursing may be granted on the basis of experience, scholastic record, and scores on the National League for Nursing Graduate Nurse Examinations. When a weakness in the background is indicated the student will be required to complete additional courses in the major field to strengthen the area specified by the department chairman.

A total of 62 units of nursing, which must include the following nursing courses, is required for completion of the nursing major:

	<i>Units</i>
Nurs 116, 125, 130, 135, 145.....	20
Nurs 119 or 120.....	3-8

23-28

Additional Requirements: Psych 111, 119, H Ed 163

SUGGESTED SEQUENCE OF COURSES FOR BACHELOR OF SCIENCE DEGREE MAJOR IN NURSING

In addition to the specific courses listed below, general education requirements and electives should be included to bring total to 15-17 units per semester. A total of 128 units must be completed for the bachelor of science degree. (See *Degrees and Credentials*)

1st Year: Nurs 1, 5, Chem 2A-B, Psych 7, Biol 66, Soc 1A, Physio 1

2nd Year: Nurs 15, 25, Bact 20, H Ec 31, Psych 119

3rd Year: Nurs 105, 110, 115, 116, Psych 111, H Ed 163

4th Year: Nurs 120, 125, 130, 135

CREDIT FOR THE R.N. IN OTHER DEPARTMENTS

For information regarding advanced standing credit for registered nurses majoring in other departments, see *Regulations and Procedures*.

HEALTH AND DEVELOPMENT CREDENTIAL

(See *Education Division and Health Education Department*)

Courses

1. Introduction to Nursing (2)

Orients students to professional nursing, appreciation of its heritage, and functions of the professional nurse in relation to other members of the nursing team.

5. Fundamentals of Nursing (3)

Theory and clinical experience in basic nursing skills to meet the psychological and physical needs of persons who are ill. (1 lecture, 6 lab hours)

15. Medical-Surgical Nursing A (5) (Former Nurs 10)

Prerequisite: Nurs 5. Guided clinical experience in basic nursing procedures; introductory pharmacology and diet therapy; laboratory experience in team nursing; principles and methods for implementing optimum care. (3 lecture, 6 lab hours)

25. Medical Surgical Nursing B (8) (Former Nurs 20)

Prerequisite: Nurs 15, Bact 20, Biol 66, Physio 1. Guided experience in team concept in total nursing care of selected patients; measures necessary for prevention, treatment, and rehabilitation; the patient as a person, a member of a family and of a community; integration of diet therapy and pharmacology. (3 lecture, 15 lab hours)

105. Medical-Surgical Nursing C (8) (Former Nurs 100)

Prerequisite: Nurs 25. Continuation of Nurs 25. Experience in medical and surgical nursing specialties. (3 lecture, 15 lab hours)

110. Maternal-Child Nursing (9) (Former Nurs 150, 175)

Prerequisite: Psych 119. Principles and application in care of the mother throughout pregnancy; the newborn infant and the well child; laboratory experience in the hospital and in community agencies providing care and education of the family, the mother and child. (4 lecture, 15 lab hours)

115. History of Nursing (2)

Survey of nursing history from the earliest time to the present; social, economic, and health conditions which influenced the development.

116. Trends in Nursing Education (3)

Prerequisite: Nurs 110, 115. Influence of social, political, religious, health, and scientific movements on the progress of nursing; trends, problems and responsibilities of the professional nurse.

117. Medical-Surgical Nursing Seminar (3)

Open only to registered nurses. Use of resource materials in analysis and solution of medical-surgical nursing care problems; new techniques and therapeutic measures.

118. Maternal-Child Nursing Seminar (3)

Open only to registered nurses. New concepts of total nursing care during the maternal cycle; child's growth and development as related to health and prevention of disease.

119. Psychiatric Nursing Seminar (3)

Open only to registered nurses. Concepts of nursing care of emotionally immature or socially disorganized personality; current therapy in the treatment of mental illness and role of the nurse in supportive care.

120. Psychiatric Nursing (8) (Former Nurs 180)

Prerequisite: Nurs 110, Psych 111. Mental disorders, the psychoses and psychoneuroses; causes, prevention, treatment, and total nursing care; social problems involved in modern concepts of mental illness. (3 lecture, 15 lab hours)

125. Seminar in Clinical Nursing (3) (Former Nurs 195)

Prerequisite: Nurs 110 or permission of instructor. Problem-solving techniques in analysis of complex nursing care problems of selected patients in the areas of medical-surgical and maternal-child health nursing.

130. Public Health Nursing (8) (Former Nurs 185)

Prerequisite: Nurs 110. Basic principles and practices of public health; responsibility of the public health nurse in community programs for health and social welfare. (3 lecture, 15 lab hours)

135. Legal Problems in Nursing Education (3)

Prerequisite: Nurs 105. The conduct, rights, and responsibilities of a professional nurse; analysis of the legal status, obligations, and liabilities of the nurse.

145. Principles of Administration in Nursing (3)

Principles of nursing service administration; ward management and its place in the organization structure of the hospital; inter-personal relationships employing the team concept.

PSYCHOLOGY DEPARTMENT

(In the Life Science Division)

Professors: Tenney (Chairman), Fisher, Lindquist

Associate Professors: Holder, Leavitt, Powell

Assistant Professors: Abou-Ghorra, Burton, Button, Cooper, H.E. Madden, Shenfeld

Part-time: Poore, Rushton, Sacks, Zeifert

The Psychology Department offers the bachelor of arts and the master of arts degrees. The undergraduate work of the department is designed to provide for the students' liberal education, to develop psychological background for application in the business, industrial, professional and creative fields, and to prepare for graduate work leading to advanced degrees. There may be specialization in the counseling, clinical, or experimental areas. The graduate program of the department is described below.

PSYCHOLOGY MAJORS

There are three options for the psychology major. Option 1 is for those who wish to specialize in psychology at the undergraduate level but do not plan to make it their profession. Option 2 is designed to prepare students for advanced graduate study in psychology. Option 3 is designed for those desiring to secure a major in psychology while they are completing the requirements for a teaching credential.

It is recommended that students majoring in psychology have at least two years of one foreign language in high school or one year in college. Students who plan to do graduate work are urged to take two years of college French, German, or Russian.

Psychology Major—Option 1

Units

Psych 11, 66	6
Elect from: Psych 103, 116, 117, 152	3
Elect from: Psych 108, 110, 133	3
Elect from: Psych 119, 120, 123	3
Elect from: Psych 131, 135, 137, 139	3
Electives in psychology from above or other offerings	18

36

Additional Requirement: Psych 25 or equivalent.

Psychology Major—Option 2

(For students planning advanced study in psychology)

Units

Psych 11, 104, 106, 110, 137 or 151	15
Elect from: Psych 103, 116, 117, 152	3
Elect from: Psych 108, 133, 135	3
Elect from: Psych 119, 120, 123	3
Elect from: Psych 131, 139, 145, 163	6
Electives in psychology from above or other offerings	6

36

Additional Requirement: Psych 25 or equivalent.

Psychology Major With Credential—Option 3

(For revised credential structure see *Education Division*)

The psychology major under Option 3 will be approved as a major for the bachelor of arts degree only for students who in addition (a) have completed the requirements for the general elementary or junior high credential, (b) have been accepted for admission to the credential program as candidates for the general secondary credential (the two teaching minors required for the credential may be completed during the postgraduate year); or, (c) are candidates for the pupil

personnel services credential. For general and professional requirements for these credentials see *Education Division*.

	<i>Units</i>
Psych 11, 66, 135, 145, 163.....	15
Psych 119 or 120.....	3
Elect from: Psych 103, 116, 117.....	3
Psych 25 or equivalent and/or psychology electives.....	6
	<hr/> 27

PHILOSOPHY-PSYCHOLOGY MAJOR

	<i>Units</i>
Psych 11.....	3
Phil 10A (10B recommended).....	3
Phil 165.....	3
Phil 103 or 135.....	3
Elect from: Psych 103, 116, 117, 141, 145, 152, 161.....	6
Elect from: Psych 108, 110, 133.....	3
Elect from: Psych 131, 135, 137, 139.....	3
Elect from: Phil 102, 140, 141.....	3
Elect from: Phil 150, 151, 160, 161.....	3
	<hr/> 30

Additional Requirements: Psych 25 or equivalent; Phil 110 or Math 130; Anthro 2, 103, or 104.

PSYCHOLOGY MINORS

General Psychology Minor

	<i>Units</i>
Psych 11, 66.....	6
Elect from: Psych 103, 108, 110, 116, 117, 119, 120, 123, 131, 133, 135, 137, 139, 141, 145, 152, 161.....	9
Elect from above or other u.d. psychology.....	3
	<hr/> 18

Additional Requirement: Psych 25 or equivalent. (Math 130 recommended.)

Psychology Minor for Social Welfare

Psych 25 or equivalent.....	3
Psych 11, 145, 152.....	9
Elect from: Psych 103, 110, 111, 116, 117, 119, 120, 123, 152F.....	6
	<hr/> 18

Psychology Minor for Speech Major

Psych 11, 103, 119, 168.....	12
Elect from: Psych 120, 131, 135, 152, 161, 175.....	6
	<hr/> 18

Psychology Minor for Elementary Education

Psych 11.....	3
Psychology electives.....	9
Psychology electives (u.d. not cross-referenced).....	6
	<hr/> 18

PUPIL PERSONNEL SERVICES CREDENTIAL
Area of Specialization in School Psychometry
 (See *Education Division*)

MASTER OF ARTS DEGREE

The graduate program for the master of arts degree in psychology is based on the equivalent of the undergraduate major in psychology at Fresno State College. The master of arts degree provides two options. The program in child-clinical psychology is designed to prepare for service in clinics, schools, and hospitals and for further graduate work. The program in general experimental psychology provides one year of graduate work in preparation for further, more advanced, study in other graduate schools or as part of the preparation for college teaching.

The departmental requirements for advancement to candidacy include a written examination set by the department, in addition to the Graduate Record Examination. A thesis is required for the degree. For further specific requirements see the chairman of the department; for general requirements see *Degrees and Credentials—Master's Degrees*. For information on junior college teaching, see *Education Division* section.

*Courses***PSYCHOLOGY**

Note: Psych 7 or 10 is prerequisite to all upper division psychology courses.

7. Introduction to Psychology (3)

Meets the psychology requirement for general education. Open only to freshmen. Individual approach to problems of adjustment; scientific principles of psychology in perception, learning, motivation, emotions, intelligence, aptitudes, and personality.

10. General Psychology (3)

Meets the psychology requirement for general education. Not open to freshmen or to students with credit in Psych 7. Fundamental principles of the study of behavior and experience.

11. Principles of Psychology (3)

Prerequisite: Psych 7 or 10. Foundations of psychology as an empirical science.

16. Personal and Social Adjustment (3)

Not open to freshmen. Recommended: Psych 7 or 10. Personality factors as they relate to problems of adjustment.

21. Applied Psychology (3)

Prerequisite or concurrently: Psych 7 or 10. Application of psychological principles and techniques in business, industry and other areas.

25. Elementary Statistics (3)

Prerequisite: one year high school algebra. Descriptive statistics and elementary hypothesis testing in the behavioral sciences. (2 lecture, 2 lab hours)

66. Differential Psychology (3)

Basic considerations in the problems of individual and group data, heredity and environment, genetics and maturation.

103. Personality (3)

Basic theoretical concepts.

104. Intermediate Statistics in Psychology (3)

Prerequisite: Psych 25 or equivalent. Advanced procedures in analysis and interpretation of psychological data. (2 lecture, 2 lab hours)

106. Experimental Psychology (3)

Prerequisite: Psych 11 or permission of instructor; Psych 104. Techniques of experimentation; statistical treatment of data. (1 lecture, 2 2-hour labs)

108. Foundations of Behavioral Science (3)

Prerequisite: Psych 11 or permission of instructor. Critical evaluation of the bases of psychological theories and their relationship to areas of the philosophy of science.

110. History of Psychology (3)

Prerequisite: Psych 11 or permission of instructor. Philosophical and historical background of psychology through the first quarter of the twentieth century; establishment of earlier schools and systems of psychology.

111. Mental Hygiene (3) (Same as Ed 111)

Basic processes in adjustment; mental health and social problems; application of principles of emotional health.

115F. Field Work With Exceptional Children (1) (Same as Ed 115F)

Prerequisite: Psych 168. Direct work with exceptional children; supervised experiences in guidance and counseling of exceptional children in special classes and in community facilities.

116. Analytical Psychologies (3)

Prerequisite: permission of instructor. The contributions of Freud, Adler, Jung and other depth-psychologists.

117. Personality in Nature and Culture (3)

Hereditary, physiological, geographical, social and cultural factors in the development of personality; theories of personality.

119. Child Psychology (3) (Same as Ed 119)

The dynamics of development and adjustment.

120. Adolescent Psychology (3) (Same as Ed 120)

Adjustment of youth to self and society.

123. Maturity and Old Age (3)

Psychological study of maturity and old age; physiological and sociological considerations.

131. Motivation (3)

Prerequisite: Psych 11 or permission of instructor. Factors responsible for instigation and modification of behavior.

133. Contemporary Psychological Theories (3)

Prerequisite: Psych 11; 18 units of psychology or permission of instructor. Analysis and development of current theoretical emphasis in psychology; contemporary psychological literature.

135. Learning (3)

Prerequisite: Psych 11 or permission of instructor. Principles of learning.

137. Sensation and Perception (3)

Prerequisite: Psych 11 or permission of instructor. The interpretation of sensory data.

139. Thinking and Language (3)

Prerequisite: Psych 11 or permission of instructor. Communication and other symbolic processes.

141. Psychology of Religion (3)

The psychological foundations of religious experience.

145. Social Psychology (3)

The interaction of individuals in groups.

146. Methods in Social Psychology (3)

Prerequisite: Psych 25 or equivalent; Psych 145 (or concurrently). Basic methods in survey research; group dynamics; communication studies; attitude scaling.

150. Comparative Psychology (3)

Prerequisite: Psych 11 or permission of instructor. Comparative functions and behavior of animals. (3 lecture, 2 lab hours)

151. Physiological Psychology (3)

Prerequisite: Psych 11 or permission of instructor. Relationship between physiological processes and behavior.

152. Abnormal Psychology (3)

Theoretical examination of origins, symptoms and treatments of personality disturbances.

152F. Clinical Psychotherapy (3)

Prerequisite: permission of instructor. Case material with clinical analyses from psychiatric viewpoint. (2 lecture, 2 clinical lab hours)

153. Psychology of the Criminal (3) (See Crim 153)**161. Clinical Psychology (3)**

The clinician's application of techniques and treatment procedures.

163. Psychological Tests (3)

Prerequisite: Psych 25 or equivalent. Theory of psychological measurement with emphasis on group testing. (1 lecture, 2 2-hour labs)

167. Psychology of Mental Retardation (3)

Psychological aspects of mental retardation; parent-child problems, etiology, nosology, school placement, institutionalization, treatment and recognition of all types.

168. Psychology of Exceptional Children (3)

Not open to students with credit in Psych or Ed 115. The atypical child; etiology, symptomology, nosology, recognition and recommendations.

174. Principles and Techniques in Guidance (3) (See Ed 174)**175. Family Counseling (3)**

Prerequisite: permission of instructor. Psychodynamic treatment of family problems; methods of counseling; psychotherapy.

181. Industrial Psychology (3)

Occupational assessment; training procedures; production efficiency; morale determinants; human engineering; decision processes; organization theory.

190. Independent Study (1-3; max see reference)

See *Regulations and Procedures—Independent Study*.

GRADUATE COURSES

(See *Course Numbering System—Definitions and Eligibility*)

200. Seminar in Psychology (3; max see below)

May be repeated with different topics. Prerequisite: permission of instructor. Seminars in psychodynamics, personality, psychological measurement, counseling

and psychotherapy, genetic psychology, experimental psychology, social psychology, applied psychology, learning, research design, physiological and comparative psychology, theoretical problems.

201. Seminar in Experimental Methods (3)

Prerequisite: Psych 106, permission of instructor. Measurement and analysis in behavioral research.

202. Seminar in Psychometrics (3)

Prerequisite: Psych 104, permission of instructor. Survey and test design and analysis in behavioral research.

204. Advanced Statistical Methods (3)

Prerequisite: Psych 104 or equivalent. Advanced parametric and non-parametric statistics and their application in psychological research.

209. Advanced Psychological Theory (3)

Prerequisite: Psych 133, permission of instructor. Current psychological literature; theoretical significance.

218. Mental Hygiene and Guidance of Children (3) (See Ed 218)

224. Counseling Techniques (3) (Same as Ed 224)

Prerequisite: Psych 174 or permission of instructor. Interviewing; directive and nondirective counseling techniques.

224F. Field Work in Counseling (2) (Same as Ed 224F)

Prerequisite: Psych 224, 25 units of pupil personnel services credential sequence, permission of instructor one semester in advance of assignment. Supervised practice in counseling in a college or high school counselor's office.

262. Diagnostic Clinical Interviewing (3)

Prerequisite: Psych 265 and permission of instructor. Case study, counseling, testing. Field work under supervision.

263. Therapeutic Clinical Interviewing (3)

Prerequisite: Psych 262 and permission of instructor. Practice in interviewing; use of available field resources such as schools, clinics, hospitals.

264. Diagnosis of Exceptional Children (3)

Prerequisite: permission of instructor. Advanced administration and interpretation of individual and group techniques. Field work under supervision.

265. Individual Mental Testing (3) (Same as Ed 255)

Not open to students with credit in Psych or Ed 165. Prerequisite: for psychology majors, Psych 161, 163; for psychometry specialization, Ed 218 or Psych 111, Psych 163 or Ed 126. Administration, interpretation, and use of current individual intelligence tests. Field work.

266A. Projective Techniques (3)

Prerequisite: Psych 152, 161, 265, permission of instructor. Seminar on basic assumptions and applications of projective devices.

266B. Projective Techniques (3)

Prerequisite: Psych 152, 161, 265, permission of instructor. Seminar on administration and scoring of projective devices.

267. Externship-Internship: Case Studies (2-12; max total 12, for master's degree 6)

Prerequisite: Psych 265, permission of instructor. Diversified experience in evaluation and case study; reading, speech and children's clinics, schools, special classes, hospitals, staff conferences and clinical practicum. Supervision by college and facility staffs.

271. Therapeutic Group Techniques (3)

Prerequisite: Psych 262, 263, permission of instructor. Critical evaluation of approaches to group therapy with children and adolescents. Field experience.

290. Independent Study (1-3; max see reference)

See *Regulations and Procedures—Independent Study*.

291. Practicum in Research (1-6; max total 6)

Prerequisite: completion of undergraduate major in psychology. Supervised research experience for students without occupational background in psychology.

299. Thesis (2-4; max total 4)

Prerequisite: see *Master's Degrees—Thesis Requirement*. Preparation, completion, and submission of an acceptable thesis for the master's degree.

PHYSICAL EDUCATION-RECREATION DIVISION

Division Head.....Harold J. Beatty

Department.....*Chairman*

Physical Education—Men.....Harold J. Beatty

Physical Education—Women.....Ruth D. Waterman

The Physical Education-Recreation Division provides a broad program of physical education activities for all students. The program is designed to provide the kinds of experiences that will offer students ample opportunity to learn the skills they may use profitably now and later in their leisure time; opportunities for all students to enjoy the satisfactions associated with participation in intramural activities; an educationally sound, vigorous intercollegiate athletic program for the highly skilled men students; and preparation for teaching physical education in public schools.

The division offers majors and minors for the bachelor of arts degree and a major in recreation for the bachelor of science degree; special, junior high, and general secondary teaching credentials; and a master of arts degree in men's physical education.

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PHYSICAL EDUCATION DEPARTMENT—MEN

(In the Physical Education-Recreation Division)

Professors: H. Beatty (Chairman), Coleman, Hanner, Pape, Warmerdam

Associate Professors: Anderson, Beiden, Burgess, Gleason, Hairabedian, Johnson,
H. Miller, Wild

Assistant Professors: Adler, Juliana

The Men's Physical Education Department offers majors and minors for the bachelor of arts degree in physical education and bachelor of science degree in recreation; preparation for the special, junior high, and general secondary teaching credentials; and a master of arts degree. The credential programs provide students with scientific, theoretical, and practical educational backgrounds for teaching physical education. The activity program is designed to permit students to meet the college physical education requirement in harmony with their fitness and interest needs. For students desiring additional opportunity for participation, a broad intramural program is available; for highly skilled students, a varied inter-collegiate athletic program is available.

ACTIVITIES

Students are expected to take physical education activities (PE 10 or 40 series) during the first four semesters. Entering freshmen are given a motor skills test during freshman week which assists in assignment to an appropriate section of PE 10-1. All students are given a water skills test during freshman week; those failing must take beginning swimming, and those passing may elect swimming. Additional activity courses, up to a total of 12 units for physical education major or minor students and 8 units for others, may be counted toward a bachelor's degree. Physical education activities taken after the general education requirement has been met may count as upper division credit. Candidates for the elementary and kindergarten-primary teaching credentials are required to have experience in rhythmic activities (PE 40-11) and team games (PE 10-1, 10-2).

MAJOR

A major in physical education for the bachelor of arts degree consists of 34 units (exclusive of the general education requirement) of which at least 19 must be upper division. See also special and general secondary credential major, and recreation major for bachelor of science degree.

Physical Education Major	<i>Units</i>
PE 30, 35A-B-C, 45A-B-C-D, 45E or 152.....	11
PE 110, 125A-B-C-D, 154, 156	20
PE professional electives (ud)	3
	34

Additional Requirements: Biol 66; Phy Sc 10 or 12 (only for students who have not had high school chemistry); H Ec 42; Physio 1; Soc 1A, 1B, or Anthro 2; and 4 units physical education activity including PE 40-11.

MINOR

The minor in physical education consists of 20 units of which at least 6 must be upper division and permits, with guidance, a selection of courses to satisfy special interests and needs. See also general secondary credential minor and recreation minor.

Physical Education Minor	<i>Units</i>
PE 30, 35A-B-C, 45A-B-C-D-E	11
PE 152, 153, 154	7
PE electives	2
	20

Physical Education Minor for Elementary Education

Units

PE 35A-B-C, 45A-B-C-D-E	9
PE 152, electives (9 un)	11
	—
	20

SPECIAL SECONDARY CREDENTIAL IN PHYSICAL EDUCATION

(For revised credential structure see *Education Division*)

The special secondary credential in physical education authorizes the holder to teach physical education in elementary and secondary schools. Candidates for this credential must complete the requirements for a bachelor's degree, have full approval for admission to the credential program, and complete the following major and professional requirements.

Credential Major in Physical Education

Units

PE 30, 35A-B-C, 45A-B-C-D-E, Rec 60	13
PE 108, 125A-B-C-D, 152, 153, 154, 156	22
PE elective	1
	—
	36

Additional Requirements: Biol 66; Phy Sc 10 or 12; H Ec 42; Physio 1; Soc 1A, 1B, or Anthro 2. For further information and additional recommended courses see the department credential adviser.

Professional Requirements

Units

Ed 109, 133 (6 un), 173, 174, 185	17
H Ed 123	3
PE 151	3
	—
	23

JUNIOR HIGH SCHOOL CREDENTIAL

(For revised credential structure see *Education Division*)

The junior high school credential authorizes the holder to serve as a teacher in grades seven, eight, and nine of elementary and secondary schools. For general and professional requirements, see *Education Division*.

The junior high school credential major in physical education is the same as the special secondary credential major in this field; the minor is the same as the general secondary credential minor.

GENERAL SECONDARY CREDENTIAL

(For revised credential structure see *Education Division*)

The general secondary credential authorizes the holder to teach in secondary schools and in grades seven and eight of elementary schools. For general and professional requirements, see *Education Division*.

Credential Major in Physical Education

Requirements for the general secondary credential major in physical education are the same as for the special secondary credential major. See also bachelor of arts degree major in physical education.

Credential Minor in Physical Education

Units

PE 30, 35A-B-C, 45A-B-C-D-E	11
PE 125A-B-C-D, 151, 154	14
	—
	25

MASTER OF ARTS DEGREE

The graduate program for the master of arts degree in physical education is based on the equivalent of the undergraduate major at Fresno State College. At least 20 of the 30 graduate units required for the degree must be in physical education. For specific requirements, consult the chairman of the department; for general requirements, see *Degrees and Credentials—Master's Degrees*. For information on junior college teaching, see *Education Division* section.

*Courses***PHYSICAL EDUCATION—MEN****10. Physical Education Activities**

Not more than 2 units in any one activity may be applied toward the general education requirement. Upper division credit (PE 110) will be given for PE 10 activities, with exception of PE 10-1, 10-2, taken after the general education physical education requirement has been met. Participation in organized physical education activities including group games, individual sports, and basic skills in physical education. (3 hours)

- 10-1. Group Games (1) (Former PE 10-1A)**
- 10-2. Group Games (1) (Former PE 10-1B)**
- 10-4. Cross Country (1)**
- 10-5. Individually Adapted Exercise (1)**
- 10-6. American Football (1)**
- 10-7. Basketball (1)**
- 10-8. Track and Field (1)**
- 10-9. Baseball (1)**
- 10-10. Elementary Swimming (1)**
- 10-11. Intermediate Swimming (1)**
- 10-12. Advanced Swimming (1)**
- 10-13. Elementary Boxing (1)**
- 10-15. Advanced Boxing (1)**
- 10-16. Elementary Wrestling (1)**
- 10-18. Advanced Wrestling (1)**
- 10-19. Elementary Tennis (1)**
- 10-20. Intermediate Tennis (1)**
- 10-21. Advanced Tennis (1)**
- 10-22. Elementary Handball (1)**
- 10-23. Intermediate Handball (1)**
- 10-24. Advanced Handball (1)**
- 10-25. Elementary Golf (1)**
- 10-26. Intermediate Golf (1)**
- 10-27. Advanced Golf (1)**
- 10-28. Elementary Archery (1)**
- 10-29. Intermediate Archery (1)**
- 10-31. Elementary Tumbling (1)**
- 10-32. Intermediate Tumbling (1)**
- 10-34. Elementary Badminton (1)**
- 10-35. Intermediate Badminton (1)**
- 10-37. Elementary Volleyball (1)**
- 10-38. Intermediate Volleyball (1)**

10-40. Body Building (1)**10-45. Self-Defense (1)****10-52. Advanced Water Polo (1)****30. Orientation in Physical Education (2)**

Introduction to the physical education program in secondary schools; personal, social, and professional requirements; demands on the physical education teacher.

35A-B-C. Fundamentals of Physical Education Activities (1-1-1)

For prospective physical education teachers. Analysis and practice of skills in each activity; rules; techniques.

(A) Speedball-Soccer-Volleyball-Softball. (B) Combatives. (C) Gymnastics.

40. Coeducational Activities

Upper division credit (PE 140) will be given for PE 40 activities taken after the general education physical education requirement has been met.

40-5. Senior Lifesaving (1) (Prerequisite: permission of instructor)**40-8. Advanced Tennis (1)****40-11. Elementary Folk and Square Dancing (1)****40-12. Intermediate Folk and Square Dancing (1)****40-14. Elementary Social Dancing (1)****40-16. Elementary Modern Dance (1)****40-17. Intermediate Modern Dance (1)****40-18. Advanced Modern Dance (1)****40-21. Elementary Archery (1)****40-24. Elementary Bowling (1)** (Former 40-19) (Fee \$1.30 per week)**40-25. Intermediate Bowling (1)** (Fee \$1.30 per week)**40-27. Elementary Ice Skating (1)** (Former 40-20) (Fee \$15)**40-28. Intermediate Ice Skating (1)** (Fee \$15)**40-31. Elementary Badminton (1)****40-32. Intermediate Badminton (1)****40-37. Intermediate Golf (1)****45A. Fundamentals of Aquatics (1)**

Open to men and women physical education majors and minors. Prerequisite: intermediate skill. Analysis and practice of beginner's skills and swimming strokes; elements of diving and skills basic to lifesaving; skill progression for various levels. (2 hours; clinic as needed)

45B. Fundamentals of Tennis (1)

Open to men and women physical education majors and minors. Prerequisite: intermediate skill. Analysis and practice of strokes and tactics; rules; history; skill progression for various levels. (2 hours; clinic as needed)

45C. Fundamentals of Badminton and Golf (1)

Open to men and women physical education majors and minors. Analysis and practice of fundamentals of badminton and golf; organization and conduct of these activities in secondary school physical education program. (2 hours; clinic as needed)

45D. Fundamentals of Folk, Square, and Social Dance (1)

Open to men and women physical education majors and minors. Prerequisite: PE 40-11. Theory and practice of elementary leadership in folk, square, and social dance. (2 hours; clinic as needed)

45E. Fundamentals of Social Recreational Activities (2)

Open to men and women physical education majors and minors. Selection, evaluation, and organization of social recreational activities; facilities and equipment evaluation; practical projects for leadership in home, school, and community activities. (2 2-hour lecture-labs)

106. Care and Conditioning of Athletes (1)

Principles of training for specific athletic schedules; methods of preventing injuries in athletic competition; first aid treatment of athletic injuries.

108. Organization of Intramural Sports (2)

For physical education majors. Organization, administration, and motivation of a program of intramural activities in secondary schools.

110. Physical Education Activities

Upper division credit will be given for PE 10 activities, with the exception of PE 10-1, 10-2, taken after the general education physical education requirement has been met. For list of activities see PE 10.

112A-B-C-D. Theory and Practice of Officiating (1-1-1-1)

Prerequisite: varsity squad experience in each sport or PE 125A-B-C-D. Analysis and interpretation of rules for major sports; procedure and practice in officiating.

(A) Football. (B) Basketball. (C) Track and Field. (D) Baseball.

125A-B-C-D. Fundamentals and Methods of Teaching Sports (2-2-2-2)

For prospective physical education teachers. Principles underlying participation in competitive interscholastic athletics; theory of coaching sports, technique; arrangement and conduct of games and schedules.

(A) Football. (B) Basketball. (C) Track and Field. (D) Baseball.

140. Coeducational Activities

Upper division credit will be given for PE 40, activities, taken after the general education physical education requirement has been met. For list of activities see PE 40.

151. Curriculum Development of Physical Education in Secondary Schools (3)

Open to men and women. Prerequisite or concurrently: PE 125A-B-C-D. Principles applied to the teaching-learning process; organization and observation of physical education activities in secondary schools; development of physical education programs.

152. Elementary School Physical Education (2)

Open to men and women. Prerequisite or concurrently: Ed 185; one course in rhythmical activities (for men PE 40-11; for women PE 40-11, 40-16, 40-17) and one course in group games or fundamentals (for men PE 10-1, 10-2; for women PE 50-28). Activities, materials, and methods for teaching physical education in elementary schools based on the California state program. (2 2-hour lecture-labs)

153. Principles of Physical Education (2)

Open to men and women. Prerequisite: PE 30, 151, and senior standing. Principles basic to a philosophy of physical education; historical background; problems of the foundation and functions of physical education in contemporary American society.

154. Organization and Administration of Physical Education in Secondary Schools (3)

Open to men and women. Prerequisite or concurrently: PE 151. Consideration of classification, scheduling, planning facilities for instruction and recreation; role of the physical education teacher in recreation, equipment, budget, co-curricular program, student leadership, community relationship.

155. Camp Counseling (2) (Same as Rec 155)

Open to men and women. For in-service counselors and students wishing summer camp employment. Philosophy, organization, and programs of various types of organized camps; requirements for counselors. Laboratory experiences in program activities, including an overnight class camping trip.

156. Kinesiology, Physiology of Exercise, and Adapted Activities (5)

Open to men and women. Prerequisite: Physio 1, Biol 66. Function and mechanics of human motion; aims, techniques, and procedures in prevention and correction of recognized divergencies; planning, evaluation, and selection of adapted activities suitable for the atypical student.

157. Recreation and Youth Leadership (1-2; max total 4)

Open to men and women. Prerequisite: permission of instructor. Practical experience as assistant leaders of organized children's and youth groups. Weekly conference with instructor.

159. Tests and Measurements (2)

Open to men and women. Scientific testing in physical education; analysis and study of tests; diagnosis of physical efficiency and physiological reactions to exercise.

190. Independent Study (1-3; max see reference)

See *Regulations and Procedures—Independent Study*.

GRADUATE COURSES

(See *Course Numbering System—Definitions and Eligibility*)

201. Physical Education Facilities and Equipment (2)

Open to men and women. Functional planning of indoor and outdoor physical education facilities and equipment for schools and recreational centers; design and construction of facilities for a complete physical education program; survey of school plants in the San Joaquin Valley.

202. Seminar in Program Development (2)

Open to men and women. Prerequisite: PE 151 or permission of instructor. Projects in the development of secondary school physical education programs, with particular attention to the needs of the San Joaquin Valley; program construction, evaluation, and methods of instruction.

209. Problems in Secondary School Physical Education (2)

Open to men and women. Physical education problems in activity program; athletic program; intramural program; recreation program (including camping); and health instruction.

220. Research in Education (2) (See Ed 220)

254. Seminar in Physical Education Administration (2)

Open to men and women. Current problems and practices in organization and administration of physical education programs in secondary schools.

272. Problems in Body Mechanics (2)

Open to men and women. Prerequisite: PE 156, Ed 133; or permission of instructor. Analysis of posture and body mechanics; methods and techniques for examination and treatment of faulty body mechanics; exercises for achieving and maintaining correct body mechanics.

273. Problems in Analysis of Athletic Performance (2)

Open to men and women. Analysis of performance in various sports; application of fundamental laws of physics and principles of the physiology of muscular activity to human performance.

290. Independent Study (1-3; max see reference)

See *Regulations and Procedures—Independent Study*.

299. Thesis or Project (2-4; max total 4)

Prerequisite: see *Master's Degrees—Thesis Requirement*. Preparation, completion, and submission of an acceptable thesis or project for the master's degree.

RECREATION

(In the Physical Education-Recreation Division)

The Physical Education-Recreation Division offers a bachelor of science degree with a major in recreation for students who plan to prepare for positions requiring major responsibility for leadership, supervision, and administration in public, private, industrial, hospital, park, youth, church, camping, outdoor education, and commercial recreation agencies. Recreation is closely allied with fields other than physical education. Additional courses emphasized in the recreation major sequence include practical and theoretical courses in recreation, crafts, music, drama, speech, and science.

BACHELOR OF SCIENCE DEGREE

The bachelor of science degree with a major in recreation is granted upon completion of 128 units including the courses listed below. The general degree regulations and general education requirements must also be fulfilled.

RECREATION MAJOR	Units
Rec 60, 155, 161A-B, 162, 163A-B.....	18
PE 45A, 45E, 152, H Ed 48.....	7
Elect from: (Men) PE 35A, 125A-B-C-D; (Women) PE 15C, 50-46, 112.....	2
Biol 101, 102, Psych 111.....	6
Pol Sc 164B, Soc 128.....	5
Elect from: Ed 185 or Psych 119 and 120.....	4-6
	42-44

Special Area Requirements: The required special area program of 20-22 units consists of one of the course groups shown below under art, industrial arts, music, and speech arts and the following additional courses, if not included in the group selected: Art 135; IA 108A or 128; Mus 9; and Drama 137, 159.

Art: Art 3, 4, 11, 101, 135, 144A (14 un)

Industrial Arts: IA 30, 107, 108A-B, 128, 142 (12 un)

Music: Mus 1-101, 9, 10-110, 129; 1 unit music elective (12 un)

Speech Arts: Drama 33, 34, 133, 137, 159, (13 un)

Additional Requirements: In addition to the above courses, the following are required: Art 119B, PE 40-11 and PE 10-19 or 50-6. (May apply on general education requirements.)

RECREATION MINOR

The minor in recreation for the bachelor of arts degree consists of 23 units of which 6 must be upper division and permits, with guidance, a selection of courses to satisfy special interests and needs. The recreation minor gives training in activities suitable for use in recreation programs of communities, schools, youth groups, churches, and clubs.

Recreation Minor	Units
PE 40-11, 45D, 45E.....	4
Rec 60, 161A; 163A or 163B.....	8
Art 119B.....	2
Elect from: Art 11; IA 108A-B, 117A-B.....	2
Elect from: Music 1-101 (college chorus); 11A-B, 76, 121A-B.....	2
Elect from: Drama 33, 34; Art 107.....	2
Elect from: Art (Art 135 recommended), IA, Mus, PE, Spch Arts.....	3

*Courses***RECREATION****60. Introduction to Recreation (2)**

Not open to students with credit in PE 158. General orientation to the profession of recreation; lectures, discussion, practical experience and observation; place of recreation in education.

155. Camp Counseling (2) (See PE 155)**161A. Organization and Administration of Recreation (2)**

Prerequisite: Rec 60 or permission of instructor. Nature and scope of recreation organization; community organization for recreation; recreation agencies and their services.

161B. Organization and Administration of Recreation (2)

Prerequisite: Rec 161A or permission of instructor. Administration of recreation; scope and significance of recognized practices; effective approach to special problems in recreation administration. Individual and group field trips.

162. Programs of Recreation (2)

Prerequisite: Rec 161B, PE 45E, or permission of instructor. Areas of concentration on leadership principles and procedures; essentials of programming, planning aids, indoor and outdoor activities; mechanics of planning, techniques of presentation, repertoire of recreational activities. (2 2-hour lecture-labs)

163A-B. Conference and Field Work in Recreation (4-4)

Prerequisite: Rec 162 or permission of instructor. Practical experience as leader or assistant leader in organized recreation programs. Experience, under supervision, in both private and public recreation required. Weekly conferences with college supervisor.

PHYSICAL EDUCATION—WOMEN

(In the Physical Education-Recreation Division)

Professors: Waterman (Chairman), Bigelow
 Associate Professors: Doyle, Hupprich, E. Sample
 Assistant Professors: Mason, Thompson

The Women's Physical Education Department offers majors and minors for the bachelor of arts degree in physical education and for the bachelor of science degree in recreation; preparation for the special, junior high, and general secondary credentials; and basic training in physical and occupational therapy and in remedial or corrective physical education. The major is designed for students who plan to assume leadership of physical education activities in club and youth groups, camp counseling, community and church centers. The credential programs provide students with scientific, theoretical, and practical backgrounds for teaching physical education. Programs are planned to meet individual needs and to emphasize an understanding of the relationships of physical education to the cultural pattern of today's society. The activity program permits students to take activities in harmony with their fitness and interest needs. Additional opportunity for participation is provided through the department-sponsored programs of the Women's Athletic Association.

ACTIVITIES

Students are expected to take physical education activities (PE 40 or 50 series) during the first four semesters. Additional activity courses, up to a total of 12 units for physical education major or minor students and 8 units for others, can be counted toward a bachelor's degree. Upper division credit will be given for physical education activities taken after the general education requirement has been met. Activity selection must meet with approval of the department. Candidates for the elementary and kindergarten-primary teaching credentials are required to have activity experience in fundamentals (PE 50-28) and rhythmic activities (PE 40-11 or 40-16).

MAJOR

A major in physical education for the bachelor of arts degree consists of 26 units (exclusive of the general education requirement) of which at least 12 units must be upper division. Students may choose, with guidance, courses to satisfy their special interests and needs. Particular attention is given the health status of physical education majors. The course is strenuous and only students meeting certain health standards will be encouraged to work for the teaching credential. (See *Entrance Examinations* for physical and medical examination requirements.) Medical rechecks will be made whenever advisable. See also special and general secondary credential major and recreation major for bachelor of science degree.

MINORS

The minor in physical education consists of 20 units of which at least 6 must be upper division, and permits, with guidance, a selection of courses to satisfy special interests and needs. See also general secondary credential minor and recreation minor.

Physical Education Minor	Units
PE 45A-B-C-D-E.....	6
Elect from: PE 15A-B-C, 115A-B-C, 155, 157, Rec 60.....	6
PE electives.....	8
	20

Physical Education Minor for Elementary Education

	<i>Units</i>
PE 15A-B, 45A-D-E, 152, 157.....	12
Elect from: PE 45B-C, 112, 115A-B, 155, Rec 60.....	5
PE electives.....	3
	<hr/> 20

SPECIAL SECONDARY CREDENTIAL IN PHYSICAL EDUCATION(For revised credential structure see *Education Division*)

The special secondary credential in physical education authorizes the holder to teach physical education in elementary and secondary schools. Candidates for this credential must complete the requirements for a bachelor's degree, have full approval for admission to the credential program, and complete the following major and professional requirements.

Credential Major in Physical Education

	<i>Units</i>
PE 15A-B-C, 30, 45A-B-C-D-E, Rec 60.....	15
PE 112, 115A-B-C, 152, 153, 154, 156.....	18
PE electives.....	3
	<hr/> 36

Additional Requirements: Biol 66; Phy Sc 10 or 12; Physio 1; Soc 1A, 1B, or Anthro 2. For further information and additional recommended courses see the department credential adviser.

Professional Requirements

Ed 109, 133 (6 un), 173, 174, 185.....	17
H Ed 123.....	3
PE 151.....	3
	<hr/> 23

JUNIOR HIGH SCHOOL CREDENTIAL(For revised credential structure see *Education Division*)

The junior high school credential authorizes the holder to serve as a teacher in grades seven, eight, and nine of elementary and secondary schools. For general and professional requirements, see *Education Division*.

The junior high school credential major in physical education is the same as the special secondary credential major in this field; the minor is the same as the general secondary credential minor.

GENERAL SECONDARY CREDENTIAL(For revised credential structure see *Education Division*)

The general secondary credential authorizes the holder to teach in secondary schools and in grades seven and eight of elementary schools. For general and professional requirements, see *Education Division*.

Credential Major in Physical Education

Requirements for the general secondary credential major in physical education are the same as for the special secondary credential major as listed above.

See also requirements for the bachelor of arts degree major in physical education.

Credential Minor in Physical Education

	<i>Units</i>
PE 15A-B-C, 45A-B-C-D-E.....	11
PE 115A-B, 151, 152, 154, 157.....	13
	<hr/> 24

*Courses***PHYSICAL EDUCATION—WOMEN****15A. Fundamentals of Rhythmic Activities (2)**

Prerequisite: PE 40-16. Practice and analysis of body movement in dance; rhythmic, space and quality elements; elementary composition; brief history of dance. (2 2-hour lecture-labs)

15B. Fundamentals of Team Sports (2)

Prerequisite: PE 50-46 (major-minor section). Practice and analysis of skills and team strategies of soccer, speedball, volleyball, and softball; interpretation of rules; drill practices and skill tests. (2 2-hour lecture-labs)

15C. Fundamentals of Basketball (1)

Open to physical education majors and minors. Analysis and practice of skills and team play; interpretation of rules. (2 1-hour lecture-labs)

15D. Fundamentals of Gymnastics, Tumbling, and Apparatus (1)

Open to physical education majors and minors. Analysis and practice of elementary stunts in tumbling, pyramid building, apparatus, trampoline; methods of spotting for safety. (2 1-hour lecture-labs)

30. Orientation in Physical Education (2)

Introduction to the physical education program in secondary schools; personal, social, and professional requirements; demands on the physical education teacher.

40. Coeducational Activities

Upper division credit (PE 140) will be given for PE 40 activities taken after the general education physical education requirement has been met.

40-5. Senior Lifesaving (1) (Prerequisite: permission of instructor)

40-8. Advanced Tennis (1)

40-11. Elementary Folk and Square Dancing (1)

40-12. Intermediate Folk and Square Dancing (1)

40-14. Elementary Social Dancing (1)

40-16. Elementary Modern Dance (1)

40-17. Intermediate Modern Dance (1)

40-18. Advanced Modern Dance (1) (Former PE 50-18)

40-21. Elementary Archery (1)

40-24. Elementary Bowling (1) (Former 40-19) (Fee \$1.30 per week)

40-25. Intermediate Bowling (1) (Fee \$1.30 per week)

40-27. Elementary Ice Skating (1) (Former 40-20) (Fee \$15)

40-28. Intermediate Ice Skating (1) (Fee \$15)

40-31. Elementary Badminton (1)

40-32. Intermediate Badminton (1)

40-37. Intermediate Golf (1)

45A. Fundamentals of Aquatics (1)

Open to men and women physical education majors and minors. Prerequisite: intermediate skill. Analysis and practice of beginner's skills and swimming strokes; elements of diving and skills basic to lifesaving; skill progression for various levels. (2 hours; clinic as needed)

45B. Fundamentals of Tennis (1)

Open to men and women physical education majors and minors. Prerequisite: intermediate skill. Analysis and practice of strokes and tactics; rules; history; skill progression for various levels. (2 hours; clinic as needed)

45C. Fundamentals of Badminton and Golf (1)

Open to men and women physical education majors and minors. Analysis and practice of fundamentals of badminton and golf; organization and conduct of these activities in secondary school physical education program. (2 hours; clinic as needed)

45D. Fundamentals of Folk, Square and Social Dance (1)

Open to men and women physical education majors and minors. Prerequisite: PE 40-11. Theory and practice of elementary leadership in folk, square, and social dance. (2 hours; clinic as needed)

45E. Fundamentals of Social Recreational Activities (2)

Open to men and women physical education majors and minors. Selection, evaluation, and organization of social recreational sports and activities; facilities and equipment evaluation; practical projects for leadership in home, school, and community activities. (2 2-hour lecture-labs)

50. Physical Education Activities

Upper division credit (PE 150) will be given for PE 50 activities taken after the general education physical education requirement has been met.

50-1. Elementary Swimming (1)**50-2. Low Intermediate Swimming (1)****50-3. High Intermediate Swimming (1)****50-6. Elementary Tennis (1)****50-7. Intermediate Tennis (1)****50-21. Archery (1)****50-27. Adaptive Body Mechanics (1)****50-28. Fundamentals (1)****50-31. Badminton (1)****50-36. Elementary Golf (1)****50-37. Intermediate Golf (1)****50-46. Team Sports (1)****112. Techniques of Officiating Tennis and Basketball (1)**

Prerequisite: previous experience in playing tennis and basketball. Interpretation of rules, officiating techniques; practice in officiating; examinations and ratings given by the San Joaquin Board of Women Officials. The Officials Board collects a fee of 25 cents and 75 cents respectively for each written and practical examination. (2 1-hour lecture-labs)

115A. Methods of Teaching Modern Dance (2)

Prerequisite: PE 15A. The dance as an art; criteria for judging the dance and dancers; contemporary dance scene. Practice in planning and teaching techniques, movement progression, and group studies; development of lesson plans and units for the secondary school. (2 2-hour lecture-labs)

115B. Methods of Teaching Team Sports (2)

Prerequisite: 15B-C. Practice and theory of techniques involving team sport units for the secondary school; skill progression, evaluating techniques, class organization, and officiating. (2 2-hour lecture-labs)

115C. Methods of Teaching Tennis and Swimming (1)

Prerequisite: PE 45A-B. Preparation of lesson plans for swimming and tennis. Practice teaching followed by class evaluation. Opportunity to observe and assist in the conduct of swimming meets and tennis tournaments. (2 lecture-lab hours)

140. Coeducational Activities

Upper division credit will be given for PE 40 activities taken after the general education physical education requirement has been met. For list of activities see PE 40.

150. Physical Education Activities

Upper division credit will be given for PE 50 activities taken after the general education physical education requirement has been met. For list of activities see PE 50.

151. Curriculum Development of Physical Education in Secondary Schools (3)

Open to men and women. Prerequisite or concurrently: PE 115A-B-C. Principles applied to the teaching-learning process; organization and observation of physical education activities in the secondary schools; development of physical education programs.

152. Elementary School Physical Education (2)

Open to men and women. Prerequisite or concurrently: Ed 185; one course in rhythmical activities (for men PE 40-11; for women PE 40-11, 40-16, 40-17) and one course in group games or fundamentals (for men PE 10-1, 10-2; for women PE 50-28). Activities, materials, and methods for teaching physical education in elementary schools based on the California state program. (2 2-hour lecture-labs)

153. Principles of Physical Education (2)

Open to men and women. Prerequisite: PE 30, 151, and senior standing. Principles basic to a philosophy of physical education; historical background; problems of the foundation and functions of physical education in contemporary American society.

154. Organization and Administration of Physical Education in Secondary Schools (3)

Open to men and women. Prerequisite or concurrently: PE 151. Consideration of classification, scheduling, planning facilities for instruction and recreation; role of the physical education teacher in recreation, equipment, budget, co-curricular program, student leadership, community relationship.

155. Camp Counseling (2) (Same as Rec 155)

Open to men and women. For in-service counselors and students wishing summer camp employment. Philosophy, organization, and programs of various types of organized camps; requirements for counselors. Laboratory experiences in program activities, including an overnight class camping trip.

156. Kinesiology, Physiology of Exercise, and Adapted Activities (5)

Open to men and women. Prerequisite: Physio 1, Biol 66. Function and mechanics of human motion; aims, techniques, and procedures in prevention and correction of recognized divergencies; planning, evaluation, and selection of adapted activities suitable for the atypical student.

157. Recreation and Youth Leadership (1-2; max total 4)

Open to men and women. Prerequisite: permission of instructor. Practical experience as assistant leaders of organized children's and youth groups. Weekly conference with instructor.

159. Tests and Measurements (2)

Open to men and women. Scientific testing in physical education; analysis and study of tests; diagnosis of physical efficiency and physiological reactions to exercise.

162. Dance Choreography (1-2; max total 4)

Prerequisite: two semesters of modern dance and Orchesis membership, or equivalent, or permission of instructor. Planning and direction of dances for public programs.

190. Independent Study (1-3; max see reference)

See *Regulations and Procedures—Independent Study*.

GRADUATE COURSES

(See *Course Numbering System—Definitions and Eligibility*)

201. Physical Education Facilities and Equipment (2)

Open to men and women. Functional planning of indoor and outdoor physical education facilities and equipment for schools and recreational centers; design and construction of facilities for a complete physical education program; survey of school plants in the San Joaquin Valley.

202. Seminar in Program Development (2)

Open to men and women. Prerequisite: PE 151 or permission of instructor. Projects in the development of secondary school physical education programs, with particular attention to the needs of the San Joaquin Valley; program construction, evaluation, and methods of instruction.

209. Problems in Secondary School Physical Education (2)

Open to men and women. Physical education problems in activity program; athletic program; intramural program; recreation program (including camping); and health instruction.

254. Seminar in Physical Education Administration (2)

Open to men and women. Current problems and practices in organization and administration of physical education programs in secondary schools.

272. Problems in Body Mechanics (2)

Open to men and women. Prerequisite: PE 156, Ed 133; or permission of instructor. Analysis of posture and body mechanics; methods and techniques for examination and treatment of faulty body mechanics; practice in exercises for achieving and maintaining correct body mechanics.

273. Problems in Analysis of Athletic Performance (2)

Open to men and women. Analysis of performance in various sports; application of fundamental laws of physics and principles of the physiology of muscular activity to human performance.

290. Independent Study (1-3; max see reference)

See *Regulations and Procedures—Independent Study*.

PHYSICAL SCIENCE DIVISION

Division Head.....Frederic A. Scott

<i>Department</i>	<i>Chairman</i>
Chemistry.....	Warren R. Biggerstaff
Engineering.....	Charles H. Cehrs
Geography.....	Chester F. Cole
Geology.....	George M. Stanley
Mathematics.....	Anthony E. Labarre, Jr.
Physics.....	Frederic A. Scott

The Physical Science Division includes five departments with common objectives and interests, quantitative and scientific thinking predominating. The division prepares for positions in industry, government, engineering, and science fields; scientific research; and teaching. It provides a general background for this scientific age.

The division offers majors and minors for the bachelor of arts degree in all departments except engineering; bachelor of science degree in chemistry, engineering, geology, mathematics, and physics; master of arts degree in mathematics and in physics; master of science degree in physics and in mathematics; and teaching credentials.

Chemistry	224
Engineering	229
Geography	236
Geology	239
Mathematics	243
Physics	249

PHYSICAL SCIENCE

JUNIOR HIGH SCHOOL CREDENTIAL

(For revised credential structure see *Education Division*)

The junior high school credential authorizes the holder to serve as a teacher in grades seven, eight, and nine of elementary and secondary schools. For general and professional requirements, see *Education Division*.

The junior high school credential majors in chemistry and physics are the same as the portions of the general secondary credential major in these fields which are required for the degree major; the minor is the same as the general secondary credential minor.

GENERAL SECONDARY CREDENTIAL

(For revised credential structure see *Education Division*)

The general secondary credential authorizes the holder to serve as a teacher in grades seven through fourteen. For general and professional requirements see *Education Division*.

The general secondary credential program for the physical sciences must include a major in either chemistry or physics and a minor in life sciences-general science. The credential major and minor consist of 42 units in the chemistry major combined with 26-34 units in the specified credential minor in life sciences-general science for a total of 68-76 units; or 48 units in the physics major combined with 28-32 units in the specified credential minor in life sciences-general science for a total of 76-80 units.

Completion of 37 units from the credential major in chemistry (exclusive of units used for general education) constitutes a major in chemistry for the bachelor of arts degree; completion of 42 units from the credential major in physics (exclusive of units used for general education) constitutes a major in physics for the bachelor of arts degree. Courses in the credential minor should be completed prior to graduation and may apply on general education requirements as appropriate.

GENERAL SECONDARY CREDENTIAL CHEMISTRY MAJOR COMBINED WITH
LIFE SCIENCES-GENERAL SCIENCE MINOR

Credential Minor in Life Sciences-General Science (for Chemistry Major only)	Units
Biol 2A-B, 1A-B, or Zool 1 and Bot 1	6-10
Physio 1	4
Physics 2A-B or Physics 4A-B-C	8-12
Geol 1, 20, or Math 21	3
Math 3	5
	<hr/>
	26-34
Credential Major in Chemistry	
Math 4	5
Chem 1A-B, 6	14
Chem 106, 110A-B, 111A-B, 128A-B, 129A-B	23
	<hr/>
	42
Total, Credential Major and Minor Combined	68-76

GENERAL SECONDARY CREDENTIAL PHYSICS MAJOR COMBINED WITH LIFE SCIENCES-GENERAL SCIENCE MINOR

Credential Minor in Life Sciences-General Science (for Physics Major only)	<i>Units</i>
Biol 2A-B, 1A-B, or Zool 1 and Bot 1	6-10
Physio 1	4
Chem 1A-B	10
Geol 1, 20, or Math 21	3
Math 3	5
	28-32
Credential Major in Physics	
Math 4, 6, 117	11
Physics 4A-B-C	12
Physics 102A-B, 105A-B, 110, 110L, 140	19
Elect from: Physics 107A-B, 120, 126, 126L, or u.d. physics electives	6
	48
Total, Credential Major and Minor Combined	76-80

CREDENTIAL MINOR IN PHYSICAL SCIENCE-GENERAL SCIENCE (FOR MAJORS OTHER THAN LIFE SCIENCE, CHEMISTRY, OR PHYSICS)

Biol 2A-B, 1A-B, or Zool 1 and Bot 1	6-10
Chem 2A-B, 8, or Chem 1A-B	9-10
Physics 2A-B or Physics 4A-B-C	8-12
Geol 1, 20, or Math 21	3
Math 3, or Math B, C, 40	3-9
(Units may be adjusted for work taken in high school.)	
	29-41

Courses

PHYSICAL SCIENCE

10. Introduction to Physical Science (3) (Former Phy Sc 10A)

Not open to students with credit in college physics. Prerequisite: one year of high school algebra or equivalent. Elementary astronomy, meteorology, and physics; mechanical, magnetic, and optical principles; application to everyday experiences. Lecture, demonstration.

12. Introduction to Physical Science (3) (Former Phy Sc 10B)

Not open to students with credit in college chemistry. Prerequisite: one year of high school algebra or equivalent. Fundamental concepts of chemistry, principles and their applications, contributions of chemical sciences and engineering to everyday living. Lecture, demonstration.

GRADUATE COURSES

(See *Course Numbering System—Definitions and Eligibility*)

305. Physical Science for Secondary School Teachers (3; max total 6 in any one field)

Prerequisite: secondary credential and two years of teaching experience. Objectives, content, and instructional materials for the physical sciences; fundamental principles and recent developments. Emphasis may be on chemistry, geology, or physics.

350. Physical Science for Elementary School Teachers (3-6; max see below)

Maximum total credit 12 units; not more than 6 units in one field. Prerequisite: elementary school credential. Selection of source materials and aids available for illustration of fundamental concepts and principles in physical science; laboratory work in construction, operation, and use of demonstrations and experiments in the elementary school.

CHEMISTRY DEPARTMENT

(In the Physical Science Division)

Professors: Biggerstaff (Chairman), Bremner, Clark, Kallo, E. Womack

Associate Professor: G. Kauffman

Assistant Professors: Burtner, Ciula, Gymer, W. Miller

Part-time: Michael

The Chemistry Department provides (1) adequate undergraduate training in chemistry for students planning professional careers in chemistry and allied professions, and for those contemplating graduate work for advanced degrees; (2) participation in the preparation of teachers of chemistry and the other physical sciences in the teaching credential programs; (3) teaching of the basic chemical sciences required by students majoring in related fields such as physics, biology, engineering, geology, agriculture, home economics, and criminology; (4) stimulation of interest in and understanding of the achievements and contributions of chemistry to our civilization for non-science students, as a part of general education; and (5) graduate instruction in chemistry for the master of science degree for those students and teachers desiring to improve their qualifications as teachers in secondary schools and junior colleges, or for employment in the chemical industries, or as preparation for further advanced study.

The Chemistry Department is approved by the American Chemical Society. Students who satisfactorily complete the program for the bachelor of science degree in chemistry will be recommended by the department for certification as graduate chemists by the American Chemical Society. Students completing the bachelor of arts degree may be recommended for certification by completing additional requirements of the American Chemical Society.

HIGH SCHOOL PREPARATION

The high school preparation for majors in the chemistry department should include: algebra (2 years), plane and solid geometry, trigonometry; chemistry or physics; German (2 years); and mechanical drawing.

MAJORS

For the bachelor of arts degree a major in chemistry consists of 37 units as listed below. For the bachelor of science degree, a major in chemistry consists of 46 units as listed below. For general degree regulations see *Degrees and Credentials*; for junior high and general secondary credential majors see *Physical Science* section. Upper division students having a grade average of B or higher in their major courses are encouraged to elect Chem 190, Independent Study, in order to acquire first-hand experience in a research project.

Foreign Language Requirement

German 1A-B and 61, or equivalent, are required for bachelor of science degree majors in chemistry. *This requirement applies to students who will be graduated in June of 1963 and thereafter.* See the general statement under *Degrees and Credentials—Foreign Language Requirement* for equivalents and alternative ways of meeting the requirement. Any student planning advanced study is advised also to meet the foreign language requirement of the school he plans to attend.

BACHELOR OF ARTS DEGREE IN CHEMISTRY

	<i>Units</i>
General Education _____	45
Chemistry Major _____	37
Chem 1A-B, 6, 106, 110A-B, 111A-B, 128A-B, 129A-B	
Additional Requirements _____	18
Math 3, 4, Physics 2A-B	
Electives _____	24
Recommended: Chem 99	

BACHELOR OF SCIENCE DEGREE IN CHEMISTRY

General Education	45
Chemistry Major	46
Chem 1A-B, 6, 106, 110A-B, 111A-B, 128A-B, 129A-B	
Elect 6 units from: Chem 115, 122, 126, 130	
Elect 3 units from: Chem 190 or a 200 course	
Additional Requirements	30
German 61, Math 3, 4, 6, Physics 4A-B-C	
Physics 102A or other approved u.d. physics or mathematics course	
Electives	7
German 1A-B or equivalent required if not taken in high school	
Recommended: Chem 99	
	128

MINORS

A minor in chemistry for a bachelor's degree requires 19 or 20 units, of which 6 are upper division. See also general secondary credential minor in *Physical Science* section.

	<i>Units</i>
Chem 1A-B; or 2A-B and 101	9-10
Chem 8, 105, 109	10
	19-20

JUNIOR HIGH SCHOOL CREDENTIAL

(See *Physical Science* section)

GENERAL SECONDARY CREDENTIAL

(See *Physical Science* section)

MASTER OF SCIENCE DEGREE

The graduate program for the master of science degree in chemistry is based on the equivalent of the undergraduate major at Fresno State College. Twenty of the 30 units required for the degree must be in chemistry. For specific requirements, consult the chairman of the department; for general requirements see *Degrees and Credentials—Master's Degrees*. For information on junior college teaching, see *Education Division* section.

FOREIGN LANGUAGE REQUIREMENT

After September 1, 1962, advancement to candidacy for the master of science degree with a major in chemistry (except for those who have been certified as graduates in Chemistry by the American Chemical Society) will require the passing of an examination demonstrating the ability to read scientific German.

*Courses***CHEMISTRY****1A-B. General Chemistry and Qualitative Analysis (5-5)**

Chem 1A not open to students with credit in Chem 2A-B. Prerequisite: high school chemistry or physics; advanced algebra or Math B (and a satisfactory score on mathematics proficiency test). Fundamental principles of chemistry; properties of common elements and their compounds; application of the principles of chemical equilibrium to separation and identification of ions. (3 lecture, 6 lab hours)

2A-B. Introductory General Chemistry (3-3)

Prerequisite: high school algebra, plane geometry or Math 28 (concurrently). Composition of matter and physical and chemical changes; fundamental laws and principles; atomic and molecular structure, qualitative and quantitative techniques; introduction to organic chemistry and biochemistry. (2 lecture, 3 lab hours)

6. Quantitative Analysis (4)

Prerequisite: Chem 1B. Principles and methods of volumetric analysis. (2 lecture, 6 lab hours)

8. Elementary Organic Chemistry (3)

Not open to chemistry majors. Recommended for students requiring a rapid coverage of the field. Prerequisite: Chem 1A or 2A-B. Survey of the aliphatic and aromatic compounds of carbon.

Phy Sc 12. Introduction to Physical Science (3) (See Phy Sc 12)**99. Glass Blowing (1)**

Enrollment limited with preference to junior and senior chemistry majors. Elements of glass blowing; construction and repair of glass apparatus. (3 lab hours)

101. Introductory Physical Chemistry (3)

Not open to chemistry majors. Prerequisite: logarithms, elementary algebra; organic chemistry, quantitative analysis. Kinetic theory of gases, liquids, solutions, buffers, conductance, electromotive force cells, reaction kinetics, colloidal systems, radioactivity, nuclear fission. (3 lecture-demonstration hours)

105. Quantitative Analysis (4)

Not open to chemistry majors. Prerequisite: Chem 1B or 2A-B. Rapid coverage of principles and methods of volumetric and gravimetric analysis. (2 lecture, 6 lab hours)

106. Quantitative Analysis (4)

Prerequisite: Chem 6 or 105 and permission of instructor. Gravimetric and advanced qualitative analysis; elements, compounds, alloys and minerals. (2 lecture, 6 lab hours)

109. Elementary Organic Chemistry Laboratory (3)

Not open to chemistry majors. Prerequisite or concurrently: Chem 8. Laboratory study of the carbon compounds with coordinating lectures. (1 lecture, 6 lab hours)

110A-B. Physical Chemistry (3-3)

Prerequisite: Chem 105 or 106; 128 A or 8; Physics 4A and B or C, or 2A-B; Math 4. Fundamental laws and theories.

111A-B. Physical Chemical Measurements (1-2)

Accompanies Chem 110A-B. (3 or 6 lab hours)

115. Intermediate Physical Chemistry (3) (Former Chem 118)

Prerequisite: Chem 110A-B. Selected topics in modern physical chemistry. (3 lecture-demonstration hours)

121. Inorganic Preparations (3)

Prerequisite: Chem 6 or 105. Preparation of inorganic compounds; development of technique, use of laboratory instruments; correlation of theory with practice; current literature. (1 lecture, 6 lab hours)

122. Advanced Inorganic Chemistry (3) (Former Chem 120)

Prerequisite: three semesters of upper division chemistry including Chem 106. General principles; structural and descriptive inorganic chemistry; correlation between observed characteristics and more fundamental properties. (2 lecture, 3 lab hours)

126. Instrumental Methods of Analysis (3)

Prerequisite: Chem 106, 129A; one year physics with laboratory. Recommended: physical chemistry. Theoretical principles of analytical chemistry; physical and instrumental methods of analysis of inorganic and organic substances. (1 lecture, 6 lab hours)

128A-B. Organic Chemistry (3-3)

Recommended for science majors and preprofessional students. Prerequisite: for 128A, Chem 1A-B or 2A-B; for 128B, Chem 128A or 8 and permission of instructor. A thorough study of the aliphatic and aromatic compounds of carbon and their reactions.

129A-B. Organic Chemistry Laboratory (2-2)

Recommended for science majors. Prerequisite or concurrently: Chem 8 or 128A. (A) General techniques used in working with aliphatic and aromatic compounds. (B) Preparation of organic compounds. (6 lab hours)

130. Qualitative Organic Analysis (3)

Prerequisite: Chem 106, 128A-B, 129A-B. Characterization of organic compounds through study of chemical and physical properties. (1 lecture, 6 lab hours)

150A. General Biochemistry (4) (Former Chem 151)

Prerequisite: Chem 8, 105, 109, and one year of general physics. Chemistry of carbohydrates, lipids, proteins, and biochemical regulators; digestion absorption, detoxication, and metabolism. (2 lecture, 6 lab hours)

150B. Clinical Biochemistry (4) (Former Chem 152)

Prerequisite: Chem 150A. Intermediary metabolism; clinical laboratory methods of analysis of tissues and body fluids and their diagnostic value. (2 lecture, 6 lab hours)

190. Independent Study (1-3; max see reference)

See *Regulations and Procedures—Independent Study*.

GRADUATE COURSES

(See *Course Numbering System—Definitions and Eligibility*)

211. Advanced Physical Chemistry (3)

Prerequisite: Chem 110A-B, 111A-B. Topics in physical chemistry selected from thermodynamics, statistical mechanics, kinetics, electrochemistry, phase rule, photochemistry, radioactivity and isotopes, states of matter.

220. Advanced Inorganic Chemistry (3)

Prerequisite: Chem 122. Selected topics; recent developments and current literature; coordination compounds, nonaqueous solvents, unusual oxidation states, and less familiar elements.

226. Advanced Analytical Chemistry (3)

Prerequisite: Chem 110A-B, 111A-B. Theory, application, recent developments and literature of organic and inorganic analysis; topics include instrumental theory, functional group analysis, microchemistry, separations and physical measurements.

230. Advanced Organic Chemistry (3)

Prerequisite: Chem 128A-B, 129A-B, 130. Selected topics in advanced theory and organic reactions with references to current literature.

280. Seminar in Chemistry (1; max total 2)**290. Independent Study (1-3; max see reference)**

See *Regulations and Procedures—Independent Study*.

299. Thesis (2-6; max total 6)

Prerequisite: see *Master's Degrees—Thesis Requirement*. Preparation, completion, and submission of an acceptable thesis for the master's degree.

ENGINEERING DEPARTMENT**(In the Physical Science Division)**

Professors: Cehrs (Chairman), J.H. Smith

Associate Professors: Barnhart, Foin

Assistant Professors: Bevill, Deming, Gaylord, Higgins, Jarrett, Kulhan, Lawton, Lowe, Richards

The Engineering Department offers curricula to prepare students for professional engineering and graduate study. The application of fundamentals and their extension to engineering practice are emphasized in the specialized courses for the various options. The programs are primarily concerned with preparation for professional work in such areas as investigation, evaluation, planning, design and development, and construction. The agricultural engineering program involves equipment, processes, and structures used in agriculture and its associated industries. Civil engineering is concerned with such fixed works as buildings, highways, bridges, water projects, and with surveying and mapping; electrical engineering, with fields of power, lighting, communications, and electronics; industrial engineering, with efficient use of manpower, machines, materials, and money in industry; mechanical engineering, with development of power by engines, its application to mass production by machines, and methods of utilizing heat and cold; sales engineering, with sale of equipment where complex technical problems are involved.

BACHELOR OF SCIENCE DEGREE IN ENGINEERING

The bachelor of science degree in engineering is granted upon completion of a four-year curriculum consisting of 132 units for all options except industrial option which requires 134 units. The general requirements for the bachelor of science degree must be completed. The required engineering courses and the other essential courses for the civil, electrical, general, industrial, mechanical, and sales engineering programs are listed under bachelor of science degree curricula. One of these programs must be completed.

BACHELOR OF SCIENCE DEGREE IN AGRICULTURAL ENGINEERING

The bachelor of science degree in agricultural engineering is granted upon completion of a four-year curriculum consisting of 132 units. The general requirements for the bachelor of science degree must be completed. The required engineering and agriculture courses and the other essential courses are listed under bachelor of science degree curricula.

HIGH SCHOOL PREPARATION

The minimum high school preparation for the courses leading to the bachelor of science degree in engineering and the bachelor of science degree in agricultural engineering consists of plane geometry (1 year), algebra (2 years), trigonometry (one-half year), physics or chemistry (1 year), and mechanical drawing (1 year). The omission of any part of the minimum amount of high school preparation will, almost invariably, make it necessary for the student to spend more than four years obtaining the bachelor of science degree. Solid geometry, both physics and chemistry, and additional mechanical drawing are strongly recommended.

MINOR

A minor in engineering consists of 18 units of which 12 must be upper division. Engr 170 and 171 may not be included in the 18 units.

CREDENTIAL PROGRAM

For information on credential program consult the department chairman and see the *Education Division* section.

REQUIREMENTS FOR BACHELOR OF SCIENCE DEGREES

In addition to the specific courses listed below, general education requirements and electives should be included to bring total to 16-17 units per semester. A total of 132 units is required for the bachelor of science degree in agricultural engineering and in all engineering options except the industrial option which requires 134 units. (See *Degrees and Credentials*.)

Agricultural Engineering

1st Year: Math 3, 4, Chem 1A, 8, Physics 4A, Engr 26, AgM 18A-B

2nd Year: Math 6, Physics 4B-C, Engr 1, 1L, 30, 32

3rd and 4th Years:

Engr 2, 2L or 121; 130, 131, 132, 140, 140L, 141, 154, 154L, 163, 163L; 3 units u.d. elective in Physical Science Division

AgM 81, 115A-B, 151A-B, Ag 136; agriculture electives (6 un)

Civil Engineering Option

1st Year: Math 3, 4, Chem 1A, 8, Physics 4A, Engr 11, 11L, 26

2nd Year: Math 6, Physics 4B-C, Engr 1, 1L, 30, 32

3rd and 4th Years:

Engr 2, 2L, 101, 102, 130, 131, 132, 133 (or 103 or 141), 134, 135, 137, 140, 140L, 154, 154L, 163, 163L, 170, 171, 172; Geol 25; 3 units u.d. elective in Physical Science Division

Electrical Engineering Option (including Electronics)

1st Year: Math 3, 4, Chem 1A, 8, Physics 4A, Engr 11, 11L, 26

2nd Year: Math 6, 117 or 119, Physics 4B-C, Engr 30, 32

3rd and 4th Years:

Engr 121, 130, 131, 132, 150, 150L, 151, 151L, 152, 152L, 153, 153L, 170, 171, 172; 3 units u.d. elective in Physical Science Division

Elect 13 units from the following courses:

Include Engr 160, 160L, 161, 161L (or 163, 163L); remaining units from Engr 140, 140L, 156, 156L, 157, 157L, 158, 158L, Physics 102A, 102B, 120, Math 114, 117, 118A, 118B, 119, 205.

General Engineering Option

1st Year: Math 3, 4, Chem 1A, 8, Physics 4A, Engr 11, 11L, 26

2nd Year: Math 6, Physics 4B-C, Engr 1, 1L, 30, 32

3rd and 4th Years:

Engr 2 and 2L, or 121; 130, 131, 132, 136 or 137, 140, 140L, 150, 150L, 151, 151L, 160, 160L, 161, 161L, 170, 171, 172; 6 units u.d. electives in Physical Science Division

Industrial Engineering Option

1st Year: Math 3, 4, Chem 1A, 8, Physics 4A, Engr 11, 11L, 26

2nd Year: Math 6, Physics 4B-C, Engr 1, 1L, 30, 32, Econ 1A-B, Acct 1A-B

3rd and 4th Years:

Engr 111, 121, 122, 130, 131, 132, 140, 140L, 154, 154L, 163, 163L, 170, 171
Bus Ad 102, 124, 151

Mechanical Engineering Option

1st Year: Math 3, 4, Chem 1A, 8, Physics 4A, Engr 11, 11L, 26

2nd Year: Math 6, Physics 4B-C, Engr 1, 1L, 30, 32

3rd and 4th Years:

Engr 121, 122, 130, 131, 132, 140, 140L, 150, 150L, 151, 151L, 160, 160L, 161, 161L, 170, 171, 172; 162, 162L (or 123, 136); 3 units u.d. elective in Physical Science Division

Sales Engineering Option

1st year: Math 3, 4, Chem 1A, 8, Physics 4A, Engr 11, 11L, 26

2nd Year: Math 6, Physics 4B-C, Engr 1, 1L, 30, 32, Econ 1A-B, Acct 1A-B

3rd and 4th Years:

Engr 130, 131, 132, 140, 140L, 154, 154L, 163, 163L, 170

Bus Ad 102, 118A-B; 8 or 9 units from sales group, Mkt 100, 108, 150, 155

Courses**ENGINEERING**

Note: Associated lecture and laboratory courses must be taken concurrently except for Engr 140, 140L; 160, 160L; 161, 161L; and 163, 163L.

1. Plane Surveying: Elementary (2)

Prerequisite: Math B, C, one year of mechanical drawing, or permission of instructor. Familiarization with surveying instruments; calculations and map drawing.

1L. Plane Surveying: Elementary Laboratory (1)

Field practice in measurement of distances and in use of the level and transit for practical problems. (3 lab hours; field trips)

2. Plane Surveying: Advanced (2)

Prerequisite: Engr 1, 1L. Theory and computation covering topographic surveying, land surveying, mine surveying, engineering astronomy, subtense bar.

2L. Plane Surveying: Advanced Laboratory (1)

Field practice in land surveying, triangulation, astronomy; transit and plane table mapping. (3 lab hours; field trips)

11. Manufacturing Processes (2)

General purpose and production machine tools, metal cutting and welding, hot and cold forming, grinding, gages, jigs, fixtures, tooling.

11L. Manufacturing Processes Laboratory (1)

Operation of machine tools, welding equipment, hot and cold forming equipment, casting equipment; practice in the use of gages, jigs, and fixtures. (3 lab hours; field trips)

25. Engineering Graphics (5)

For students who have not had one year of high school mechanical drawing, or who fail the mechanical drawing proficiency test. Not open to students with credit in Engr 26. Prerequisite: plane geometry, trigonometry, Math 3 (or concurrently). Elementary mechanical drawing and lettering; use of instruments; geometric constructions; balance of course content same as Engr 26. (3 4-hour lecture-labs)

26. Engineering Graphics (4)

May be taken for reduced units by students with credit in part of this work; not open to students with credit in Engr 25 or equivalent. Prerequisite: plane geometry, trigonometry, Math 3 (or concurrently); one year high school mechanical drawing and satisfactory score on mechanical drawing proficiency test. Principles of descriptive geometry and application to three-dimensional problems in engineering; pictorials, dimensioning, working drawings; graphical mathematics—functional scales, empirical equations, elementary concurrency and alignment charts, nomograms. (3 3-hours lecture-labs)

30. Analytical Mechanics: Statics (3)

Prerequisite: Physics 4A; Math 6 (or concurrently). Statics, analysis of force systems, equilibrium problems, friction, graphic and algebraic methods of problem solution, centroids and moments of inertia.

32. Materials of Engineering Construction (2)

Prerequisite or concurrently: Engr 30. Properties of engineering materials; basic structure of materials, mechanical properties, and control of properties during production and fabrication.

101. Route Surveying (2)

Prerequisite: Engr 2, 2L. Computation and field work covering surveys for highway, irrigation, construction and other kinds of engineering projects. (1 lecture, 3 lab hours; field trips)

102. Geodetic Surveying (2)

Prerequisite: Engr 2, 2L; Math 6. Triangulation; adjustment of geodetic figures; base line measurement, map projection; precise leveling. (1 lecture, 3 lab hours; field trips)

103. Photogrammetry (2)

Prerequisite: Math C, Engr 1, or permission of instructor. Terrestrial and aerial photography applied to surveying and mapping; stereoscopy; application of aerial surveying to specific engineering problems. (1 lecture, 3 lab hours; field trips)

111. Methods Analysis (2)

Prerequisite: senior standing or permission of instructor. Survey and measurement of factors concerning the human element in its relationship to standards of performance and production; use of motion and time studies and work sampling techniques. (2 2-hour lecture-labs)

121. Mechanism (3)

Prerequisite: Engr 25 or 26; 130 (or concurrently). Elementary principles of mechanism; gears, cams, and other mechanical linkages; graphical solution of motion problems. (2 3-hour lecture-labs)

122. Mechanics of Machines (3)

Prerequisite: Engr 121, 130, 131. Analytical study of machinery; application of principles covered in courses on mechanism, mechanics of materials and materials of engineering construction courses.

123. Machine Design (2)

Prerequisite: Engr 122. Design of machine elements and complete machines; preparation of detail and assembly drawings and specifications. (2 2-hour lecture-labs)

130. Analytical Mechanics Dynamics (3)

Prerequisite: Engr 30. Mathematical treatment of the principles of kinematics and kinetics with applications to problems in engineering.

131. Mechanics of Materials (4)

Prerequisite: Engr 30; 32 (or concurrently). Application of the principles of mechanics to design of structural and machine members; stress analysis of beams and columns. (3 lecture, 2 lab hours)

132. Materials Laboratory (2)

Prerequisite: Engr 32; 131 (or concurrently). Instruction and practice in making standard tests of iron, steel, cement, concrete, brick, and other engineering materials. (1 lecture, 3 lab hours)

133. Steel and Timber Structures (2)

Prerequisite: Engr 135. Design of trusses and building frames; structural detailing in steel and timber. (1 lecture, 3 lab hours)

134. Reinforced Concrete (2)

Prerequisite: Engr 135. Design in reinforced concrete; detail drawing of reinforced concrete structures. (1 lecture, 3 lab hours)

135. Structural Engineering Theory (3)

Prerequisite: Engr 131. Stresses in simple framed structures; introduction to theory of moment distribution and analysis of rigid frames; solution of problems by mathematical and graphical methods.

136. Metals Laboratory (2)

Prerequisite: Engr 132. Determination of physical properties of metals as manufactured and affected by heat-treatment and forming processes. (1 lecture, 3 lab hours)

137. Soils and Concrete Laboratory (2)

Prerequisite: Engr 132. Mechanical properties of soils in conjunction with engineering structures; designing concrete mixes; effect on mechanical properties of variation in mixes. (1 lecture, 3 lab hours)

140. Fluid Mechanics (3)

Prerequisite: Engr 130; 160 or 163 (or concurrently). Properties of fluids; theory of the flow of fluids with applications to engineering problems.

140L. Fluid Mechanics Laboratory (1)

Laboratory experiments illustrating the principles of fluid mechanics; methods of water measurement; tests of hydraulic equipment. (3 lab hours; field trips)

141. Irrigation Engineering (2)

Prerequisite: Engr 131, 140. Flow of water in canals, design of canals and canal systems, measurements of water, surveys for irrigation systems. (1 lecture, 3 lab hours; field trips)

150. Magnetic and Electric Circuits (3)

Prerequisite: Physics 4B, Math 6 (or concurrently). Fundamentals of magnetic circuits; basic laws of direct-current and of single and polyphase alternating-current circuits; transient phenomena in simple circuits; principles of electrical instruments; introduction to field theory.

150L. Magnetic and Electric Circuits Laboratory (1)

Use of electrical instruments; experiments and computations on magnetic, direct- and alternating-current circuits, single and polyphase, and on transient phenomena in simple circuits. (3 lab hours)

151. Electrical Machinery (3)

Prerequisite: Engr 150, 150L. Principles of direct- and alternating-current machinery and associated apparatus.

151L. Electrical Machinery Laboratory (1)

Experiments and computations on direct- and alternating-current machinery and associated apparatus. (3 lab hours)

152. Electrical Circuit Analysis (3)

Prerequisite: Engr 150, 150L; Math 117 or 119. Complex circuits, locus diagrams, network theorems, coupled circuits, nonlinear circuit elements, non-sinusoidal waves, pulses, transients, unbalanced three-phase circuits, symmetrical components, and synthesis; applications of matrix algebra, Fourier series and integral, Laplace transforms.

152L. Electrical Circuit Analysis Laboratory (1)

Experiments and computations on networks, bridge circuits, coupled circuits, non-sinusoidal waves, pulses, transients, unbalanced three-phase circuits, and symmetrical components. (3 lab hours; field trips)

153. Electrical Transmission (3)

Prerequisite: Engr 151, 151L (or concurrently); 152, 152L. Principles of transmission of electrical energy over wires at power and communication frequencies and through wave guides and space at ultra-high frequencies.

153L. Electrical Transmission Laboratory (1)

Experiments involving electrical transmission of energy. (3 lab hours; field trips)

154. Electrical and Electronic Apparatus (3)

Not open to students with credit in both Engr 150 and 151. Prerequisite: Physics 4B, Math 4. Magnetic and electric circuits, direct and alternating current apparatus, electronic devices and associated circuits.

154L. Electrical and Electronic Apparatus Laboratory (1)

Experiments involving magnetic, electrical, and electronic equipment. (3 lab hours)

156. Electronics (2)

Prerequisite: Engr 150, 150L. Physical electronics, characteristics and properties of electronic devices, both thermionic and solid state; introduction to basic systems.

156L. Electronics Laboratory (1)

Experimental study of electronic tubes and devices. (3 lab hours)

157. Electronic Circuits and Applications (2)

Prerequisite: Engr 156, 156L. Fundamental theory of electronic circuits; applications in communications, controls, and industrial processes.

157L. Electronic Circuits and Applications Laboratory (1)

Experimental study of electronic circuits and commercial type electronic apparatus. (3 lab hours; field trips)

158. High-Frequency Electronics (2)

Prerequisite: Engr 153, 153L, 157, 157L. High-frequency techniques; electronic circuitry in control, communication, television, radar, and microwave systems; special applications.

158L. High-Frequency Electronics Laboratory (1)

Laboratory measurements and use of high-frequency equipment. (3 lab hours; field trips)

160. Applied Thermodynamics: Gas Cycles (3)

Prerequisite: Physics 4C; Engr 130 (or concurrently). Thermodynamic processes; theoretical cycles for gasoline and diesel engines; performance of internal combustion engines; compression and expansion of air; flow of gases.

160L. Mechanical Engineering Laboratory (1)

Instruments employed in mechanical engineering practice; measurement of temperature, pressure, and horsepower; performance of internal combustion engines and air compressors. (3 lab hours; field trips)

161. Applied Thermodynamics: Vapor Cycles (3)

Prerequisite: Engr 160. Combustion; vapor processes; performance of boilers, steam engines, turbines; heat transfer.

161L. Mechanical Engineering Laboratory (2)

Prerequisite: Engr 160L. Heat power apparatus; flue and exhaust gas analyses; efficiency and heat balance in boilers and engines; flow of vapors. (4 lab hours; field trips)

162. Air Conditioning (3)

Prerequisite or concurrently: Engr 161, 161L. Theory and practice in air conditioning including psychrometrics, load estimating, heating and cooling systems, fluid design and controls.

162L. Air Conditioning Laboratory (1)

Practical laboratory work with commercial type units; test of components of air conditioning systems. (3 lab hours; field trips)

163. Heat Power (3)

Not open to students with credit in both Engr 160 and 161. Prerequisite: Physics 4C; Engr 130 (or concurrently). The thermodynamics of heat engines; construction and operational features of internal combustion engines, steam engines and turbines.

163L. Heat Power Laboratory (1)

Operating and performance testing of heat engines. (3 lab hours; field trips)

170. Engineering Economy (2)

Prerequisite: senior standing in engineering. Interest, depreciation, sinking funds, bonds; comparisons of costs of alternative solutions to engineering problems.

171. Contracts and Specifications (2)

Prerequisite: senior standing in engineering. Principles of contracts and specifications affecting engineering work; codes and legal requirements; preparation of specifications and reports.

172. Senior Project (2)

Prerequisite: senior standing in engineering. Selection and study of a problem by student under supervision of a staff member; final written report to the engineering staff. (Individual project except by special permission)

190. Independent Study (1-3; max see reference)

See *Regulations and Procedures—Independent Study*.

GRADUATE COURSES

(See *Course Numbering System—Definitions and Eligibility*)

311. Professional Examination Review (2; max see below)

May be repeated for credit provided different fields are covered. Prerequisite: bachelor's degree in engineering or eligibility to take state registration examinations. Review of engineering fundamentals for those qualified to take the state examination for certification as engineer-in-training; or review in a specific field (civil, electrical, mechanical, or other) for those preparing to take the examination for registration as professional engineer.

321. Professional Engineering Seminar (3; max see below)

May be repeated for credit provided different fields are covered. Prerequisite: bachelor's degree in engineering or experience as a professional engineer. Latest developments in various specialized areas of professional engineering practice; new materials, design and construction methods, equipment, devices, and procedures.

GEOGRAPHY DEPARTMENT
(In the Physical Science Division)

Professors: Cole (Chairman), McKim
Associate Professor: Crosby
Assistant Professor: Ervin

For administrative purposes the Geography Department is included in the Physical Science Division; however, the major and most of the courses are counted as social science.

The Geography Department offers a major and a minor in geography for the bachelor of arts degree. Geography offerings include undergraduate preparation for careers in regional and urban planning (land use surveys, market area analysis); teaching; map intelligence, real estate, cartography, weather; and preparation for graduate work.

Geography, because it integrates much information from the social and natural sciences and because of the diversity of subject matter from which it obtains data, offers a broad, liberal education applicable to many fields of employment. Geography provides much insight of direct application to teaching various courses of study in the elementary and secondary schools.

BACHELOR OF ARTS DEGREE IN GEOGRAPHY

The bachelor of arts degree with a major in geography consists of 124 units, including 45 units of geography. See requirements listed below. For general degree requirements see *Degrees and Credentials*. Geography courses may not meet the social science general education requirement for geography majors. Two years of one foreign language are recommended for majors intending to do graduate work in geography.

GEOGRAPHY MAJOR	<i>Units</i>
Geography 3, 4, 6, 111, 112, 115, 116, 120, 130, 181	25
Geology 20, 105, 120	9
Elect from: Geography (ud) and Biology 157	11
	—
	45

Additional Requirements: Geology 1, 2; 3 units of anthropology, economics, or sociology.

GEOGRAPHY MINOR	<i>Units</i>
Geography 3, 4, 6	7
Elect from: Geography (ud), Biology 157, Geology 20, 105, 120	13
	—
	20

CREDENTIAL PROGRAM

For information on credential programs consult department chairman and see *Education Division* section.

Courses

GEOGRAPHY

Note: Geography courses count as social science (not as physical science) in fulfillment of general education requirements.

3. Economic Geography (3)

World distribution of significant commodities, their uses in cultures; agricultural and mineral resource patterns; regionalization of economic activity; implications for contemporary society.

4. World Geography (3)

Not open to students with credit in Geog 2. Cultural and physical features; economic development; resources; man-land relationships. The approach is by continents and/or cultural regions.

6. Geography Laboratory (1)

Practical exercises in use of atlas, longitude and latitude, earth-sun relations, time, climatic elements and topographic maps. One two-hour field trip required.

111. Map Interpretation (2)

Prerequisite: permission of instructor. Interpretation of foreign and domestic maps; symbols, scale, methods of showing topography, vegetation, culture, land use; soils, water and water levels; characteristics of projections.

112. Aerial Photograph Interpretation (2)

Prerequisite: permission of instructor. Aerial photographs as a means of determining culture, topography, and vegetation; scale, use of index, vertical and oblique photographs, and stereoscopes.

115. Cartography (3)

Use of instruments for drafting and lettering of maps; construction and use of standard map projections; relief representation and map reproduction; cartographic source materials and literature; field trips.

116. Political Geography (3)

Power factors in international relations; concepts of space, resources, industry, agriculture, technology, population, and food supply; cultural groups related to states and their association.

120. Urban Geography (3)

The region as a geographic unit; urban settlements as regional centers; city-region relationships; morphology and structure of villages, towns and cities, and their internal functional relationships; case studies.

124. Geography of the USSR (2)

Regional distribution of resources and industries of the USSR.

126. Australia, New Zealand, and Pacific Islands (3)

Geographic relationship of natural and cultural features to social and economic development.

127. Europe (3)

Geographic regions of Europe emphasizing the relation of human activities to physical factors areal in their distribution and influence.

128. Far East (3)

Regional summary of geographic conditions of countries bounding the Western Pacific; resources and physical conditions influencing political problems.

129. Africa (3)

Systematic survey of Africa; cultural and natural features related to economy of individual countries.

130. Geographic Literature (2)

Prerequisite: geography major or minor. Primary and secondary source materials; literary background of geography.

141. Anglo America (3)

Systematic and regional survey of Anglo America; cultural and physical features related to economy.

142. South America (3)

Relationship of natural and cultural features; economic and social development; man-land relationships. Countries considered individually.

143. Caribbean America (3)

Not open to students with credit in Geog 126, 142 prior to September 1959. Relationship of natural and cultural features in Mexico, Central American countries, and Caribbean islands and countries; social and economic development; man-land relationships.

177. Historical Geography of the United States (3)

Regional settlement of the United States; peopling of physiographic regions, creation of economic (cultural) regions, and geographic factors related to broad trends in American history. One week-end field trip required.

180. Field Geography (1-6; max total 6)

Week-end or summer field tours.

181. Technical Field Geography (3)

Study and application of geography field techniques.

189. Geography of California (2)

Natural and cultural patterns of California; historical and regional geography of the state.

190. Independent Study (1-3; max see reference)

See *Regulations and Procedures—Independent Study*.

GRADUATE COURSES

(See *Course Numbering System—Definitions and Eligibility*)

205. Seminar in Regional Geography (3)

Prerequisite: 9 units of upper division geography or permission of instructor. Theories of regional geography; method in regional delimitation; applied regional geography.

290. Independent Study (1-3; max see reference)

See *Regulations and Procedures—Independent Study*.

GEOLOGY DEPARTMENT
(In the Physical Science Division)

Professors: Stanley (Chairman), Beard
Assistant Professors: Cserna, Mack

The Geology Department offers majors in geology for the bachelor of arts degree and for the bachelor of science degree. Geology offerings include undergraduate preparation for professional careers and for graduate work. The introductory course in geology meets a natural science requirement in general education; and courses for earth study as an avocation.

BACHELOR OF ARTS AND BACHELOR OF SCIENCE DEGREES
MAJORS IN GEOLOGY

The bachelor of arts degree with a major in geology consists of a total of 124 units including 34 units of geology. The bachelor of science degree with a major in geology consists of a total of 128 units including 45 units of geology. See requirements listed below. For general degree requirements see *Degrees and Credentials*. A student planning graduate study is advised to meet the foreign language requirements of the institution he plans to attend.

Geology Major for BA Degree	<i>Units</i>
Geology 1, 1L, 2, 12, 101, 105, 106.....	18
Geology 108 or equivalent summer field course.....	6
Elect from: Geology 5, 13, 107, 110, 111, 112, 113, 115, 116, 117, 118, 130, 190 (include 8 units u.d.).....	10
	34

Additional Requirements: Chem 2A-B or 1A-B; Engr 1, 1L; Math C; Physics 2A-B. Recommended: French, German, or Russian.

Geology Major for BS Degree	<i>Units</i>
Geology 1, 1L, 2, 5, 12, 13, 101, 105, 106, 107, 110, 112, 113, 118.....	36
Geology 108 or equivalent summer field course.....	6
Elect from: Geology 111, 115, 116, 117, 130, 190.....	3
	45

Additional Requirements: Biol 1B; Engr 1, 1L; Engl 72; Math 3, 4; Physics 4A-B-C; Chem 1A or 2A-B; Chem 1B or 8. Recommended: French, German, or Russian.

GEOLOGY MINOR

A minor in geology consists of 14 units (exclusive of Geol 20, 120), of which at least 6 are upper division. It is recommended that Geol 1, 2, 5, 12, 105, and 189 be included in the minor.

CREDENTIAL PROGRAM

For information on credential programs consult the department chairman and see *Physical Science* and *Education Division* sections.

Courses

GEOLOGY

1. Physical Geology (3) (Former Geol 1A)

Nature and properties of earth materials and processes involved in development of landscapes; work and effects of streams, waves, glaciers, volcanoes, mountain building, and earthquakes. May include field trips.

11. Physical Geology Laboratory (1)

Prerequisite: Geol 1 concurrently or permission of instructor. Introductory laboratory study of minerals, rocks, topographic maps, and geologic maps; land forms and geologic structures as shown by maps and models. One-day field trip required. (2 lab hours)

2. Historical Geology (3) (Former Geol 1B)

Prerequisite: Geol 1 or equivalent. Survey of earth's history revealed by the rock sequence. May include field trips.

5. Topographic Maps (2)

Not open to students with credit in Geol 5A or B. Prerequisite: Geol 1. Principles and techniques of topographic map interpretation; land forms as influenced by geologic structures and physiographic history; exercises with geologic maps and structure sections. (1 lecture, 2 lab hours)

12. Physical Mineralogy (2) (Former Geol 12A)

Identification of common rock-forming minerals by means of physical properties. (1 lecture, 3 lab hours)

13. Determinative Mineralogy (2) (Former Geol 12B)

Prerequisite: Geol 12, Chem 2A-B; or equivalent. Mineral identification by means of chemical and blowpipe analysis. (1 lecture, 3 lab hours)

20. Meteorology (3) (Former Geog 5)

Weather analysis; factors basic to weather forecasting and climatological studies. (One 2-hour Saturday field trip required.)

25. Engineering Geology (3)

Not open to freshmen. For engineering students. Principles of physical geology; application of geology to engineering structures and projects.

101. Petrology (3)

Prerequisite: Geol 1, 12 (or concurrently). Common rock-forming minerals; origin, classification, textures, and structures of igneous, sedimentary, and metamorphic rocks; examination of rocks in the hand specimen. (2 lecture, 2 lab hours)

105. Geomorphology (3)

Prerequisite: Geol 2, or permission of instructor. Land forms, their origin and development; regional problems. May include field trips.

106. Structural Geology (3)

Prerequisite: Geol 2, 5; or permission of instructor. Structural arrangements of rocks; intrusive and extrusive rock structures; folding and faulting; unconformities; applications to geophysical prospecting. May include field trips. (2 lecture, 2 lab hours)

107. Field Geology Methods (2)

Prerequisite: Math C. Field trips to introduce students to methods and instruments used in geologic field work. (1 lecture; field hours—4 weekly until spring vacation, 8-hour Saturday trips thereafter.)

108. Field Geology (4-6; max total 6) Summer only

Prerequisite: geology major or permission of instructor. Geologic reconnaissance and application of instrumental methods in geologic mapping and written report of area selected for study.

110. Paleontology (3)

For geology and biology majors. Prerequisite: Geol 2, and either Biol 1B or Zool 1; or permission of instructor. Structures and development of prehistoric animals; invertebrates and index fossils. May include field trips. (2 lecture, 3 lab hours)

111. Stratigraphy (3)

Prerequisite: Geol 2, 101, or permission of instructor. Principles of stratigraphy and of sedimentation as applied to stratigraphy; features, arrangements, fossils, age and distribution of major rock formations of North America. May include field trips.

112. Optical Mineralogy (3)

Prerequisite: Geol 13 or permission of instructor. Optical properties of minerals; identification of selected minerals by optical methods. Manipulation and use of petrographic microscope. (2 lecture, 3 lab hours)

113. Microscopic Petrography (3)

Prerequisite: Geol 101, 112. Problems of classification of rocks; thin section study with petrographic microscope of igneous, sedimentary, and metamorphic rocks. (2 lecture, 3 lab hours)

115. Economic Geology (3)

Not open to students with credit in Geol 115A. Prerequisite: college chemistry, geology major with senior standing; or permission of instructor. Common earth materials essential in industry; geology, mineralogy, origin, distribution, occurrence, extraction, methods of refining, uses. May include field trips.

116. Petroleum Geology (3)

Prerequisite: Geol 101, 106. Theories of origin of petroleum, petroleum structures, prospecting, extraction methods; selected petroleum fields. May include field trips.

117. Ground Water (2)

Prerequisite: senior standing or permission of instructor. Geologic and hydrologic factors related to occurrence and utilization of ground water.

118. Geological Maps (2)

Prerequisite: Geol 106 or permission of instructor. Interpretation of geologic maps; advanced problems in structural geology; stereographic net; structural interpretation from aerial photographs. (1 lecture, 3 lab hours)

120. Climatology (3)

Prerequisite: Geol 20 or equivalent. Climates of the earth and their significance to man.

130. Geological Literature (2)

Prerequisite: geology major or minor. Primary and secondary source materials; literary background of geology.

189. Geology of California (2)

Prerequisite: Geol 1, or Geog 1, or permission of instructor. Origin of geological features of the State; relation of structural, stratigraphic, and mineralogical conditions to geologic features and resources of the State.

189L. Geology of California Field Study (1)

Prerequisite or concurrently: Geol 189 or permission of instructor. Field study of selected areas displaying features of the geology of California; written report on each trip. Minimum of 32 hours in field trips required during semester of registration in course; limited to students who can arrange transportation for field trips and share cost.

190. Independent Study (1-3; max see reference)

See *Regulations and Procedures—Independent Study*.

MATHEMATICS DEPARTMENT
(In the Physical Science Division)

Professors: Labarre (Chairman), Alkire

Assistant Professors: DiAntonio, Ewy, Howes, Kipps, W. Rees, Robbins, Robinson, Suhr

Instructors: L. Walker, Worm

Mathematics serves as a part of general education, as an integral part of technical studies in physical science and engineering, as a foundation in other fields of study, and as a pure science for those interested in mathematics itself and for those who use it in some applied field such as statistics, coding and programming for computers, or actuarial work. A program of preparation is offered for teachers of mathematics.

HIGH SCHOOL PREPARATION

Most courses in mathematics require a sequence of prerequisites. Students should be sure the prerequisites are met in time to take required courses. Math B and C are prerequisite to a major or minor in mathematics. A full four-year sequence of mathematics including these courses should be completed in high school, if possible.

DUPLICATION OF COURSES

Only in exceptional cases may a student receive credit toward a degree for one course which duplicates one or more courses taken in high school. He must receive written permission from the department chairman prior to enrollment for credit in such a course. Under no circumstances can this credit be applied toward the general education requirement. The following are considered duplication:

Math 27, one year high school algebra.

Math 28, one year high school geometry.

Math B, two years high school algebra.

Math C, one-half year high school trigonometry.

No credit will be allowed for Math B, C, 27 or 28 if taken after completion of Math 3 or more advanced mathematics courses.

MAJORS

The Mathematics Department offers majors for the bachelor of arts degree and the bachelor of science degree. The bachelor of arts degree (noncredential) is designed primarily for those preparing for graduate study in mathematics. The bachelor of science degree is intended to prepare those who plan to enter industrial or government employment. See also credential major.

Foreign Language Requirement

Two years of satisfactory collegiate study (or equivalent) in one foreign language are required for the bachelor of arts degree major (but not the credential major) in mathematics. *This requirement applies to students who will be graduated in June of 1963 and thereafter.* See the general statement under *Degrees and Credentials—Foreign Language Requirement* for equivalents and alternative ways of meeting the requirement. Any student planning advanced study is advised also to meet the foreign language requirement of the school he plans to attend.

Mathematics Major for BA Degree

	<i>Units</i>
Math 3, 4, 7A-B, 106 or 109, 114 or 115, 118A-B, 119	31
Elect from: Math (u.d.), Physics 105A-B or 170A-B	5

36

Additional Requirements: see foreign language requirement.

Mathematics Major for BS Degree	<i>Units</i>
Math 3, 4, 6 or 7A-B, 107 or 109, 114 or 115, 117 or 119, 121.....	25-28
Math 118A-B.....	3-6
Elect from: Math (u.d.), Physics 105A-B or 170A-B.....	8-2
	—
	36

Additional Requirements: Physics 4A-B-C, Chem 1A-B or 1A, 8.

MINOR

Math 3, 4.....	10
Math electives (incl. 6 u.d.).....	9
	—
	19

(See also credential minor.)

JUNIOR HIGH SCHOOL CREDENTIAL

(For revised credential structure see *Education Division*)

The junior high school credential authorizes the holder to serve as a teacher in grades seven, eight, and nine of elementary and secondary schools. For general and professional requirements, see *Education Division*.

The junior high school credential major in mathematics is the same as the portion of the general secondary credential major in this field which is required for the degree major; the minor is the same as the general secondary credential minor.

GENERAL SECONDARY CREDENTIAL

(For revised credential structure see *Education Division*)

The general secondary credential authorizes the holder to teach in secondary schools and in grades seven and eight of the elementary schools. For general and professional requirements, see *Education Division*.

Credential Major in Mathematics	<i>Units</i>
Math 3, 4, 6 or 7A-B, 101, 102, 103 or 116, 114 or 115, 200 or 202.....	28-31
Elect from: Math 106, 107, 130.....	3
Math electives.....	5-2
	—
	36

For further information and additional recommended courses, see the department credential adviser.

Credential Minor in Mathematics

	<i>Units</i>
Math 3, 4, 101, 102.....	16
Math electives.....	4
	—
	20

MASTER OF ARTS AND MASTER OF SCIENCE DEGREES

The graduate programs in mathematics for master's degrees are based on the corresponding undergraduate programs at Fresno State College. Math 114, 115, 118A-B, and 119 must be completed if not taken in the undergraduate program. In addition, master of arts degree candidates must include Math 110 or 200. Specific requirements are listed below. For additional information or alternative programs appropriate for elementary, secondary, or junior college teachers, consult the department chairman; for general requirements see *Degrees and Credentials—Master's Degrees*.

Foreign Language Requirement

After September 1, 1962, advancement to candidacy for the master of arts degree with a major in mathematics (but not the credential major) will require two years of satisfactory collegiate study (or the equivalent) in one foreign language. The

foreign language requirement may be met by the passing of a proficiency examination.

Master of Arts Degree in Mathematics		<i>Units</i>
Math 205, 207, 211 or 215, 231 or 232, 241, 290 or 299.....		17-18
Math electives (200 series, exclude 202)		4-3
Electives (u.d.)		9
		—
		30

Master of Science Degree in Mathematics		
Math 205, 207, 221, 290 or 299.....		12
Math electives (200 series, exclude 202)		9
Electives (u.d.)		9
		—
		30

Courses

MATHEMATICS

B. Intermediate Algebra (3)

Prerequisite: elementary algebra and geometry. Rapid review of fundamentals of elementary algebra, fractions, factoring, simultaneous equations, functions and their graphs, exponents, logarithms, progressions, quadratic equations, ratios and variations, binominal theorem. (See *Duplication of Courses.*)

C. Trigonometry (3)

Prerequisite: Math B. Concept of a function, sine and cosine functions, tables and graphs, other trigonometric functions, identities and equations, trigonometric functions of angles, solution of triangles, logarithms. (See *Duplication of Courses.*)

2. Mathematics of Finance (3)

For business students. Prerequisite: Math B or 2 years high school algebra. Development of mathematical relations between investment and income; compound interest, annuities, sinking fund, depreciation, amortization, and bonds.

3. Mathematical Analysis I (5)

Prerequisite: two years of high school algebra, one year of plane geometry, trigonometry. Field postulates, the real numbers, function and its graph, linear function, sets, finite induction, vectors and complex numbers, limit, derivative, continuity, applications of differentiation, polynomials, integration.

4. Mathematical Analysis II (5)

Prerequisite: Math 3. Rational functions, periodic functions, trigonometric functions, inverse functions, polar coordinates, exponential and logarithmic functions, conic sections, parametric representation of curves, determinants and matrices, functions of two variables, probability.

6. Mathematical Analysis III (3)

Prerequisite: Math 4. Techniques of integration, applications, infinite series, calculus of functions of several variables, hyperbolic functions, Taylor's theorem.

7A-B. Intermediate Mathematical Analysis III-IV (3-3)

Prerequisite: Math 4. Hyperbolic functions, techniques of integration, improper integrals, theory of plane curves, Taylor's theorem, numerical methods; infinite series, Fourier series, calculus of functions of several variables, introduction to differential equations.

10. Mathematics of the Elementary School (3)

Not open to students with credit in Ed 107. Prerequisite: elementary algebra and geometry, second semester sophomore. Tests covering the ordinary operations of arithmetic; fundamental concepts, unit plan of organizing subject matter; analysis of skills and difficulties.

21. Elementary Astronomy (3)

Prerequisite: elementary algebra and geometry. Nontechnical fundamental principles and facts of astronomy; appreciation of the wonders of the universe.

27. Elementary Algebra (3)

Transition from arithmetic to symbolism and generalization of algebra, fundamental operations, equations, formulas. (See *Duplication of Courses*)

28. Plane Geometry (3)

Prerequisite: Math 27. Points, lines, angles, triangles, polygons, circles; axioms, theorems, problems; proofs and constructions. (See *Duplication of Courses*)

40. Introduction to Statistical Methods (3)

Not open to students with credit in Math 107, 109. Prerequisite: sophomore standing, Math 27, 28. Organization of data, descriptive measures, sampling, statistical inference, testing hypotheses, chi-square, correlation and regression.

101. Principles of Geometry (3)

Prerequisite: Math 3. Fundamental concepts and constructions of plane synthetic geometry; the point, line, triangle, and circle; similarity, concurrency, collinearity, inversion, harmonic division, poles and polars.

102. Principles of Algebra (3)

Prerequisite: Math 4. Number systems; elementary theory of groups, rings and fields; polynomials and theory of equations; determinants, matrices and linear systems.

103. History of Mathematics (3)

Prerequisite: Math 3. Development of mathematics from primitive times; influence of social and economic changes; emphasis on mathematics prior to the nineteenth century.

106. Projective Geometry (3)

Prerequisite: Math 101, 102 or permission of instructor. Synthetic and analytic projective geometry: axioms; duality; perspective and projective correspondence; harmonic sets; coordinatization; projective collineations and correlations; polarities and conics; groups of projective, affine and Euclidean transformations.

107. Probability and Statistics (3)

Prerequisite: Math 4. Introduction to statistics, mathematical development of probability, measures of central tendency and variability, moments, normal distribution, linear correlation.

108. Advanced Statistics (3)

Prerequisite: Math 107. Theory of sampling; problem of estimation; tests of significance; statistical hypotheses; confidence limits; the t , F , and chi-square distributions; analysis of variance and covariance; application of certain tools and techniques.

109. Probability (3)

Prerequisite: Math 6 or 7A. Classical and axiomatic viewpoints; joint, marginal, and conditional probabilities; Bayes' theorem; repeated trials; convolutions; limit theorems.

110. Symbolic Logic (3) (See Phil 110)**114. Linear Algebra (3)**

Prerequisite: Math 6 or 7A. Vectors and vector spaces, transformation of coordinates, linear transformations, geometry of real vector spaces; matrices, algebra of matrices, eigenvalues, diagonalization, and quadratic forms.

115. Modern Algebra (3)

Prerequisite: Math 102 or 114. Introduction to fundamental concepts of modern algebra such as groups, rings, integral domains, and fields.

116. Theory of Numbers (3)

Prerequisite: Math 3; or Math B and 130. Divisibility, greatest common divisor, Euler's function, continued fractions, congruences, quadratic residues, Diophantine equations.

117. Advanced Engineering Mathematics (3)

Prerequisite: Math 6 or 7B. Ordinary differential equations; Laplace transform; orthogonal, Gamma and Bessel functions; vector analysis; partial differential equations; functions of a complex variable.

118A-B. Advanced Calculus (3-3)

Prerequisite: Math 6 or 7B. The real number system; function theory, continuity, differentiability; partial differentiation; multiple integrals; line and surface integrals; Fourier series and integrals; infinite series.

119. Differential Equations (3)

Prerequisite: Math 6 or 7B; Physics 4A. Definition and classification of differential equations; general, particular, and singular solutions; existence theorems; theory and technique of solving certain differential equations; applications.

121. Numerical Analysis (3)

Prerequisite: Math 6 or 7A. Finite difference and Lagrangian interpolation formulas; numerical solution of equations, systems of equations, and differential equations.

130. Introduction to Modern Mathematics (3)

Prerequisite: Math B. Logic, set theory, probability, linear programming, Markov chains, applications to economics, psychology, and sociology.

190. Independent Study (1-3; max see reference)

See *Regulations and Procedures—Independent Study*.

GRADUATE COURSES

(See *Course Numbering System—Definitions and Eligibility*)

200. Foundations of Mathematics (3) (Same as Phil 200)

Prerequisite: Math 102, 110, or permission of instructor. Mathematical logic with applications to the development of the real number system and philosophy of mathematics.

202. Fundamental Concepts of Mathematics (3)

Prerequisite: Math 6 or 7A. Fundamental notions regarding number theory, number system, algebra of number fields; functions, limits, calculus, and differential equations. Primarily for those planning to teach mathematics.

205. Functions of a Complex Variable (3)

Prerequisite or concurrently: Math 119. Analytic functions, conformal mapping, analytic continuation, meromorphic functions, contour integration and the residue theorem, Laplace transform.

207. Real Variables (3)

Prerequisite or concurrently: Math 118B. Theory of sets; cardinals; ordinals; function spaces, linear spaces; measure theory; theory of modern integration and differentiation.

211. Point Set Topology (3)

Prerequisite: Math 205 or 207 (may be taken concurrently). Basic concepts of point set topology, set theory, topological spaces, continuous functions; connectivity, compactness and separation properties of spaces. Topics selected from function spaces, CW complexes, metrization, dimension theory.

215. Differential Geometry (3)

Prerequisite or concurrently: Math 119. Study of geometry in Euclidean space by means of calculus, including theory of curves and surfaces, curvature theory of surfaces, and intrinsic geometry on a surface.

221. Advanced Numerical Analysis (3)

Prerequisite: Math 121. Linear equations and matrices; parabolic, hyperbolic, and elliptic differential equations; principles of coding and programming of computers.

231. Rings and Fields (3)

Prerequisite: Math 115. Sets, groups, rings, fields, factorization, Galois theory.

232. Linear Algebra (3)

Prerequisite: Math 115. Groups with operators, modules, representation theory, ideal theory, polynomial ideals.

241. Seminar (3)

Prerequisite: two graduate courses in mathematics. Presentation of current mathematical research in field of student's interest.

290. Independent Study (1-3; max see reference)

See *Regulations and Procedures—Independent Study*.

299. Thesis (2-6; max total 6)

Prerequisite: see *Master's Degrees—Thesis Requirement*. Preparation, completion, and submission of an acceptable thesis for the master's degree.

302. Topics in Mathematics for Teachers (3; max total 6, if topic not repeated)

Prerequisite: permission of instructor. Topics in modern mathematics with special emphasis for teachers.

PHYSICS DEPARTMENT
(In the Physical Science Division)

Professors: Scott (Chairman), A. Eliason

Associate Professors: S. Brown, Donaldson, Shacklett

Assistant Professors: S. Brooks, Shockley, P. Young

The Physics Department is organized and developed to offer scientific programs leading to various degrees in physics, including the bachelor of arts, bachelor of science, master of arts, and master of science. The programs are arranged to assist in meeting the need for qualified teachers and scientifically trained personnel brought about by the increasing applications of physics to industries, communications, aviation, engineering, national defense and particularly to the research which develops these fields.

HIGH SCHOOL PREPARATION

The high school preparation for majors in the Physics Department should include: algebra (2 years), plane and solid geometry, trigonometry, and chemistry or physics; French, German, or Russian (2 years or more); and mechanical drawing (recommended).

MAJORS

For the bachelor of arts degree a major in physics consists of 37 units of which 25 must be upper division. For the bachelor of science degree, a major in physics consists of 44 units as listed below. For general degree regulations see *Degrees and Credentials*; for junior high and general secondary credential majors, see *Physical Science* section.

Foreign Language Requirement

Two years of satisfactory collegiate study (or equivalent) in French, German, or Russian are required for majors in physics. *This requirement applies to students who will be graduated in June of 1963 and thereafter.* See the general statement under *Degrees and Credentials—Foreign Language Requirement* for equivalents and alternative ways of meeting the requirement. Any student planning advanced study is advised also to meet the foreign language requirement of the school he plans to attend.

Degree Curricula	BA	BS
Physics Major		
Physics 4A-B-C, 102A-B, 105A-B, 107A-B, 110, 110L, 140.....	37	37
Physics 115, 130A-B		7
Additional Requirements		
Chem 1A-B	10	10
Math 3, 4, 6, 118A-B, and one elective from Math 102, 114, 117, 119	22	22
General Education, Foreign Language*, and Electives	55	52
	124	128

**SUGGESTED SEQUENCE OF COURSES FOR BACHELOR OF
SCIENCE DEGREE IN PHYSICS**

In addition to the specific courses listed below, general education requirements and electives should be included to bring total to 15-17 units per semester. A total of 128 units must be completed for the bachelor of science degree. (See *Degrees and Credentials*.)

1st Year: Math 3, 4, Physics 4A, F Lang (or equivalent)

2nd Year: Physics 4B-C, Math 6, 117 or 119, Chem 1A-B, F Lang (or equivalent)

3rd Year: Physics 102A-B, 105A-B, 110, 110L, 140, Math 118A-B

4th Year: Physics 107A-B, 115, 130A-B

* Courses taken in high school may reduce requirement.

MINORS

A minor in physics for a bachelor's degree requires 18 units of which 6 must be upper division. For general secondary credential minor, see *Physical Science* section.

JUNIOR HIGH SCHOOL CREDENTIAL

(See *Physical Science* section.)

GENERAL SECONDARY CREDENTIAL

(See *Physical Science* section.)

MASTER OF ARTS DEGREE

The graduate program for the master of arts degree in physics is based on the equivalent of the undergraduate major in physics at Fresno State College. Twenty of the 30 units required for the degree must be in physics. For specific requirements, consult the chairman of the department; for general requirements, see *Degrees and Credentials—Master's Degrees*. See foreign language requirement below. For information on junior college teaching, see *Education Division* section.

MASTER OF SCIENCE DEGREE

The master of science degree in physics is designed for graduates who desire to seek industrial employment in physics and allied fields. Undergraduate preparation equivalent to a physics major at Fresno State College is necessary for admission. For specific details of the program, consult the chairman of the department; for general requirements, see *Degrees and Credentials—Master's Degrees*. See foreign language requirement below. For information on junior college teaching, see *Education Division* section.

FOREIGN LANGUAGE REQUIREMENT

After September 1, 1962, advancement to candidacy for the master of arts or the master of science degree with a major in physics will require the passing of an examination demonstrating the ability to read materials of the major in French, German, or Russian.

Courses**PHYSICS**

Note: Math 6, Physics 4A-B-C are prerequisite to all upper division and graduate physics courses. No more than 12 units of lower division physics may be applied toward a degree. Associated lecture and laboratory courses must be taken concurrently.

2A-B. General Physics (4-4)

Prerequisite: Math B, 28, or equivalents; satisfactory score on mathematics proficiency test. Mechanics, properties of matter, heat, sound, light, electricity and magnetism, and modern physics. (3 lecture, 3 lab hours)

4A. Mechanics and Sound (4)

Prerequisite: Math 3. Statics, forces, motions, properties of matter, wave motion and sound; solution of problems illustrating principles of mechanics. (3 lecture, 3 lab hours)

4B. Electricity and Magnetism (4)

Prerequisite: Physics 4A, Math 3, 4. Electrostatics, concepts of fields and potential, capacitance, D.C. circuits, chemical and thermal effects, magnetic fields, induced current, alternating current circuits. (3 lecture, 3 lab hours)

4C. Heat, Light and Radiation (4)

Prerequisite: Physics 4A, Math 3, 4. Temperature, calorimetry, heat flow, engine cycles, lenses, mirrors, optical instruments, spectra, atomic structure, radioactivity, X rays, and nuclear physics. (3 lecture, 3 lab hours)

Phy Sc 10. Introduction to Physical Science (3) (See Phy Sc 10)**55. Sound (3)**

For music students and others interested in the physical basis of music. Vibrations and spectra of various musical instruments; harmony and discord, the tempered scale; acoustics; reproducing instruments; hearing.

102A-B. Modern Physics (3-3)

Prerequisite: Chem 1A or 2A-B. (A) Theoretical and experimental aspects of atomic nature of matter, measurement of electronic charge, conduction of electricity in gases, radiation, photo-electric effect, atom models and spectroscopy. (B) Natural and artificial radioactivity, cosmic rays, fission, fusion, properties of nuclear radiations and their detection.

105A-B. Analytical Mechanics (3-3)

(A) Analytical and vector treatment of the fundamental principles of statics, kinematics, and dynamics. (B) Advanced dynamics; harmonic motion, central force fields and Lagrange's equations.

107A-B. Advanced Electricity and Magnetism (3-3)

Prerequisite: Physics 105A. (A) Mathematical analysis of electrostatics and magnetostatics, Gauss' law, solutions of Laplace's equation, images, theory of conduction, magnetic potentials. (B) Motion of ions in electric and magnetic fields, electromagnetic induction, Maxwell's equations and wave propagation, electron theory and magnetic properties.

110. Physical Optics (3)

Theory of optical phenomena; wave theory of light with applications to optical instruments; interference and diffraction phenomena, dispersion, polarization.

110L. Physical Optics Laboratory (1) (3 lab hours)**115. Introduction to Quantum Mechanics (3)**

Prerequisite: Physics 102A, 105A, 110, Math 119. Historical background, postulates, meaning and methods of quantum mechanics; applications to atomic phenomena.

120. Electrical Measurements (3)

Prerequisite: Physics 4A-B-C, Math 6. Theory, operation and use of direct and alternating current measuring instruments. (2 lecture, 3 lab hours)

126. Physical Electronics: Tubes (2)

Electron ballistics, thermionic emission, diode and multielement tube characteristics, rectification, elementary amplifier theory, gas tubes, special tubes.

126L. Physical Electronics Laboratory: Tubes (1) (3 lab hours)**127. Physical Electronics: Circuits (2)**

Prerequisite: Physics 126, 126L. Audio and RF amplifiers, oscillators, feedback, modulation, detection, application of tubes to control techniques, solid state and transistor theory.

127L. Physical Electronics Laboratory: Circuits (1) (3 lab hours)**130A-B. Advanced Laboratory (2-2)**

Prerequisite: Physics 102A-B, 105A-B; senior physics major. Advanced experiments in mechanics, electricity and magnetism, atomic and nuclear physics. Opportunity for at least one individual project. (6 lab hours)

140. Thermodynamics and Kinetic Theory (3)

Prerequisite: Math 117 or 119. Fundamental concepts and laws of thermodynamics and kinetic theory with applications.

162. Introduction to Solid State Physics (3)

Prerequisite: Physics 115. Classification of solids; crystalline state and lattice vibrations; properties of metallic lattices and dielectrics; magnetic properties of solids; free electron theory and band theory of metals; semiconductors; imperfections.

170A-B. Introduction to Mathematical Physics (2-2)

Application of mathematical methods to the solution of problems in physics.

180A-B. Seminar in Physics (1-1)

Prerequisite: senior or graduate physics major or permission of department chairman.

190. Independent Study (1-3; max see reference)

See *Regulations and Procedures—Independent Study*.

GRADUATE COURSES

(See *Course Numbering System—Definitions and Eligibility*)

Note: Preparation equivalent to a physics major at Fresno State College and the permission of the instructor are prerequisite to admission to any of the graduate courses in Physics.

203A-B. Theoretical Physics (3-3)

Advanced treatment of classical analytical mechanics including Lagrange's and Hamilton's formulation of the laws of motion, special relativity, small oscillation theory, hydrodynamics.

206. History and Philosophy of Physical Science (2)

Development of physical science from the historical standpoint and its significant contributions; philosophy of science, nature of reality, principle of causality, role of definitions in science, uncertainty and measurements, rise and decline of the mechanical view, epistemology.

220A-B. Advanced Electricity and Magnetism (3-3)

Electromagnetic theory and its applications; solutions of Laplace's equation; electromagnetic potentials; cylindrical and spherical waves; retarded potentials; Lienard-Wiechert potentials; special relativity and electron theory.

221A-B. Atomic and Nuclear Physics (3-3)

The nature of matter and radiation as deduced from the classical quantum and quantum mechanical theories; atomic and nuclear structure; the nature of the nucleus as deduced from classical, quantum and quantum mechanical theories; models of nuclear structure.

222A-B. Quantum Mechanics (3-3)**223. Statistical Mechanics (3)**

Theoretical principles of classical and quantum statistics.

280A-B. Group Study of Selected Topics (3-3)**290. Independent Study (1-3; max see reference)**

See *Regulations and Procedures—Independent Study*.

299. Thesis or Project (2-4; max total 4)

Prerequisite: See *Master's Degrees—Thesis Requirements*. Preparation, completion, and submission of an acceptable thesis or project for the master's degree.

SOCIAL SCIENCE DIVISION

Division Head.....Karl Falk

Divisional Administrative

Assistant.....Clair E. Nelsen

Department

Chairman

Criminology.....Frank Boolsen

History.....Francis A. Wiley

The Social Science Division aims to prepare students for better citizenship and to offer a broad education for meeting present-day problems. The division is organized into six integrated fields (anthropology, criminology, economics, history, political science, and sociology) which supplement the offerings in other divisions in the college.

The division offers majors and minors for the bachelor of arts and bachelor of science degrees; teaching credentials; preprofessional training for public service, law, social work, and criminology; general preparation for business and other professions; the master of arts degree in economics, history, and social science; and master of science degree in criminology.

Social Science 254

Anthropology
Economics
Political Science
Social Science
Sociology

Criminology 266

History 270

SOCIAL SCIENCE DIVISION

Professors: K. Falk (Head), W. Beatty, Dienstin, H. Graham, Wang
 Associate Professors: Brigham, Buckman, Haworth, W. Henderson, Roth, Svenson
 Assistant Professors: Bush, P. Pickford, Provost, W. Young
 Part-time: Jenkins, Knapp, Rich, Wilmer

THE AMERICAN HISTORY AND UNITED STATES CONSTITUTION REQUIREMENT

The American history and United States Constitution (including California state constitution and local government) requirement for graduation should be fulfilled by Hist 10 and Pol Sc 11. The following courses may be substituted for Hist 10: Hist 8A-B, 171-172, 173-174, 176, 181, or Econ 110; for Pol Sc 11: Pol Sc 1A-B or 101.

MAJORS AND MINORS

Majors and minors are offered in criminology, economics, history, political economy, political science, public administration, social science, and sociology-anthropology; a major is offered in social welfare. Majors must maintain at least an average grade of C in all courses taken in the division.

Note: Criminology and History Departments follow this section; the Geography Department is in the Physical Science Division section.

Foreign Language Requirement

Two years of satisfactory collegiate study (or equivalent) of one foreign language are required of all majors in the social science division. Majors in criminology, public administration, social welfare, and sociology-anthropology are limited to a modern language. Oral use of the language is emphasized for majors in criminology, public administration, and social welfare. *This requirement applies to students who will be graduated in June of 1963 and thereafter.* See the general statement in section on *Degrees and Credentials—Foreign Language Requirement* for equivalents and alternative ways of meeting the requirement. Any student planning advanced study is advised also to meet the foreign language requirement of the school he plans to attend.

BACHELOR OF ARTS DEGREE MAJORS

The following major requirements are in addition to the general education requirement in social science. See also general secondary credential major.

Economics	<i>Units</i>
Econ 1A-B, 100A-B, Bus Ad 102	15
Elect from: Econ 150, 151, 170, 174, Bus Ad 152, or courses below	3
Elect two groups: Econ 101, 103; 110, 111; 131A-B, 136; 178, 180; Bus Ad 133, 135	12
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	30
Political Economy	
Econ 1A-B, 131A or B, 174	12
Pol Sc 1A-B, 112A or B, 157, 164A-B	18
Elect from: Econ 100A-B, 101, 103	3
Elect from: Acct 155; Econ 110, 136, 150, 178; Pol Sc 152, 161, 163, 165; Bus Ad 102, 135	9
	—
	42

	<i>Units</i>
Political Science	
Pol Sc 1A-B, 112A-B, 127.....	15
Elect from: Pol Sc 128, 132.....	3
Elect from: Pol Sc 135, 143, 144, 146, 157.....	9
Elect from: Pol Sc 124, 129, 152, 153, 161, 163, 164A-B.....	3
Elect from: Econ 178, 180; Hist 137A-B, 151A-B, 167, 176; Soc 111.....	6
	36
Public Administration	
Pol Sc 1A-B, 112A or B, 164A-B.....	15
Elect from: Pol Sc 127, 144, 146.....	6
Elect from: Pol Sc 152, 161, 163, 165, 170.....	9
Elect from: Econ 131A, 180; Bus Ad 102; Soc 152, 155.....	6
	36
Social Science	
From courses in Econ, *Geog, Hist, Pol Sc, Soc-Anthro:	
Elect 12 units in one field.....	12
Elect 9 units in each of two other fields.....	18
Elect 6 units in each of the two remaining fields.....	12
	42
	(incl 21 ud)
Social Welfare	
Econ 1A-B, Anthro 2, Soc 1A.....	12
Soc 120, 121, 122, 124, 126, 181.....	14
Elect from: Anthro 104, Econ 150, Soc 125, 127, 128, 152, 155, 157.....	6
Elect from: Crim 120, 132; Econ 180; Mkt 105; Soc 111, 140.....	3
Elect from: Econ 131A-B, Pol Sc 161, 163, 164A-B.....	3
	38
(In addition, psychology minor for social welfare required.)	
Sociology-Anthropology: Anthropology Option	
Anthro 1, 2; 9 units u.d. Anthro electives.....	15
Soc 1A; 6 units from Soc 152, 155, 157.....	9
Math 40 or 130; Psych 145; Ling 100, 150.....	12
Elect from: Econ 100A-B, 101, 110, 111, 180.....	3
Elect from: Hist 2, 4A-B, 107, 108, 111A-B, 135, 137A-B, 155, 160A-B, 161, 163, 167, 176.....	6
	45
Sociology-Anthropology: Sociology Option	
Anthro 2, 104; Soc 1A-B, 175.....	15
Elect from: Soc 111, 140, 152, 155, 157, 165.....	15
Elect 3 units u.d. from each field: Econ, Hist, Phil, Pol Sc, Psych.....	15
	45

* May not include Geog 6, 111, 112, 115, 130, 180, 181.

MINORS

The following minor requirements are in addition to the general education requirement in social science. See also general secondary credential minor.

	<i>Units</i>
Economics	
Econ 1A-B, 178 or 180.....	9
Elect from: Econ 100A-B, 101, 103.....	3
Elect from: Econ 110 or 111, 131A-B, 136, 150, 151, 170, 174; Bus Ad 102, 135.....	6
	18
Political Economy	
Econ 1A-B, 100A or B or 103; Pol Sc 1A-B, 112A or B.....	18
Elect from: Acct 155; Econ 110, 131A-B, 136, 178; Bus Ad 102, 135.....	3
Elect from: Econ 150; Pol Sc 152, 161, 163, 165.....	3
	24
Political Science	
Pol Sc 1A-B; 112A or B.....	9
Elect from: Pol Sc 127, 128, 132.....	3
Elect from: Pol Sc 135, 143, 144, 146, 157.....	6
Elect from: Pol Sc 152, 164A-B.....	3
Elect from: Econ 178, 180; Hist 137A-B, 151A-B, 167, 176; Soc 111.....	3
	24
Public Administration	
Pol Sc 1A-B; 112A or B; 164A-B.....	15
Elect from: Pol Sc 161, 163, 165, 170.....	6
Elect from: Econ 131A; Bus Ad 102; Soc 152.....	3
	24
Social Science	
Elect from two fields (6 un each): Econ, * Geog, Hist, Pol Sc, Soc-Anthro.....	12
Social Science electives from above fields.....	12
	24
	(incl 18 ud)
Sociology-Anthropology	
Elect one group: Anthro 1, 2, 104; or Soc 1A-B, 152 or 155.....	9
Soc-Anthro electives (u.d.).....	9
	18

CERTIFICATE IN PUBLIC ADMINISTRATION

The certificate in public administration is offered to persons interested in training for work in public service. Applications for admission to the program must be approved by the Social Science Division. The certificate in public administration is granted upon completion of an approved program of 23 units with a grade-point average of 2.5 (on a four grade-point system). For information on course requirements, consult the department adviser.

JUNIOR HIGH SCHOOL CREDENTIAL

(For revised credential structure see *Education Division*)

The junior high school credential authorizes the holder to serve as a teacher in grades seven, eight, and nine of elementary and secondary schools. For general and professional requirements, see *Education Division*.

The junior high school credential major in social science is the same as the portion of the general secondary credential major in this field which is required for the degree major; the minor is the same as the general secondary credential minor.

* May not include Geog 6, 111, 112, 115, 130, 180, 181.

GENERAL SECONDARY CREDENTIAL(For revised credential structure see *Education Division*)

The general secondary credential authorizes the holder to teach in secondary schools and in grades seven and eight in elementary schools. For general and professional requirements, see *Education Division*.

Credential Major in Social Science

The credential major in social science consists of 42 units, exclusive of the general education requirement in social science. Completion of the first 36 units of the required sequence below constitutes a major in social science for the bachelor of arts degree for students working toward the general secondary credential.

	<i>Units</i>
Anthro 2, Soc 1A; Econ 1A-B; Geog 4.....	15
Elect from: Geog 3, 116, 141.....	3
Elect from: Pol Sc 128, 157, 161, 163.....	6
Elect from: Hist 131, 141, 145, 146, 147; Econ 111.....	6
Elect from: Hist 167, 171, 172, 173, 174, 175, 176, 181; Econ 110.....	6
Elect from: Anthro 104; Econ 178, 180; Hist 107, 108, 135, 163, 164; Pol Sc 135, 143; Soc Sc 198; Soc 111, 140, 155.....	6
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	42

Credential Minor in Social Science

Econ 1A-B; Geog 3 or 4; Pol Sc 11, 157.....	15
Hist 1, 10; 167 or 176.....	9
Elect from: Soc 1A-B, Anthro 2.....	6
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	30

MASTER OF ARTS DEGREE

The graduate program for the master of arts degree in economics or social science is based on the equivalent of the undergraduate major at Fresno State College. For specific requirements, consult the head of the division; for general requirements, see *Degrees and Credentials—Master's Degrees*. For information on junior college teaching, see *Education Division* section.

Foreign Language Requirement

After September 1, 1962, advancement to candidacy for the master of arts degree with a major in economics or social science will require the passing of an examination demonstrating the ability to read materials of the major in one appropriate foreign language.

Courses**ANTHROPOLOGY****1. Introduction to Physical Anthropology (3)**

May not be used to meet general education requirements in social science. Relation of man and the animals; evolution of man, fossil man, race and racial classification; racial theories.

2. Introduction to Cultural Anthropology (3)

The nature of culture; culture growth and history; survey of cultural phenomena; cultural theory; applied anthropology.

102. Ethnology (3)

Prerequisite: Anthro 2 or permission of instructor. Major theories of culture; survey of culture types and their distribution; ethnological problems.

103. Acculturation (3)

Prerequisite: Anthro 2 or permission of instructor. Impact of western civilization upon nonwestern societies; social and cultural adjustments to impact; disintegration; reinterpretation, and reintegration; place of anthropology in international relations and colonial administration.

104. Social Anthropology (3)

Prerequisite: Anthro 2 or permission of instructor. The place of anthropology in the social sciences; theories and schools in social anthropology; community studies, integration, functionalism, psychological aspects.

105. Survey of Native American Culture (3)

Prerequisite: Anthro 2 or permission of instructor. Prehistory of western hemisphere; linguistic groups; development, spread, and attainments of native Indian cultures.

107. Civilizations of Southeast Asia (3)

Not open to students with credit in Hist 105B or 107. History and culture of Southeast Asia from earliest times to the present.

108. Civilizations of East Asia (3)

Not open to students with credit in Hist 105A or 108. Anthro 107 is not prerequisite to Anthro 108. History and cultures of China, Japan, and Korea from earliest times to the present.

110. Anthropological Methods (3)

Prerequisite: Anthro 1, 2, or permission of instructor. Practical work on excavation; use of various instruments employed by excavator; keeping field records; theory of dendrochronology, percentage dating; methods of physical anthropology and ethnology. (2 lecture, 2 lab hours)

200 series. Graduate courses are listed under *Criminology, Economics, History, Political Science, and Social Science.*

CRIMINOLOGY

(See *Criminology Department*)

ECONOMICS**1A-B. Principles of Economics (3-3)**

Not open to first-semester freshmen. Prerequisite to upper division courses in economics and business. (A) General characteristics of economic system of the United States; organization of society for production and exchange of goods; structural and functional description of basic economic institutions. (B) Elementary economic theory, economic problems of present day society and related public policy.

100A. Economic Theory: Price Analysis (3)

Prerequisite: Econ 1A-B. Price mechanism and resource allocation under conditions of pure competition, monopolistic competition, oligopoly; theories of consumer's choice, cost, production, income distribution; nature of economic generalizations.

100B. Economic Theory: National Income Analysis (3)

Prerequisite: Econ 1A-B. Classical, Keynesian and post-Keynesian theories on level of income and employment; elements of national income accounting, flow-of-funds analysis; relationship of rate of interest to level of investment; alternative theories of inflation; warranted rates of economic growth.

101. History of Economic Thought (3)

Evolution of economics as a science; doctrines of different schools of thought—Mercantilists, Physiocrats, Historical School, Classical Economists; contributions of outstanding economists.

102. Contemporary Economic Problems (3; max total 6)

Prerequisite: upper division standing and permission of instructor. Analysis of economic problems and issues which are of public interest and importance at the time the course is given.

103. Economic Fluctuations (3)

Prerequisite: Econ 1A-B; senior standing or permission of instructor. Cyclical movements of business; history, characteristics and measurement; critical examination of business cycle theories and of proposals for reducing economic fluctuations.

110. Economic History of the United States (3)

Meets the American history requirement for general education. Recommended: Econ 1A-B. Exploration and colonization to the present; economic factors in development of the United States; relationships of economic forces to historical, political, and social change.

111. Economic Development of Europe (3)

Recommended: Econ 1A-B. European expansion, fifteenth century to the present; present economic conditions and trends in Europe; interest of United States in European economy.

131A. Public Finance (3)

Prerequisite: Econ 100A or permission of instructor. Governmental revenues and expenditures at federal, state, and local levels of jurisdiction.

131B. Fiscal Policy (3)

Prerequisite: Econ 100B or permission of instructor. Impact of governmental revenues and expenditures upon levels of employment; fiscal measures as contra-cyclical devices; debt management; built-in stabilizers.

136. Monetary Policy (3)

Prerequisite: Econ 1A-B, 100A or B, Bus Ad 135; permission of instructor. Monetary policy as a tool for promoting and maintaining economic stability and full employment; controversial issues in monetary policy and lessons of experience.

150. Labor Economics (3)

Prerequisite: Econ 1A-B, 100A or B; or permission of instructor. Alternative theories of wages, employment and structure of labor market; impact of collective bargaining on level of wages, employment and labor's share of national income; history and philosophies of labor movement, structure and functioning of labor unions.

151. History of Labor in the United States (3)

Prerequisite: Econ 150 or permission of instructor. Analytical topics from historical viewpoint; evolution of unions and labor legislation interpreted in terms of economic theory.

170. Transportation (3)

Prerequisite: Econ 1A-B. Economics of rail, water, motor, air, and pipeline transportation.

174. Government Regulation of Economic Activity (3)

Prerequisite: Econ 100A or permission of instructor. Justification for regulation, constitutional limitations, public utility regulation, regulation of monopoly; competitive practices; government policy in other areas of economic activity.

178. International Economics (3)

Prerequisite: Econ 100A or B or permission of instructor. International economic relations; problems and policies in the light of fundamental economic theory.

180. Comparative Economic Systems (3)

Prerequisite: Econ 100A or B or permission of instructor. Comparative study of economic systems of the modern world; capitalism, socialism, communism, fascism, and the problems which arise within each.

190. Independent Study (1-3; max see reference)

See *Regulations and Procedures—Independent Study*.

GRADUATE COURSES

(See *Course Numbering System—Definitions and Eligibility*)

200. Research Methods—Economics (3)

Techniques of research, preparation and handling of materials in economics and related fields.

201. Seminar in Economic Theory (3; max total 6)

Advanced topics in economic theory.

210. Seminar in Economic History of United States (3; max total 6)

Prerequisite: Econ 110 or permission of instructor. Critical examination of, and reports on, selected topics in the economic history of the United States.

280. Seminar in Social Science (3; max total 6)**290. Independent Study (1-3; max see reference)**

See *Regulations and Procedures—Independent Study*.

299. Thesis (2-4; max total 4)

Prerequisite: See *Master's Degrees—Thesis Requirement*. Preparation, completion, and submission of an acceptable thesis for the master's degree.

HISTORY

(See *History Department*)

POLITICAL SCIENCE**1A-B. Comparative Government (3-3)**

Full-year sequence meets the United States Constitution requirement for general education. Essentials and comparative features of major governments of the world. (A) Government and politics of Great Britain, France, and Russia. (B) Politics and government of Switzerland, Republic of Ireland, and the United States; federal, California state and local government relationships.

11. American Government and Institutions (3) (Former Soc Sc 3B)

Meets the United States Constitution requirement for general education; federal, California state and local government. Not open to freshmen or to students with credit in Pol Sc 1A-B or 101. Prerequisite: Hist 10 or equivalent. Government within the context of society; relevant studies in economics, sociology, anthropology, history, psychology organized around a set of governmental questions.

41A-B. Current Affairs (2-2) (Former Soc Sc 41A-B)

Late entrance with permission of instructor for 1 unit. Subject matter for class discussion taken from the daily newspapers and current magazines.

101. American Constitution, Institutions and Ideals (3)

Meets the United States Constitution requirement for general education. Not open to students below second semester sophomore or with credit in Pol Sc 1A-B, 11, or equivalent. Prerequisite: Hist 8A-B, 10, or permission of instructor. Executive, legislative, and judicial functions of our government under the constitution; federal, California state and local governmental relationships.

102. California Government and Institutions (1)

Not open to students with credit in Pol Sc 1A-B, 11, 101, or equivalent. Open only to students who have satisfied United States Constitution requirement but have not satisfied California state and local government requirement. Examination of legislative, executive, judicial, and local government problems in California.

112A-B. History of Political Thought (3-3)

112A is not prerequisite to 112B. Prerequisite: Pol Sc 1A-B or permission of instructor. (A) Development of political thought from Plato to Machiavelli with readings and discussions. (B) Development of political thought from Machiavelli to the present.

124. Foundations of National Power (2)

Not open to students with credit in Air Sc 104A. Prerequisite: upper division standing; AFROTC students register under Air Sc 104A. Major factors underlying international tensions—nationalism, imperialism, and communism; attempts to alleviate these tensions; balance of power concepts; the superpowers United States and the USSR.

127. International Relations (3)

Prerequisite: Pol Sc 1A-B or permission of instructor. Analytical introduction to international relations; nationalism; imperialism; racial, population, and economic factors; war; settlement of international disputes by methods other than war; foreign policies of the major powers.

128. Contemporary World Politics, 1914 to the Present (3)

Prerequisite: Pol Sc 1A-B, Hist 4A-B, or permission of instructor. World affairs from 1914 to the present; present foreign policies of the major powers from historical, political, and economic viewpoints; events leading to World War II and United Nations organization.

129. Contemporary International Problems (1)

Prerequisite: Pol Sc 1A-B, upper division standing, permission of instructor. Reading, research, and discussion of current international problems.

132. The Conduct of American Foreign Affairs (3)

Prerequisite: Pol Sc 1A-B or permission of instructor. Formulation and execution of foreign policy; constitutional framework; role of the President and the executive branch, Congress, pressure groups and public opinion; contemporary problems and policies.

135. Soviet Institutions (3)

Prerequisite: Pol Sc 1A-B, Hist 137A-B, or permission of instructor. The Soviet State since 1918; political aspects of Soviet institutions.

143. Postwar Governments of Continental Europe (3)

Prerequisite: Pol Sc 1A-B, or permission of instructor. Comparative treatment of the politics and government of France, Germany, and Italy from the close of World War II to the present.

144. The Government of England (3)

Prerequisite: Pol Sc 1A or permission of instructor. Constitutional history since 1900, contemporary political parties, and governmental machinery of the United Kingdom.

146. Latin-American Governments (3)

Prerequisite: Pol Sc 1A-B or permission of instructor. Political evolution of the foremost Latin-American republics; racial, cultural, economic, and geographic factors; constitutional history and development of political institutions and parties.

152. Political Parties and Pressure Groups (3)

Prerequisite: Pol Sc 1A-B or Hist 8A-B; permission of instructor. History and characteristics of political parties and pressure groups; their interaction and influence upon nominations, and elections, upon executive and legislative branches of federal, state, and local government.

153. Dynamics of Political Behavior (2)

Prerequisite: Pol Sc 1A-B, permission of instructor. Recent statistical and other techniques for the analysis of political behavior.

157. United States Constitution: Growth and Development in Theory and Practice (3)

Prerequisite: Pol Sc 1A-B or permission of instructor. Law of the Constitution and its underlying political theory, with leading cases.

161. State and County Government (3)

Prerequisite: Pol Sc 1A-B or permission of instructor. The organization, structure, powers, and functions of state and county governments.

163. Municipal Government and Administration (2)

Prerequisite: Pol Sc 1A-B or permission of instructor. Organization, powers, and functions of city government; types of city charters, relationship between city and state government; police and fire protection, education, water supply, health and sanitation, city planning, debts and taxation, public utilities.

164A-B. Public Administration (3-3)

Prerequisite: Pol Sc 1A-B or permission of instructor. (A) Administrative organization; structures; span of control and staff and line functions; the federal system; relation of executive to other branches of government; administrative reorganization in the United States. (B) Administrative procedure; internal management; personnel; fiscal management; administrative tribunals.

165. Public Personnel Administration (2)

Prerequisite: Pol Sc 1A-B, 164A-B; or permission of instructor. American personnel administration; job recruitment and classification; merit test construction and analysis; salary plans and grades; building employee morale and efficiency, on-job training programs; promotions, demotions, dismissals, retirement programs.

170. Introduction to Planning (2)

Prerequisite: Pol Sc 1A-B or permission of instructor. Planning process in government and role of the planner in a democratic society; planning as a line of function in city, county, and area government; planning boards and commissions.

172. Urban Renewal and Metropolitan Problems (2; max total 4)

Limited to students who can arrange field trips. Prerequisite: Pol Sc 1A-B, or 101, or permission of instructor. Administration of urban renewal programs in cities and counties; concept of the workable program and other requirements for federal aid; problems of intergovernmental cooperation in local and metropolitan areas, housing, planning, and redevelopment programs.

180. Internship in Public Administration (2-6; max total 6)

Prerequisite: Pol Sc 1A-B and permission of instructor. Supervised work and project experience with government agencies; government problems and procedures. (1 weekly seminar; minimum of 3 field hours per unit)

190. Independent Study (1-3; max see reference)

See *Regulations and Procedures—Independent Study*.

GRADUATE COURSES

(See *Course Numbering System—Definitions and Eligibility*)

249. Seminar in Comparative Government (3; max total 6)

Prerequisite: Pol Sc 1A-B, 127, and permission of instructor. Advanced level synthesis of basic concepts, issues, and problems of comparative government.

264. Seminar in Public Administration (3; max total 6 if topic not repeated)

Prerequisite: permission of instructor. Problems in administrative analysis and organization, tools and techniques of administrative research, interpretation and application of research findings.

290. Independent Study (1-3; max see reference)

See *Regulations and Procedures—Independent Study*.

SOCIAL SCIENCE**34. Problems of American Society (3)**

Analysis of selected problems of American society; causes, effects, and possible solutions.

190. Independent Study (1-3; max see reference)

See *Regulations and Procedures—Independent Study*.

198. Great Books in Social Science (3; max total 6)

Prerequisite: permission of instructor. Selected classics in the social sciences dealing with American materials. Various members of the division participate in discussions.

GRADUATE COURSES

(See *Course Numbering System—Definitions and Eligibility*)

280. Seminar in Social Science (3; max total 6)**290. Independent Study (1-3; max see reference)**

See *Regulations and Procedures—Independent Study*.

299. Thesis (2-4; max total 4)

Prerequisite: see *Master's Degrees—Thesis Requirement*. Preparation, completion, and submission of an acceptable thesis for the master's degree.

SOCIOLOGY

Note: All sociology courses in the 120 series and Soc 181 are courses with social welfare content. These courses include integrated theoretical and applied materials with contributions from sociology, political science, cultural anthropology, economics, and psychology.

1A-B. Principles of Sociology (3-3)

(A) Principal concepts and problems, including personality, social groups, social change and social processes. (B) Prerequisite: Soc 1A. Analysis of conditions in society regarded as disruptive of the social order and subject to remedial action.

111. Race and Cultural Relations (3)

Prerequisite: Soc 1A or Anthro 2, or permission of instructor. Racial and cultural minority groups in the United States; problems of education, social adjustment, family life, relations in industry, race consciousness, race and cultural prejudice, tension areas, assimilation; race problems in international relations.

120. Introduction to Social Welfare (2)

Prerequisite: Soc 1A or permission of instructor. History and philosophy of social welfare and social work in Europe and the United States.

121. Social Welfare Programs (2)

Prerequisite: Soc 1A or permission of instructor. Major contemporary social welfare programs in the United States.

122. Child Welfare (3)

Prerequisite: Soc 1A or permission of instructor. Recommended: Psych 119, Soc 120, 121. Programs for physical, psychological, and social needs of children; institutions, foster homes, adoption, guidance clinics, protective and preventive services, services for handicapped; legislation.

124. Fundamentals of Interviewing (3)

Prerequisite: Soc 1A or permission of instructor. For social welfare, criminology, recreation, and education students. Principles and practice of interviewing in case work, group work, community organization, social research, correctional work, and related areas.

125. Survey of Social Work Methods (2)

Prerequisite: Soc 1A or permission of instructor. Concepts and practices of social welfare methods; case work, group work and community organization; analysis of material from the field.

126. Social Security Principles (2)

Prerequisite: Soc 1A or permission of instructor. Basic philosophy and policy of social security programs, including public assistance and social insurances; the Social Security Act; roles of federal, state, and local governments.

127. Community Welfare Organization (3)

Prerequisite: Soc 1A or permission of instructor. Community mental health, medical, recreation, informal education, and welfare resources; organization and coordination of community services to meet social needs.

128. Principles of Group Work (2)

Prerequisite: Soc 1A or permission of instructor. For social welfare, criminology, recreation, education students, and others interested in group work. Fundamentals of group process, group dynamics, and group therapy; guided group experience.

140. Rural and Urban Problems (3)

Prerequisite: Soc 1A or permission of instructor. Comparative characteristics of rural and urban living; social institutions, human behavior, social problems; their impact and influence.

152. History of Social Thought (3)

Prerequisite: Soc 1A or permission of instructor. Leading social thinkers of the Western World from Plato to contemporary sociologists; comparative study of social philosophers of the East.

155. Social Institutions (3)

Prerequisite: Soc 1A or permission of instructor. Major social institutions—familial, economic, political, educational, religious; origin and development; functions and interrelationships in contemporary phases of development.

157. Social Change (3)

Prerequisite: Soc 1A or permission of instructor. Social dynamics; factors and forces underlying social change; process of social change; direction of social change.

165. The Family (3)

Prerequisite: Soc 1A or permission of instructor. Nature, historical development, and contemporary trends of the modern family.

175. Sociological Methods (3)

Prerequisite: Soc 1A, Math 40. Methods in sociological-anthropological research.

176. Field Work in Sociology (3)

Prerequisite: Soc 175. Field work in problems which fall within the recognized scope of sociological research.

180. Training in Public Service (1-2; max total 5)

Prerequisite: Soc 1A or permission of instructor. Planned and supervised experience or study in a field of occupational specialization.

181. Supervised Social Welfare Field Experience (1-2; max total 4)

Prerequisite: second semester junior standing; Soc 1A or permission of instructor. Observation, orientation and limited participation in operations of private or public social welfare agencies. (Minimum of 3 field hours per unit.)

190. Independent Study (1-3; max see reference)

See *Regulations and Procedures—Independent Study*.

200 series. Graduate courses are listed under *Criminology, Economics, History, Political Science, and Social Science*.

CRIMINOLOGY DEPARTMENT
(In the Social Science Division)

Professor: Boolsen (Chairman)
Associate Professor: Tocchio
Assistant Professor: Ray
Part-time: Clegg, Mortland

The Criminology Department provides educational opportunities in the areas of law enforcement and correctional work. The law enforcement program is designed for students interested in careers in law enforcement and related areas at the federal, state, and local levels of government, or in allied occupations in government, business, and industry. The correctional work program is designed for students interested in careers in probation, parole, penal and correctional institutions, and other affiliated forms of work.

The department offers the bachelor of science and master of science degrees in criminology and a minor for students majoring in other departments.

BACHELOR OF SCIENCE DEGREE IN CRIMINOLOGY

The bachelor of science degree in criminology with options in law enforcement or correctional work is granted upon completion of a four-year curriculum consisting of 128 semester units. The general degree requirements must be completed, see *Degrees and Credentials*. Each student desiring to major in criminology must select and complete one of the options listed below.

Foreign Language Requirement

Two years of satisfactory collegiate study (or equivalent) in one modern foreign language are required for majors in criminology. Students will be expected to emphasize speaking competence in the language. *This requirement applies to students who will be graduated in June of 1963 and thereafter.* See the general statement under *Degrees and Credentials—Foreign Language Requirement* for equivalents and alternative ways of meeting the requirement. Any student planning advanced study is advised also to meet the foreign language requirement of the school he plans to attend.

Law Enforcement Option	Units
Crim 1 (u.d. students excluded).....	0-3
Crim 2, 4A-B, 5, 7, 10, 105A-B, 113, 114, 129, 132, 153.....	37
Crim 8 (or satisfactory experience).....	0-4
Engl 72, Soc 1A, Jour 17A.....	8
H Ed 48 (or possession of valid First Aid Certificate).....	0-2
Sec Ad 1 or 2 (may be satisfied by examination).....	0-2
PE 10-45 (or course in combatives).....	0-1
<i>(See also Degrees and Credentials—Special Course Requirements)</i>	
Elect from: Jour 113; Ed 125 or Math 40 or Psych 25; Psych 111, 145, 152, 152F; Crim 120, 133, 135, 170.....	12

57-69

Correctional Work Option	Units
Crim 1 (u.d. students excluded).....	0-3
Crim 2, 105A-B, 120, 132, 133, 135, 153, 170.....	27
Engl 72, Soc 1A.....	6
Crim 181 (or satisfactory experience).....	0-2
Elect from: Jour 113; Ed 125 or Math 40 or Psych 25; Anthro, Soc, or Psych electives (u.d., excluding field work and independent study).....	25

58-63

CRIMINOLOGY MINOR	<i>Units</i>
Crim 1; Crim electives (u.d.)	12
Anthro 1, 2, or Soc 1A-B	6
Soc or Anthro elective (u.d.)	3
	21

CREDENTIAL PROGRAM

For information on credential programs consult the department chairman and see the *Education Division* section.

MASTER OF SCIENCE DEGREE

The graduate program for the master of science degree in criminology is based on the equivalent of the undergraduate major in criminology at Fresno State College. An area of occupational specialization, such as correctional work or law enforcement, is required. For specific requirements consult the chairman of the department; for general requirements, see *Degrees and Credentials—Master's Degrees*. For information on junior college teaching, see *Education Division* section.

Foreign Language Requirement

After September 1, 1962, advancement to candidacy for the master of science degree in criminology will require the passing of an examination demonstrating the ability to speak one appropriate modern foreign language.

*Courses***CRIMINOLOGY****1. General Administration of Justice (3)**

Administration of criminal justice in the United States stressing factors that affect this administration.

2. Police Organization and Administration (3)

Fundamentals of police organization and administration applied to field operations; records and reports, patrol; traffic; investigation; vice, crime prevention; public relations; police ethics; allied problems.

4A-B. Basic Police Science (3-3)

Open only to criminology majors. (A) Field note taking and crime scene recording; beat patrol and observation; laws of arrest, search, and seizure; Penal Code and related laws; mechanics of arrest; control of crowds and public gatherings; jail practices and procedures. (B) Introduction to investigation; police procedures; elements of interrogation; juvenile procedures; report writing and descriptions; court appearance and testimony; public relations.

5. Traffic (2)

Open only to criminology majors. Primary traffic functions of the police; traffic law enforcement; traffic direction; accident investigation.

7. Firearms (2)

Open only to criminology majors. Prerequisite: permission of instructor. Use and care of firearms; explanation of situations warranting use of firearms; legal provisions and restrictions; policy covering use in performance of duty; safety precautions; nomenclature; dry firing and familiarization firing. (1 lecture, 3 range field hours)

8. Directed Policing (1; max total 8)

Open only to criminology majors who are members of the College Student Police Unit. Prerequisite or concurrently: Crim 4A-B; permission of instructor. Supervised field experience in police work for interpreting theories developed in parallel criminology courses. Weekly conference with supervisor. (Minimum of 3 field hours per unit.)

10. Police Records (2)

Open only to criminology majors. Organization and installation of a police record system; types and functions of records; recording procedures.

105A-B. Criminal Law (3-3)

Theory of criminal law; corpus delicti of important specific offenses; laws of arrest; search and seizure; rules of evidence; criminal procedure; juvenile law.

113. Criminal Investigation (4) (Former Crim 115A)

Open only to criminology majors. Prerequisite: Crim 4A-B, Jour 17A; or equivalent. Principles and techniques in criminal investigation; police photography in investigation; scientific crime detection methods; forensic science and laboratory techniques. (3 lecture, 3 lab hours)

114. Criminal Identification (3) (Former Crim 115B)

Open only to criminology majors. Prerequisite: Crim 4A-B, Jour 17A; or equivalent. Criminal identification systems; personal identification.

120. Crime Prevention and Juvenile Delinquency (3)

Prerequisite: Psych 7 or 10, Soc 1A or equivalent. Organization and function of crime prevention agencies; police techniques in the prevention of delinquency and crime; case work; the policewoman; consolidation of community resources in preventing crime and delinquency.

123. Workshop on Children and Youth (1-2; max total 2) Summer only

Deviant and aberrational behavior of children and youth.

129. Detection of Deception (3)

Open only to criminology majors. Prerequisite: Psych 7 or 10. Historical, physiological, psychological and legal aspects of criminal interrogation; detection of deception techniques; theory and practice of instrumental detection of deception and other interrogation aids; laboratory experiments with polygraph. (2 lecture, 3 lab or demonstration hours)

132. Criminology (3)

Prerequisite: Psych 7 or 10, Soc 1A or equivalent. Crime and criminals from the social and cultural viewpoint; knowledge and practice in the field of criminology.

133. Institutional Treatment of Offenders (3)

Prerequisite: Crim 132 or equivalent. Modern philosophy and methods in the treatment of adult offenders and juvenile delinquents in correctional institutions.

135. Probation and Parole (3)

Prerequisite: Crim 120 or equivalent. Principles and practices in probation and parole.

153. Psychology of the Criminal (3) (Same as Psych 153)

Prerequisite: Psych 7 or 10, Soc 1A or equivalent. Psychological bases of crime; motivation, alcoholism, economic and cultural pressures; forms of crime; criminal careers.

170. Research in Criminology (3)

Not open to students with credit in Crim 200. Prerequisite Engl 72 or permission of instructor, senior standing. Research methodology; use of library resources; preparation and handling of materials in criminology; written report required.

180. Training in Public Service (1-2; max total 2)

Open only to senior and graduate students without occupational experience. Prerequisite: permission of instructor. Planned and supervised experience or study in a field of occupational specialization. Weekly conference with field supervisor. (Minimum of 3 field hours per unit)

181. Directed Correctional Work Experience (1-3; max total 6)

Open only to senior criminology majors without correctional work experience. Not open to students with credit in Crim 180. Prerequisite: permission of instructor. Observation of and participation in the operations of principal agencies dealing with prevention, control, and treatment of crime and delinquency. Weekly conference with field supervisor. (Minimum of 3 field hours per unit)

190. Independent Study (1-3; max see reference)

See *Regulations and Procedures—Independent Study*.

GRADUATE COURSES

(See *Course Numbering System—Definitions and Eligibility*)

201. Seminar in Criminology (3)

Prerequisite: Crim 132 or permission of instructor. Theories and research in the etiology of juvenile delinquency and criminal behavior.

204. Seminar in Criminal Law (3; max total 6)

Prerequisite: Crim 105A-B or permission of instructor. Inquiry into principal concepts and contemporary issues involved in selected legal aspects of criminology. Topics vary with each offering.

208. Seminar in Administration (3; max total 6)

Prerequisite: Crim 2 or Pol Sc 164A; or permission of instructor. Analysis of selected theories of organization, administration, and management of agencies concerned with criminal justice. Topics vary with each offering.

227. Seminar in Crime and Delinquency Prevention Programs (2)

Prerequisite: Crim 120 or 132. Policies and programs for prevention and control of delinquency and crime; evaluation of specific programs; principles of prevention and control.

233. Seminar in the Treatment of Offenders (3; max total 6)

(Former Crim 225A-B, 229)

Prerequisite: Crim 133 or equivalent. Modern philosophy and practice in institutional and noninstitutional treatment of offenders. Topics vary with each offering.

270. Advanced Study in Criminology (1-6; max total 6)

Prerequisite: Crim 170, statistics course, department approval of problem. Special problems in criminology; individual study in laboratory, library, or field work; formal written reports. Weekly conference with instructor.

281. Field Work (1-6; max total 6)

Open only to criminology majors. Prerequisite: permission of instructor. Work experience in law enforcement or correctional work.

290. Independent Study (1-3; max see reference)

See *Regulations and Procedures—Independent Study*.

299. Thesis or Project (2-4; max total 4)

Prerequisite: see *Master's Degrees—Thesis Requirement*. Preparation, completion, and submission of an acceptable thesis or project for the master's degree.

HISTORY DEPARTMENT
(In the Social Science Division)

Professors: Wiley (Chairman), W. Smith
Associate Professors: Canales, Cobb, Nelsen
Assistant Professors: Bohnstedt, Comegys, Grivas, Matthew

A primary function of the History Department is to give students a liberal education in world and American civilization. It aims to bring to them an understanding of modern society by reviewing the achievements of the past. Thus the department aims to prepare students to be enlightened citizens equipped with the broad cultural background essential to studies in the fields of education, philosophy, literature, law, government, journalism, public service, and business; all of which today demand a greater grasp of vital domestic and foreign problems.

The department offers a major and a minor in history for the bachelor of arts degree, a graduate program in history for the master of arts degree, and courses for use in teaching credential programs.

HISTORY MAJOR

The following major requirements are in addition to the general education requirement in social science.

	<i>Units</i>
Hist 1, 2 (exclude course if used for general education); 8A-B, 199	12-15
Elect from: Hist 107, 108, 111A-B, 121, 131, 135, 136, 163, 164, 165A-B	9-12
Elect from: Hist 158, 167, 171, 172, 173, 174, 175, 176, 181, 185, 189A-B	9-12
Elect from: Hist 137A-B, 141, 145, 146, 147, 151A-B, 155, 160A-B	9-12
—	42

Foreign Language Requirement

Two years of satisfactory collegiate study (or equivalent) of one foreign language are required of majors in history. *This requirement applies to students who will be graduated in June of 1963 and thereafter.* See the general statement in section on *Degrees and Credentials—Foreign Language Requirement* for equivalents and alternative ways of meeting the requirement. Any student planning advanced study is advised also to meet the foreign language requirement of the school he plans to attend.

HISTORY MINOR

The following minor requirements are in addition to the general education requirement in social science.

	<i>Units</i>
Hist 1, 2 (exclude course if used for general education); 8A-B	9-12
Elect from: Hist 107, 108, 111A-B, 121, 131, 135, 136, 163, 164, 165A-B	3-6
Elect from: Hist 158, 167; 171, 172; 173, 174; 175, 176, 181, 185; 189A-B	6-9
Elect from: Hist 137A-B, 141, 145, 146, 147, 151A-B, 155, 160A-B	3-6
—	24

CREDENTIAL PROGRAM

For information on credential programs consult the department chairman and see *Social Science Division* and *Education Division* sections.

MASTER OF ARTS DEGREE

The graduate program for the master of arts degree in history is based on the equivalent of the undergraduate major at Fresno State College. For specific requirements, consult the chairman of the department; for general requirements, see *Degrees and Credentials—Master's Degrees*. For information on junior college teaching, see *Education Division* section.

Foreign Language Requirement

After September 1, 1962, advancement to candidacy for the master of arts degree with a major in history will require the passing of an examination demonstrating the ability to read materials of the major in one appropriate foreign language.

Courses**HISTORY****1. Western Civilization to 1650 (3)**

Meets general education requirement in the area of man and culture. Foundations of western civilization; interdependence of cultures and peoples; cultural development from prehistoric times to 1650. (1 lecture, 2 quiz sections.)

2. Western Civilization Since 1650 (3)

Not open to students with credit in Hist 4A-B. Meets general education requirement in the area of man and culture. Political, social, and cultural history of Europe since 1650; European expansion and impact of western civilization upon the non-European world; Asian and African nationalist movements in 19th and 20th centuries. (1 lecture, 2 quiz sections)

4A-B. Modern Europe (3-3)

Prerequisite to upper division world history courses. European history from 1500 to present.

8A-B. History of the Americas (3-3)

Hist 8A is not prerequisite to 8B. Survey of Western Hemisphere history from discovery to the present; evolution of contemporary American states. The year course satisfies the American history requirement in general education.

10. American History (3) (Former Soc Sc 3A)

Meets the American history requirement in general education. Not open to first semester freshmen or to students with credit in Hist 8B or equivalent. Interaction of geographic, economic, political, and cultural forces in transformation of an agrarian society into a complex, industrial, urban order; emergence of ideals and procedures known as the American way of life.

107. Civilizations of Southeast Asia (3) (Former Hist 105B)

Not open to students with credit in Anthro 107. History and cultures of Southeast Asia from earliest times to the present.

108. Civilizations of East Asia (3) (Former Hist 105A)

Not open to students with credit in Anthro 108. History and cultures of China, Japan, and Korea from earliest times to the present.

111A-B. Ancient World (3-3)

Prerequisite: Hist 4A-B or equivalent. Survey of the ancient Mediterranean world. (A) The Near East and Greece from the earliest times to Philip of Macedon. (B) Alexander the Great, the Hellenistic world, Rome to the reign of Constantine.

121. Medieval Europe (3)

Prerequisite: Hist 4A-B or equivalent. European history from the fall of the Roman Empire to the beginning of modern times; social, cultural, religious, and economic foundations of Western Europe.

131. Renaissance and Reformation (3)

Prerequisite: Hist 4A-B or equivalent. History of the foundations of modern Europe during the 14th, 15th, and 16th centuries.

135. Moslem World (3)

Prerequisite: Hist 4A-B or permission of instructor. Political and cultural development of the Arabs, Turks, Berbers, and other Moslem peoples from Mohammed to the present.

136. Africa (3)

Prerequisite: permission of instructor. Survey of the chronological development and the indigenous and foreign influences which have created modern Africa.

137A-B. Russian and Soviet Civilization (3-3)

Hist 137A is not open to students with credit in former Hist 137. Prerequisite: Hist 4A-B or permission of instructor. (A) The country and peoples of the USSR from the ninth century to 1800. (B) From 1800 to the present; political, cultural, and social progress of the Russian people during the 19th and 20th centuries.

141. Europe 1618-1789 (3)

Prerequisite: Hist 4A-B or equivalent. European culture, institutions, and politics from the start of the Thirty Years' War to the outbreak of the French Revolution.

145. Europe 1789-1870 (3)

Prerequisite: Hist 4A-B or equivalent. Background of the French Revolution; revolutionary movements in Europe through 1870; cultural developments of the late 18th and 19th centuries.

146. Europe 1870-1914 (3)

Prerequisite: Hist 4A-B or equivalent. Domestic politics of major European nations; international tension and diplomatic alliances; political and economic ideologies; European imperialist expansion; the world economy; rise of modern art and other cultural developments.

147. Europe Since 1914 (3)

Not open to students with credit in Hist 146 prior to September 1959. Prerequisite: Hist 4A-B or equivalent. The European nations in two world wars; rise and character of totalitarian movements; social and economic developments; artistic achievements; new intellectual currents; revolt of Asia and Africa against European dominance.

151A-B. England (3-3)

Political, economic, and cultural development of the British Isles from the earliest times to the present; constitutional growth. (A) British Isles during ancient and medieval times through the Renaissance and Reformation to the end of the Tudor Period. (B) Main currents in the thought, culture, and social progress of the British people from 1603 to the present.

155. British Empire Since 1714 (3)

Prerequisite: Hist 4A-B or equivalent. Older overseas empire and break-up; newer empire after 1783; rise, federation, and imperial relations of self-governing dominions; crown colony system; India under the British; British expansion in Africa and the Pacific.

158. Canada (3)

Prerequisite: Hist 8A-B or equivalent. Discovery, growth and expansion of Canada, social, economic and political institutions from the French regime through British rule to the Transcontinental Dominion.

160A-B. Spain and Portugal (2-2)

Prerequisite: Hist 4A-B or equivalent. (A) Development of the Iberian peninsula from prehistoric times to the Napoleonic Invasion of 1808. (B) From 1808 to the present; political, social and economic institutions; outstanding literary works.

161. Mexico Today (2) Summer only

Taken concurrently with field trip to Mexico and Span 55A or B. Recommended: Hist 165A-B. Social, economic, and cultural aspects; revolution of 1910; rise of national consciousness; Mexico's place in the future.

163. Colonial Latin America (3)

Prerequisite: Hist 8A-B or equivalent. The Age of Discovery, European and American background; development of political, social, and economic institutions of the Spanish and Portuguese empires in America.

164. Republics of Latin America (3)

Prerequisite: Hist 8A-B or equivalent. Rise of modern Hispanic American states since Independence; solutions to problems posed by geography, political inexperience, racial variations, anticlericalism; impact of Industrial Revolution in Mexico, Argentina, Chile, Colombia, and Brazil.

165A. Mexico to 1867 (2)

Pre-Columbian: culture, economy, political phases of Aztec empire; rapid review of Spanish colonial government and administration; problems facing independence; political unrest in republican period to 1867.

165B. Mexico Since 1867 (2)

Díaz régime, rise of modern Mexico; Mexican Revolution, destructive and constructive phases; consequent political, economic, and social upheaval; return to stability, Mexican intellectual trends which caused or accompanied the events considered.

167. American Foreign Policy (3)

Prerequisite: Hist 4A-B, 8A-B, or equivalent. Principles, ideals, and policies of United States in foreign relations.

171. Early American History, 1607-1815 (2)

Prerequisite: Hist 8A-B or equivalent. The first of a sequence of four courses covering the full period of the history of the United States, political and economic factors, social and cultural development.

172. Expansion and Conflict, 1815-1865 (2)

Prerequisite: Hist 8A-B or equivalent.

173. Reconstruction and Industrial Expansion, 1865-1896 (2)

Prerequisite: Hist 8A-B or equivalent.

174. United States as a World Power, 1896 to Date (2)

Prerequisite: Hist 8A-B or equivalent.

175. Representative Americans (2)

Biographical sketches of leading characters in American history from Revolution to present. Lectures and reading from standard biographies.

176. Social and Intellectual History of the United States (3)

Meets the American history requirement in general education. Prerequisite: Hist 8A-B or equivalent, or permission of instructor. Emergence of the American people; development of social conflicts; the impact of expansion, industrialization, and urbanization upon society.

181. Westward Movement (3)

Meets the American history requirement in general education. Prerequisite: Hist 8A-B or equivalent, or permission of instructor. Development of western civilization in United States; movement of people and ideas from east to west, persistence and significance.

185. San Joaquin Valley (2)

San Joaquin Valley from Indian days to present; recent expansion in agriculture and industry.

189A-B. California (2-2)

Prerequisite: Hist 8A-B or equivalent; upper division standing. Discovery, exploration, and early settlement of Alta California; founding of the missions; the Spanish, Mexican, and American periods; government, customs, habits, and influences of the various peoples who occupied California.

190. Independent Study (1-3; max see reference)

See *Regulations and Procedures—Independent Study*.

199. Advanced Study in History (3)

Not open to students with credit in Hist 200. Prerequisite: upper division standing, major in history or political science; permission of instructor. Introductory course for advanced work; bibliography, research techniques, historical writing; appraisal of historians of contemporary significance.

GRADUATE COURSES

(See *Course Numbering System—Definitions and Eligibility*)

202. Seminar in Historiography (3; max total 6 if area not repeated)

Prerequisite: major or minor in one of the social sciences or permission of instructor. Advanced studies in a field of history—American, Latin American, European; writings and philosophies of great historians; development of historiography.

240. Seminar in European History (3; max total 6)

Open only to history and social science majors. Prerequisite: Hist 199 or permission of instructor.

263. Seminar in Latin-American Studies (3; max total 6)

Prerequisite: one of the following—Hist 160A-B, 163-164, 165A-B, or Span 104A-B; and Hist 199 or permission of instructor. Recommended: reading knowledge of Spanish or Portuguese. Research in specific areas of Hispanic American history and culture. Field trips to the University of California and Bancroft Libraries.

270. Seminar in American History (3; max total 6)

Open only to history and social science majors.

278. Seminar in Recent Interpretations of American History (3; max total 6 if topic not repeated)

Prerequisite: teaching credential with social science major; or history major or minor. Examination of selected problems in American history in the light of new research discoveries; extensive use of scholarly journals.

280. Seminar in Social Science (3; max total 6)**289. Seminar in California History (3; max total 6)**

Prerequisite: Hist 189A-B. Research on special problems in California history.

290. Independent Study (1-3; max see reference)

See *Regulations and Procedures—Independent Study*.

299. Thesis (2-4; max total 4)

Prerequisite: see *Master's Degrees—Thesis Requirement*. Preparation, completion, and submission of an acceptable thesis for the master's degree.

SPEECH ARTS DIVISION

Division Head.....John W. Wright

The Speech Arts Division prepares for professional, semiprofessional, and technical careers and offers majors and minors for the bachelor of arts degree; teaching credentials; and the master of arts degree.

Speech Arts 276

Dramatic Art
Radio-Television
Speech
Speech Correction

SPEECH ARTS DIVISION

Professors: J. Wright (Head), Lombard, C. Taylor

Associate Professors: Burriss, Campbell, P. Walker, D. Wilson

Assistant Professors: Alden, Arnold, Ek, G. Graham, A. Kaufman, Loring, Pratt, Shupe

The Speech Arts Division offers majors for those who plan to make some phase of speech training their profession or vocation as public speakers, book reviewers, play directors, recreational leaders, speech correction specialists, and radio and television production personnel. Students may choose, with guidance, areas of experience to satisfy special needs. For those who intend to make the teaching of speech their profession, the division offers programs for special, junior high, and general secondary credentials and the special credential to teach exceptional children in the area of speech correction and lip reading. For revised credential structure see *Education Division*. The master of arts degree is available under the general provisions listed in this section.

SPEECH TEST

(See *Entrance Examinations*)

MAJORS AND MINORS

The Speech Arts Division offers bachelor of arts degree majors and minors in dramatic art, radio-television broadcasting, and speech with options in public address, interpretation, speech correction, and speech for elementary education. Sp Corr IX, which may be required for some students, does not count toward a major or minor.

DRAMATIC ART MAJOR AND MINOR

The dramatic art major provides training for play directors and playwrights, for community recreational leadership, and for personal development, and is a resting ground for professional theatre ambitions.

Major	<i>Units</i>
Drama 33, 34 or 134, 62, 133, 135, 139, 180, 185A or B	22
R-TV 44	3
Spch 10 or 110, 15 or 115, 22	7
Approved electives	4
	—
	36
Minor	
Drama 33, 34 or 134, 62, 133	11
Spch 10 or 110, 15 or 115, 22	7
	—
	18

(incl 6 ud)

RADIO-TELEVISION BROADCASTING MAJOR AND MINOR

The radio-television broadcasting major provides training for positions in the radio and television industries and for teachers of radio and television production; and motivation for effective speech training. There are many opportunities in the San Joaquin Valley for persons qualified in radio and television work.

Major	<i>Units</i>
Drama 33, 34 or 134	6
R-TV 40, 41, 44, 141A, 144, 145, 147	18
Spch 10 or 110, 15 or 115, 22	7
Approved electives	9
	—
	40

(incl 12 ud)

Minor	<i>Units</i>
R-TV 40, 41, 44, 144, 147	13
Spch 10 or 110, 15 or 115, 22	7
Approved electives	4
	—
	(incl 6 ud) 24

SPEECH MAJOR AND MINOR

The speech major and minor are offered with options in public address, interpretation, speech correction, and elementary education. One of the options must be selected by students majoring or minoring in speech. See also special, junior high, and general secondary credential majors and minor.

Public Address Option

The speech major with public address option involves techniques of platform practice, group discussion, and the organization of a speakers' bureau and contest speaking, and prepares for careers in the public service. It should be especially useful to prelegal and social welfare students.

Major	<i>Units</i>
Spch 10 or 110, 15 or 115, 22, 24, 25, 121, 124, 125 or 126, 127	24
Approved electives	12
	—
	(incl 12 ud) 36

Minor	<i>Units</i>
Spch 10 or 110, 15 or 115, 22, 24, 25, 124 or 125	16
Approved elective	2
	—
	(incl 6 ud) 18

Interpretation Option

The speech major with interpretation option develops talent in acting and expertness in interpretative reading for the platform.

Major	<i>Units</i>
Drama 33, 139	6
Spch 10 or 110, 15 or 115, 22, 122, 130	12
Approved electives	18
	—
	(incl 12 ud) 36

Minor	<i>Units</i>
Drama 33	3
Spch 10 or 110, 22, 122, 130	10
Approved electives	5
	—
	(incl 6 ud) 18

Speech Correction Option

The speech major with speech correction option prepares for working with the speech handicapped through schools, private clinics and social welfare, and provides a foundation for a master's degree in this field.

Major	<i>Units</i>
Drama 137	2
Spch 10 or 110, 22	5
Sp Corr 150, 151, 152, 153, 154, 155, 160, 161	18
Approved electives	11
	—
	36

Minor

	<i>Units</i>
Spch 10 or 110, 22	5
Sp Corr 150, 151, 152, 155, 160, 161	13
	<hr/> 18

Speech Major for Elementary Education

Students interested in qualifying for the general elementary credential and at the same time completing a major in speech should consult the head of the Speech Arts Division. See also revised credential structure *Education Division*.

SPECIAL SECONDARY CREDENTIAL IN SPEECH ARTS
(For revised credential structure see *Education Division*)

The special secondary credential in speech arts authorizes the holder to teach public speaking, oral expression, and dramatic arts in elementary and secondary schools. Candidates for this credential must complete the requirements for a bachelor's degree, have full approval for admission to the credential program, and complete the following major and professional requirements.

Credential Major in Speech Arts	<i>Units</i>
Drama 33, 34 or 134, 133	9
R-TV 40	3
Spch 10 or 110, 15 or 115, 22, 25	10
Sp Corr 150	2
Elect from: Spch 121, 124, 126	6
Elect from: Drama 62, 185A-B, Spch 125	5-6
Approved electives	5-4
	<hr/> 40

For further information and additional recommended courses, see the division credential adviser.

Professional Requirements	<i>Units</i>
Ed 109, 133, 173, 185	14
Spch 136	3
	<hr/> 17

JUNIOR HIGH SCHOOL CREDENTIAL

(For revised credential structure see *Education Division*)

The junior high school credential authorizes the holder to serve as a teacher in grades seven, eight, and nine of elementary and secondary schools. For general and professional requirements, see *Education Division* section.

The junior high school credential major in speech is the same as the portion of the general secondary credential major in this field which is required for the degree major; the minor is the same as the general secondary credential minor.

GENERAL SECONDARY CREDENTIAL

(For revised credential structure see *Education Division*)

The general secondary credential authorizes the holder to teach in secondary schools and in grades seven and eight of elementary schools. For general and professional requirements, see *Education Division* section.

Credential Major In Speech

Requirements for the general secondary credential major in speech are the same as for the special secondary credential major. Admission to the credential program and completion of 33 units (including 12 upper division) of the credential major constitute a major in speech for the bachelor of arts degree.

Credential Minor in Speech

Units

Spch 10 or 110, 15 or 115, 22	7
Elect from: Spch 20, 21, 24	3
Elect from: Drama 33, R-TV 40, Spch 25	3
Elect from: Drama 34 or 134, R-TV 41, Spch 121	3
Elect from: Drama 133, R-TV 44, Spch 125	3
Elect from: Drama 62, R-TV 144, Spch 124, 126	2-3
Elect from: Drama 139, R-TV 147, Spch 127	2-3
Approved electives	2-0

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Credential Major in Language Arts

Admission to the credential program and completion of 33 units of the major below constitute a major in language arts for the bachelor of arts degree.

Units

Engl 61A or B, 103, 104, 105, 120, Ling 100, 131	20
Jour 8A	3
Drama 62, Spch 22, 121, 124, 126, Sp Corr 150	16

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For further information and additional recommended courses, see department credential adviser.

Credential Minor in Language Arts

Units

Engl 1B, 61A or B, 103 or 104, 105, 120, Ling 100, 131	20
Spch 20, 21, or 24	3
Spch 22, 121, 124 or 126	9

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CREDENTIAL TO TEACH EXCEPTIONAL CHILDREN**Area of Specialization****Speech Correction and Lip Reading in Remedial Classes**(For revised credential structure see *Education Division*)

This credential with the area of specialization indicated authorizes the holder to serve as a teacher of exceptional children in special day classes or remedial classes in elementary and secondary schools in the area of speech correction and lip reading. For credential requirements see *Education Division* section.

MASTER OF ARTS DEGREE

The graduate program for the master of arts degree in speech is based on the equivalent of the undergraduate major or minor in speech at Fresno State College. From 18 to 24 of the 30 units required for the degree must be in speech. For specific requirements, consult the head of the division; for general requirements, see *Degrees and Credentials—Master's Degrees*. For information on junior college teaching, see *Education Division* section.

Courses

Note: Former Speech courses have been regrouped under Dramatic Art, Radio-Television, Speech, and Speech Correction.

DRAMATIC ART**33. Elementary Techniques of Acting (3)**

Fundamental techniques and theories of acting. (3 2-hour lecture-labs)

34. Theatre Craft (3) (Same as IA 34)

Introduction to the crafts in technical theatre: scene construction, scene painting, property selection, stage lighting, sound production; costume construction and make-up; laboratory experience in preparing plays for public performance. (3 lecture-lab and arranged hours)

62. Introduction to Theatre (2) (Same as Engl 62)

Introductory study of the theatre arts; major styles of dramatic composition and production; analysis of representative examples.

131. Playwriting (2; max total 6)

Prerequisite: permission of instructor. Play analysis, exploration of folk material, fundamentals of playwriting, critical analysis and revision of manuscripts, experimental production of completed scripts. (2 lecture-lab and arranged hours)

133. Play Direction (3) (Former Spch 139A)

Prerequisite: Drama 33. Fundamental techniques and theories of stage direction. (3 2-hour lecture-labs)

134. Advanced Theatre Craft (3) (Former Spch 182) (Same as IA 134)

Prerequisite: Drama 34 or permission of instructor. Advanced training in the crafts of technical theatre. (3 lecture-lab and arranged hours)

135. Make-up for Theatre (2)

Theory of make-up for theatre; laboratory applications. (lab hours arranged)

137. Dramatization in Elementary Education (2) (Same as Ed 137)

Basic techniques for the use of dramatization in elementary education; socio-drama, dramatization of school subjects, creative dramatic play, preparation of assembly and public programs.

139. Advanced Acting and Direction (3; max total 6)

Not open to students with 6 units credit in Spch 133 and 139B. Prerequisite: Drama 33 or permission of instructor. Advanced techniques of acting and play direction. (3 2-hour lecture-labs)

159. Children's Theatre (2)

Theories of children's theatre and application to problems in production. (lab hours arranged)

162A-B. Shakespeare (3-3) (See Engl 162A-B)**180. Design in the Theatre (3; max total 9) (Same as IA 180)**

Students may not repeat areas taken in former Spch 134A-B, 135A. Prerequisite: Drama 34 or permission of instructor. Theory and laboratory application in scene design, costume, stage and television lighting. (lab hours arranged)

184. Readings in Dramatic Literature (2; max total 6) (Same as Engl 184)

Open to upper division students of all departments. Prerequisite: permission of instructor. Reading and discussion of great plays of history; several plays presented in reading recital. (2 lecture-lab and arranged hours)

185A-B. History of the Theatre (3-3)

(A) History of European theatre and component arts from ancient Greece through the mid-nineteenth century; analysis of representative examples. (B) From Ibsen to the present, including history of theatre in America; analysis of representative examples.

200 series. Graduate courses are listed under *Speech*.

RADIO-TELEVISION

40. Introduction to Radio and Television Broadcasting (3)

Radio and television as media of mass communication; practice in application of oral and visual techniques to the broadcast situation.

41. Elementary Radio Production (3)

Prerequisite: R-TV 40. Director's techniques and tools; microphone setups, sound effects, music, script analysis, casting, control operation, and oral techniques. (3 lecture-lab and arranged hours)

44. Elementary Television Production (3)

Prerequisite: R-TV 40. Fundamentals of television broadcasting techniques and program planning. (2 lecture and arranged hours)

128. Motion Picture Evaluation (2)

Criteria for motion picture selection; use of reviews and judgment by critics and organizations; critical observation; appreciation and enjoyment. (2 lecture-lab and arranged hours)

129. Telefilm Production (2; max total 4)

Prerequisite: R-TV 128, permission of instructor. Theoretical and practical application of visualization techniques as applied in the media of television film. (lab hours arranged)

141A-B. Radio and Television Continuity Writing (3-3)

Prerequisite: Engl 1A. Application of principles of creative writing to radio and television broadcasting; analysis and writing of radio and television plays; writing skills and standards of criticism. (3 lecture-lab and arranged hours)

142. Radio and Television News Broadcasting (2) (Same as Jour 142)

Prerequisite: Engl 1A; Jour 114. All aspects of radio and television news broadcasting; analysis and use of the techniques in editing and writing. (2 lecture-lab and arranged hours)

143. Radio and Television in Education (2) (Same as Ed 143)

Philosophy, objectives, and uses of radio and television in education; place of radio and television in the curriculum, classroom utilization, out-of-school listening and viewing; advantages and limitations of the media; evaluation of school broadcasts; program planning.

143L. Radio and Television Education Laboratory (1) (Same as Ed 143L)

Prerequisite or concurrently: R-TV 143. Experience in production of educational radio and television programs.

144. Advanced Television Production (2)

Prerequisite: R-TV 44. Organization and planning of the television production. (2 lecture-lab and arranged hours)

145. Radio and Television Station Operation and Programming (2)

Prerequisite: R-TV 44. Organization, management, and programming of radio and television stations; correlation of department functions; rules and regulations governing station operation. Experience in simulated broadcasts; apprenticeships in local stations. (2 lecture-lab and arranged hours)

147. Radio and Television Direction (2; max total 8)

Prerequisite: R-TV 41 or 44, permission of instructor. Radio direction: planning and organization of production elements and direction of radio programs for broadcast over local stations. Television direction: planning and organization of production elements and direction of television programs on closed-circuit and over local stations. (lab hours arranged)

149. Radio and Television Announcing (2)

Prerequisite: R-TV 44. Development of professional radio and television announcing skills; participation in radio and television broadcasts over local commercial stations. (2 lecture-lab and arranged hours)

200 series. Graduate courses are listed under *Speech*.

SPEECH**10. Administration of Speech Arts Programs (2)**

Organization and management of public events in speech arts. (2 lecture-lab and arranged hours)

15. Speech Arts Laboratory (2; max total any area 4)

Prerequisite: permission of instructor. Group laboratory experience in major presentations and programs for theatre, radio-television, and forensics. (lab hours arranged)

20. Fundamentals of Voice and Expression (3)

Diagnosis and improvement of voice and expression habits; building of confidence through a variety of speech experiences. Recommended for prospective teachers.

21. Fundamentals of Oral Communication (3)

Meets speech requirement in general education. Understanding and practicing the skills of oral communication; observation, organization, reasoning, semantics, transmission, listening, and problem solving.

22. Fundamentals of Interpretation (3)

Basic techniques of interpretative speech.

24. Fundamentals of Public Speaking (3)

Communication of ideas by means of the informal talk; organization; persuasive-ness; clarity of thinking and grammatical accuracy.

25. Argumentation and Debate (3)

For prelegal students, majors and minors in speech and the social sciences. Principles of argumentation and debating. (3 lecture-lab hours)

26. Group Discussion (3)

Prerequisite: Spch 20, 21, or 24. Psychological and sociological theory applied to groups involved in the communication process of informal group discussion.

76. Mechanics of Oral Expression (2)

For prospective teachers; open to others. Intensive drill in voice and reading techniques. (2 lecture-lab and arranged hours)

110. Administration of Speech Arts Programs (2; max total 4)

Organization and management of public events in speech arts. (2 lecture-lab and arranged hours)

115. Advanced Speech Arts Laboratory (2; max total any area 6)

Prerequisite: permission of instructor. Group laboratory experience in major presentations and programs for theatre, radio-television, and forensics. (lab hours arranged)

121. Advanced Oral Communication (3)

Prerequisite: Spch 21 or permission of instructor. Study and application of the theories of oral communication at an advanced level.

122. Interpretation (3; max total 6)

Prerequisite: permission of instructor. For students desiring to develop appreciation and interpretative ability as well as for those interested in platform work. Oral interpretation of lyric poetry, monologues, narratives, and drama.

124. History of Public Address (3)

Prerequisite: Spch 24 or permission of instructor. History of public address from earliest times to the present.

125. Rhetorical Theory (3)

Prerequisite: Spch 25 or permission of instructor. Critical study of principles of rhetorical theory.

126. Advanced Group Discussion (3)

Prerequisite: Spch 26 or permission of instructor. Analysis of types and techniques of group discussion with extensive experience in the organization and preparation of discussions.

127. Mechanics of Group Leadership (2)

Social and economic organizations, structure and functions; conducting meetings, practice in chairmanship, duties of officers, and techniques of parliamentary law.

130. Verse Choir (2; max total 4)

Selection of poetry appropriate for verse choir on various educational levels; role of verse choir in speech teaching; plotting of voice arrangements.

136. Methods in Speech Education (3) (Same as Ed 136)

Prerequisite: junior standing, speech major or minor. Bibliographies, course outlines, lesson plans, and methods of teaching the speech arts; adaptation to grade and needs. (2 lecture and arranged observation hours)

158. Speech for the Classroom Teacher (3) (Same as Ed 158)

Prerequisite: permission of instructor. Speech needs of teachers; management of speech activities in the classroom; diagnosis of student speech difficulties and techniques for alleviating deficiencies.

189. Projects in Production (2; max total any combination 6)

Prerequisite: permission of instructor. Individual projects in all phases of production in laboratory theatre, local radio and television stations, and forensics. (hours arranged)

190. Independent Study (1-3; max see reference)

See *Regulations and Procedures—Independent Study*.

GRADUATE COURSES

(See *Course Numbering System—Definitions and Eligibility*)

200. Introduction to Graduate Study (2)

Prerequisite: speech minor or equivalent. Seminar in research procedures and materials in speech. Required of all majors in speech arts during the first semester of graduate work.

210. Graduate Survey in Speech Arts (2)

Prerequisite or concurrently: Spch 200; permission of instructor. Seminar in review and analysis of advanced literature in an area of specialization.

215. Seminar in Speech Arts (2; max total 8) (Former Spch 222, 224, 239, 244, 247)

Prerequisite: speech minor or equivalent. Research and individually directed work on problems within one area of speech arts: theatre, interpretation, radio-television, public address, and communications.

253. Seminar in Functional Speech Disorders (3; max total 6)

Prerequisite: Sp Corr 153, 155; permission of instructor. Projects in library research or in experimentation relating to functional speech disorders such as articulation, delayed speech, stuttering, and functional voice disorders.

254. Seminar in Organic Speech Disorders (3; max total 6) (Former Spch 223)

Prerequisite: Sp Corr 154, 155; permission of instructor. Projects in library research or in experimentation relating to organic speech disorders such as cleft palate, cerebral palsy, aphasia, and organic voice disorders. (3 lecture-lab and arranged hours)

255. Advanced Clinical Practice (2; max total 4)

Prerequisite: Sp Corr 153, 154, 155; permission of instructor. Supervised clinical practice in diagnosis and therapy of complex speech and hearing problems; causative factors, outlining plan of therapy, counseling parents, referral considerations. (2 lecture-lab and arranged hours)

260. Seminar in Audiology (3)

Prerequisite: Sp Corr 155, 160, 161. Projects in library research or experimentation.

290. Independent Study (1-3; max see reference)

See *Regulations and Procedures—Independent Study*.

299. Thesis or Project (2-4; max total 4)

Prerequisite: see *Master's Degrees—Thesis Requirement*. Preparation, completion, and submission of an acceptable thesis or project for the master's degree.

SPEECH CORRECTION

1X. Corrective Speech (2)

Required of students whose speech tests suggest need for special help. May not apply on speech major, minor, or general education. Diagnosis and correction of the more pronounced speech difficulties, individual conferences. (hours arranged)

150. Introduction to Speech Correction (2) (Same as Ed 150)

Problems of speech correction in education; classification of speech defects, common types, causes and therapeutic procedures; development of normal speech in the child; speech correction in public schools; role of classroom teacher in speech correction program.

151. Phonetics (2)

Study of the speech sounds of American English; discrimination of phonetic elements and transcription of a variety of speech patterns through use of phonetics.

152. Methods in Correction of Speech Defects (2)

Prerequisite: Sp Corr 150, 151. Development of speech correction methods adapted to speech-handicapped child in public school program; observation of clinical practice; planning materials for clinic and school use.

153. Stuttering (2)

Prerequisite: Sp Corr 150, 152 or permission of instructor. Causes and therapy in current use; parent-child relationships; therapeutic approaches to improvement of interpersonal relationships and alleviation of stuttering symptom.

154. Speech Pathology (3)

Prerequisite: Sp Corr 152. Causation and therapy procedures for organic speech disorders, including cleft palate, cerebral palsy, aphasia, voice disorders.

155. Clinical Practice in Speech and Hearing Therapy (2; max total 6)

Prerequisite: Sp Corr 152, permission of instructor. Supervised clinical practice in speech and hearing therapy with a variety of speech and hearing problems; diagnosis of speech deficiencies, procedures of referral to other agencies, parent counseling; case records. (Hours arranged)

156. Voice Science (2)

Prerequisite: Sp Corr 150. Anatomical structures utilized in speech sound production; acoustical properties of sound with respect to pitch, loudness, duration and quality; processes of respiration, phonation, resonance, articulation, including structures involved in each and acoustical modifications that may be effected.

160. Audiometry and Hearing Conservation (3) (Same as H Ed 160)

Fundamentals of acoustics; methods of testing auditory acuity; educational aspects of deafness; medical aspects and remedial follow-up for acoustically handicapped children. (3 lecture-lab and arranged hours)

161. Lip Reading and Auditory Training (2) (Same as Ed 161)

Basic principles of establishing communication by observation of visible aspects of speech; methods of teaching lip reading to the acoustically handicapped; recognition and discrimination of speech sounds and speech skills.

200 series. Graduate courses are listed under *Speech*.

ADMINISTRATION

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OFFICE OF THE CHANCELLOR

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Donald M. Muchmore	Vice Chancellor
Raymond A. Rydell	Vice Chancellor for Academic Affairs
John F. Richardson	Vice Chancellor for Business Affairs

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AUXILIARY ORGANIZATIONS

(Fresno State College Association, Inc., Foundation, Agricultural Foundation)

Director of Related Educational Activities.....Earle L. Bassett

Assistant Manager for Association Activities.....Earl Whitfield

COLLEGE ADMINISTRATION, 1961-1962

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President	Arnold E. Joyal
Vice President	Irwin O. Addicott
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Administrative Research Assistant	Rose Shamlin
Executive Dean	Orrin D. Wardle

INSTRUCTION

Dean of the College	Dallas A. Tueller
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Audio-Visual Coordinator	Leonard H. Bathurst, Jr.
Dean of Arts and Sciences	Herbert H. Wheaton
Dean of Graduate Studies	Phyllis W. Watts
Coordinator of Graduate Studies	Arnold M. Cooper
College Librarian	Henry M. Madden

STUDENT PERSONNEL SERVICES

Dean of Students	W. Donald Albright
Associate Dean of Students (Activities—Housing)	Gordon Wilson
Activities Adviser	Alice Morse Powell
Housing Coordinator	Charles L. Wheeler, Jr.
Associate Dean of Students (Counseling—Testing)	Melvin A. Angell
Test Officer and Coordinator of Faculty Advising	Deryle K. Allen
Psychometrist	Beverly J. Aldrich
Counselor (Veterans, Foreign Students, Scholarships—Loans)	Kenneth E. Lewis
Counselor	Viola A. Davis
Counselor	Evelyn Wright
Associate Dean of Students (Admissions—Records) and Coordinator of Relations with Schools	Harry E. Jones
Registrar	John E. Harter
Admissions Officer	William G. D. Pollock
Evaluations Supervisor	Caroline Ryles
Director of Placement	Harold D. Jones
Placement Supervisor	Gean Howard
Director of Health Services	Marvyn S. Schwartz, M.D.
Physician	Lloyd A. Hall, M.D.
Supervising Nurse	Anna Edwards

EDUCATIONAL SERVICES AND SUMMER SESSIONS

Dean of Educational Services and Summer Sessions	Edward M. Spencer
Director of Bakersfield Center	Leo P. Varner

FARM SCHOOL

Dean of Farm School	Lloyd Dowler
Farm Manager	George F. Ilg

BUSINESS MANAGEMENT

Business Manager	Carl Levin
Administrative Assistant	Henry Roberts
Accounting Officer	George Weybright
Purchasing and Property Officer	Ralph D. Koerber
Assistant Personnel Analyst	E. T. Hier
Housing Manager	William M. Coughran
Superintendent of Buildings and Grounds	Ray Emberton
Chief Engineer	Marion Mason

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Chief of Party	Raymond H. Harrison
Campus Coordinator	Kenneth L. Meeks

DIVISION HEADS AND DEPARTMENT CHAIRMEN, 1961-62

Agriculture Division.....	Lloyd Dowler
Agriculture Mechanics Department.....	Clarence D. Jensen
Animal Science Department.....	Jesse T. Bell
Plant Science Department.....	Wayne E. Biehler
Air Science Division.....	Lt. Col. Edgar L. Stambaugh
Applied Arts Division.....	Marion A. Grosse
Home Economics Department.....	Christine Spraker
Industrial Arts Department.....	Marion A. Grosse
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Guidance and Special Education Department.....	Benjamin G. Kremen
Health Education Department.....	Henry F. Fricker
School Administration Department.....	Orley W. Wilcox
Secondary Education Department.....	Stephen V. Ballou
Fine Arts Division.....	Ralph C. Rea
Art Department.....	John Ed Herbert
Music Department.....	Ralph C. Rea
Humanities Division.....	Herbert H. Wheaton
English Department.....	Earl D. Lyon
Foreign Language Department.....	Carlos A. Rojas
Journalism Department.....	Paul V. Sheehan
Philosophy Department.....	A. Wayne Colver
Life Science Division.....	Lloyd G. Ingles
Biology Department.....	Lloyd G. Ingles
Nursing Department.....	Fannie L. Sample
Psychology Department.....	Edward V. Tenney
Physical Education-Recreation Division.....	Harold J. Beatty
Physical Education Department—Men.....	Harold J. Beatty
Physical Education Department—Women.....	Ruth D. Waterman
Physical Science Division.....	Frederic A. Scott
Chemistry Department.....	Warren R. Biggerstaff
Engineering Department.....	Charles H. Cehrs
Geography Department.....	Chester F. Cole
Geology Department.....	George M. Stanley
Mathematics Department.....	Anthony E. Labarre, Jr.
Physics Department.....	Frederic A. Scott
Social Science Division.....	Karl L. Falk
Criminology Department.....	Frank M. Boolsen
History Department.....	Francis A. Wiley
Speech Arts Division.....	John W. Wright

LIBRARY

College Librarian.....	Henry M. Madden
Librarian IV.....	Robert T. Utterback, Virginia C. West
Librarian III.....	Joan C. Hawkins, Bessie N. Kylberg, Elizabeth A. Landrum, George H. Ollikkala, Lillie A. Parker, Raymond F. Wood
Librarian II.....	Sara C. Berry, Aristotle Bouras, Ruth O. Dahlgren, Ronald J. Harlan, Stephanie Hillman, Erland L. Jacobsen, Gary B. Kellogg, Ruth E. Leerhoff, Robert C. Page, Edith M. Quibell, Lois M. Scarborough, S. Louise Stull, J Printise Womack
Librarian I.....	William S. Abrams, Jack W. Lyle, Mary Snodgrass

FACULTY, 1961-62

Note: Part-time faculty, emeriti, Bakersfield Center staff, and Sudan staff follow this section. Numbers in parentheses indicate year of appointments at Fresno State College.

- JOYAL, ARNOLD E. (1948), President
BA, MA, PhD, University of California; LHD, California College of Medicine.
- ABOU-GHORRA, IBRAHIM (1956), Assistant Professor of Psychology; Counselor
BA, Cairo University; Diploma, Ain Shams University (Egypt); Diploma, Cairo Institute of Higher Studies; MA, Ohio State University; PhD, University of Southern California; Certified Psychologist.
- ABRAMS, WILLIAM S. (1961), Librarian I
BA, MSLS, Syracuse University.
- ADDICOTT, IRWIN O. (1934; 1950), Vice President
BA, University of California; MA, BD, Pacific School of Religion; EdD, Stanford University.
- ADLER, JACK E. (1961), Assistant Professor of Physical Education
BA, MS, University of Washington.
- AHERN, MARY E. (1959), Assistant Professor of Nursing
BS, St. Louis University; Registered Nurse.
- AIKEN, JOYCE B. (Spring 1962), Instructor in Art
BA, Fresno State College.
- ALBRIGHT, W. DONALD (1958), Dean of Students
BS, Northeast Missouri State Teachers College; MEd, University of Missouri; EdD, Teachers College, Columbia University.
- ALDEN, H. LEE, JR. (1960), Assistant Professor of Speech
BA, University of Virginia.
- ALDRICH, BEVERLY J. (1957), Psychometrist
BA, University of Nebraska.
- ALDRICH, LESLIE L. (1955), Assistant Professor of Industrial Arts
BA, Willamette University; MA, Oregon State College.
- ALKIRE, G. DON (1953), Professor of Mathematics
BA, MA, University of South Dakota; EdD, University of Kansas.
- ALLEN, DERYLE K. (1961), Test Officer; Coordinator of Faculty Advising
BA, Southwestern State College (Oklahoma); MEd, EdD, University of Oklahoma.
- ANDERSON, MYRON M. (1937), Associate Professor of Physical Education
BA, Fresno State College; MA, University of Southern California.
- ANGELL, MELVIN A. (1956), Associate Dean of Students (Counseling and Testing)
BA, MA, EdD, University of Washington; Certified Psychologist.
- ARCE, GINA (1957), Assistant Professor of Botany
BA, MA, George Peabody College; PhD, Vanderbilt University.
- ARNOLD, RICHARD L. (1953), Assistant Professor of Speech
BA, MA, University of Iowa.

- AUSTIN, ELLIS T. (1958), Associate Professor of Business Administration
BA, University of Washington; PhD, Michigan State University.
- AVERY, GEORGE E. (1959), Assistant Professor of Education
BS, Colorado State University; EdD, University of Maryland.
- BADDIN, MELVIN M. (1948), Associate Professor of Music
BM, MMus, Northwestern University
- BAKKEGARD, BENJAMIN M. (1958), Assistant Professor of Music and Education; Laboratory School Teacher
BS, University of North Dakota; MEd, University of Minnesota; EdD, Teachers College, Columbia University.
- BALLOU, STEPHEN V. (1953), Professor of Education; Chairman, Secondary Education Department (On sabbatical leave, fall)
BEd, Duluth State Teachers College; MA, EdD, University of Colorado.
- BARNES, ARTHUR P. (1959), Assistant Professor of Music
BM, MM, University of Wichita.
- BARNHART, KENNETH E., JR. (1958), Associate Professor of Engineering
BS, MS, PhD, University of California.
- BATHURST, LEONARD H., JR. (1954), Associate Professor of Education; Audio-Visual Coordinator
BA, MEd, EdD, Pennsylvania State University.
- BEARD, C. NOBLE (1937), Professor of Geology
BA, MA, Indiana University; PhD, University of Illinois.
- BEATTY, HAROLD J. (1937), Professor of Physical Education; Division Head, Department Chairman, Athletic Director
BA, Fresno State College; MA, University of California.
- BEATTY, WILLIAM C., JR. (1947), Professor of Social Science
BA, University of Denver; MA, University of Colorado; PhD, University of Southern California.
- BEIDEN, J. PETER (1948), Associate Professor of Physical Education
BA, University of Redlands.
- BELL, JESSE T. (Spring 1948), Principal Vocational Instructor in Agriculture; Acting Chairman, Animal Science Department
BS, Texas College of Arts and Industries; MA, Sul Ross State Teachers College.
- BENNETT, BOB L. (1955), Assistant Professor of Music
BA, Fresno State College; MS, Juilliard School of Music.
- BERDAHL, ARTHUR C. (1932), Professor of Music
BA, Augustana College; MA, PhD, State University of Iowa.
- BERGEY, JOHN (1961), Assistant Professor of Nursing
BS, Yankton College; MA, University of Pittsburgh; Registered Nurse.
- BERRY, SARA C. (1957), Librarian II, Laboratory School
BA, Occidental College.
- BEVILL, VINCENT D. (1957), Assistant Professor of Engineering
BS, Fresno State College; Registered Mechanical Engineer.
- BIEHLER, WAYNE E. (1951), Senior Vocational Instructor in Agriculture; Chairman, Plant Science Department
BS, Fort Hays Kansas State College; MS, University of California (Davis).
- BIGELOW, MARION E. (1932), Professor of Physical Education
BS, MS, University of Wisconsin.
- BIGGE, MORRIS L. (1950), Professor of Education
BA, Washburn Municipal University; MS, University of Michigan; PhD, University of Kansas.

- BIGGERSTAFF, WARREN R.** (1948), Professor of Chemistry; Department Chairman
BA, Willamette University; MS, Oregon State College; PhD, University of Wisconsin.
- BILLINGS, ROBERT S.** (1957), Assistant Professor of English
BA, University of New Hampshire; MA, Boston University; PhD, State University of Iowa.
- BIRD, C. WESLEY** (1932), Professor of Foreign Languages
BA, MA, Oberlin College; Diplôme, Grenoble University; MA, PhD, Princeton University.
- BLISS, WILLIAM H.** (1950), Professor of Industrial Arts
BS, Central Missouri State College; MA, Colorado State College; EdD, Bradley University.
- BOGHOSIAN, ALTOON** (1960), Assistant Professor of Nursing
BA, Fresno State College; MS, University of California; Registered Nurse.
- BOHNSTEDT, JOHN W.** (1956), Assistant Professor of History
BA, Michigan State University; MA, PhD, University of Minnesota.
- BOOLSEN, FRANK M.** (1948), Professor of Criminology; Department Chairman
BA, MA, University of California.
- BOURAS, ARISTOTLE** (1955), Librarian II
BA, Fresno State College; MA, University of Denver.
- BOWERS, BILLIE I.** (1959), Laboratory School Teacher
BA, Fresno State College.
- BRAUN, O. MARTIN** (1936), Principal Vocational Instructor in Agriculture
BS, MA, University of California.
- BREMNER, RAYMOND W.** (1947), Professor of Chemistry
BS, MS, PhD, University of Washington.
- BRENGELMAN, FREDERICK H.** (1957), Assistant Professor of English
BA, Dana College; MA, University of Nebraska; PhD, University of Washington.
- BRENNINGER, RALPH A.** (1946), Professor of Foreign Languages
BS, Lafayette College; MA, Columbia University; PhD, University of California.
- BREWSTER, MARJORIE A.** (1923; 1930), Associate Professor of Education
BA, Fresno State Teachers College; MS, University of Southern California.
- BRIGHAM, THOMAS M.** (1953), Associate Professor of Sociology (On leave)
BA, San Francisco State College; MSW, University of California; Registered Social Worker (California).
- BROOKS, SIDNEY** (1958), Assistant Professor of Physics
BA, University of Pennsylvania; MS, University of Michigan; PhD, Rutgers University.
- BROOKS, WAYNE A.** (1956), Assistant Professor of Business Administration (On leave)
BA, St. Ambrose College; JD, University of Iowa; LLM, Stanford University; Member, Iowa Bar, California Bar.
- BROSEGHINI, ALBERT L.** (1959), Assistant Professor of Biology
BS, Northern Illinois State College; MS, PhD, Iowa State College of Agriculture and Mechanic Arts.
- BROWN, FORREST D.** (1947), Professor of Education
BS, MS, Fort Hays Kansas State College; PhD, University of Cincinnati.
- BROWN, SHELDON J.** (1956), Associate Professor of Physics
BA, PhD, University of California at Los Angeles.

- BRYON, ARTHUR J. (1941; 1947), Professor of Music
Normal Degree, San Francisco Conservatory of Music; BA, Fresno State College; MA, University of California; DMA, University of Southern California.
- BUCKMAN, KARL E. (1942), Associate Professor of Social Science
BA, Fresno State College; MA, Claremont Colleges.
- BURDICK, DONALD J. (1960), Assistant Professor of Biology
BA, San Jose State College; PhD, University of California.
- BURGESS, ROBERT C. (1947), Associate Professor of Physical Education
BA, Fresno State College; MS, University of Southern California.
- BURRIS, MERLYN D. (1947; 1953), Associate Professor of Speech
BA, Fresno State College; MA, University of California at Los Angeles.
- BURTNER, DALE C. (1958), Assistant Professor of Chemistry
BA, Reed College; MS, PhD, University of Washington.
- BURTON, BENJAMIN B. (1958), Assistant Professor of Psychology
BA, MA, PhD, University of Missouri; Certified Psychologist.
- BUSH, P. DALE (1961), Assistant Professor of Economics
BA, MA, University of Denver.
- BUTTON, ALAN D. (1961), Assistant Professor of Psychology
BS, MA, University of Oregon; PhD, Stanford University.
- CADY, DOROTHY A. (1954), Laboratory School Teacher
BS, University of Minnesota; BA, MA, Fresno State College; Registered Nurse.
- CAMPBELL, HOWARD J. (1946), Associate Professor of Speech
BS, North Texas State Teachers College; MA, Stanford University; EdD, University of California.
- CANALES, JOSE C. (1946), Associate Professor of History
BA, Manhattan College; MA, PhD, University of California.
- CARLSON, MILTON D., Captain, USAF (1958), Assistant Professor of Air Science
BA, University of South Dakota.
- CARR, JOHN H. (1953), Associate Professor of Bacteriology
BS, Kansas State Teachers College; MS, PhD, Kansas State College.
- CARR, ROBERT A. (1952; 1957), Associate Professor of Business Administration
BA, MA, San Francisco State College; PhD, University of Southern California.
- CEHRS, CHARLES H. (1948; 1953), Professor of Engineering; Department Chairman
BME, University of Akron; MS, Oregon State College; ME, University of California; Registered Mechanical Engineer.
- CHAMBERS, DWIGHT O (1960), Assistant Professor of Foreign Languages
BS, MA, PhD, University of Kansas.
- CHITTICK, ROGER D. (1956), Assistant Professor of English
BA, Butler University; MA, Washington State College; PhD, Stanford University.
- CIULA, RICHARD P. (Spring 1961), Assistant Professor of Chemistry
BA, Bowling Green State University; MS, University of California; PhD, University of Washington.
- CLARK, DAVID E. (1950; 1953), Associate Professor of Chemistry
BA, University of Redlands; MS, PhD, Stanford University.
- CLOSE, V. DEAN, JR. (1961), Assistant Professor of Business Administration
BA, San Jose State College; LLB, University of California.
- COBB, GWENDOLIN B. (1953), Associate Professor of History
BA, MA, PhD, University of California.

- COLE, CHESTER F. (1947), Professor of Geography; Department Chairman
BA, Eastern Washington College of Education; MA, University of Washington;
PhD, University of Nebraska.
- COLEMAN, CECIL N. (April, 1959), Professor of Physical Education
BA, MA, Arizona State University.
- COLVER, A. WAYNE (1957), Assistant Professor of Philosophy; Department
Chairman
BA, University of California at Los Angeles; MA, PhD, Harvard University.
- COMEGYS, ROBERT G. (1955), Assistant Professor of History
BA, MA, University of Washington; PhD, Stanford University.
- COOPER, ARNOLD M (1957), Assistant Professor of Psychology; Coordinator
of Graduate Studies
BA, San Francisco State College; MA, PhD, Claremont Graduate School;
Certified Psychologist.
- CORD, WILLIAM O. (1958), Assistant Professor of Foreign Languages
BS, Southeast Missouri State College; MA, Washington University; PhD,
University of Colorado.
- COYLE, MARGUERITE (Spring 1961), Assistant Professor of Nursing
BS, MS, Wayne State University; Registered Nurse.
- CROSBY, JOHN A. (1956), Associate Professor of Geography
BS, University of Chicago; MA, PhD, University of Washington.
- CSERNA, EUGENE G. (Spring 1959), Assistant Professor of Geology
PhD, University of Sciences (Budapest, Hungary); MA, PhD, Columbia
University.
- DAHLGREN, RUTH O. (1961), Librarian II
BS, Minot State College (North Dakota); MALS, University of Michigan.
- DANDROY, MAXIMA A. (Spring 1956), Assistant Professor of Education
BSE, National Teachers College (Philippines); MA, Arellano University
(Philippines); EdD, Stanford University.
- DAVIS, IRVING F., JR. (1960), Assistant Professor of Business Administration
BS, University of California; MS, University of Illinois; PhD, University of
California.
- DAVIS, MARTHA A. (1960), Assistant Professor of Nursing
BS, St. Louis University; MA, Teachers College, Columbia University; Regs-
tered Nurse.
- DAVIS, VIOLA A. (1955), Counselor
BA, Pasadena College; MA, University of Southern California; PhD, North-
western University.
- DELANEY, VERNE D. (1940), Professor of Music
BM, MA, University of Washington.
- DEMING, DONALD E. (1960), Assistant Professor of Engineering
BS, Worcester Polytechnic Institute; MS, University of Connecticut.
- DEMPSTER, FRED E. (1951), Associate Professor of Music
BA, University of Omaha; MMus, Northwestern University.
- DETAR, WILLIAM R. (1956), Intermediate Vocational Instructor in Agriculture
BS, MS, University of California (Davis).
- DETTINGER, DONALD J. (1947), Associate Professor of Industrial Arts and
Education
BA, Chico State College; MS, Oregon State College.
- DI ANTONIO, GUS (1961), Assistant Professor of Mathematics
BS, MS, PhD, University of Pittsburgh.

- DIENSTEIN, WILLIAM (1946), Professor of Social Science and Criminology
BA, Stanford University; MA, University of California; PhD, Stanford University.
- DOKOOZLIAN, NICK (1957; 1962), Junior Vocational Instructor in Agriculture
BS, Fresno State College.
- DONALDSON, JOHN R. (1956), Associate Professor of Physics
BS, MA, Rice Institute; MS, PhD, Yale University.
- DOW, VIRGINIA M. (1961), Laboratory School Teacher
BA, Fresno State College.
- DOWLER, LLOYD (1948), Head, Agriculture Division; Dean of Farm School
BS, MS, University of Wyoming.
- DOYLE, KATHERINE E. (1937), Associate Professor of Physical Education
BA, Stanford University; MS, Wellesley College.
- DUKE, JOHN H. (1946), Professor of Journalism
BJ, University of Texas; MA, PhD, University of Southern California.
- DUNNING, WILLIAM J. (1947), Professor of Industrial Arts
BS, Iowa State Teachers College; MS, Iowa State College; EdD, University of North Dakota.
- EK, RICHARD A. (Spring 1961), Assistant Professor of Speech
BA, University of Utah; MA, San Francisco State College.
- ELIAS, CLAUDE E. JR. (Spring 1960), Assistant Professor of Business Administration
BA, MA, University of Wyoming.
- ELIASON, AFTON Y. (1935), Professor of Physics
BS, Utah State Agricultural College; MA, PhD, University of California.
- EMERSON, JOHN T. (1959), Assistant Professor of Business Administration
BA, JD, University of Chicago.
- ENSSLIN, WALTER (Spring 1959), Assistant Professor of Foreign Languages
PhD, University of Berlin.
- ERVIN, ROGER E. (1957), Assistant Professor of Geography
BA, MA, University of Washington; PhD, University of Florida.
- EVANS, JOHN L. (1961), Intermediate Vocational Instructor in Agriculture
BS, MA, California Polytechnic College.
- EVANS, RALPH F. (1947), Professor of Education
BEd, Eastern Illinois State Teachers College; MA, PhD, State University of Iowa.
- EWY, DANIEL J. (1951; 1955), Assistant Professor of Mathematics
BA, University of California; MS, Stanford University.
- FALK, DORIS F. (1946), Associate Professor of Biology
BA, MA, PhD, University of California.
- FALK, KARL L. (1938), Professor of Economics; Head, Social Science Division
BA, Stanford University; PhD, University of Berlin.
- FAST, PETER G. (1957), Assistant Professor of Education
BA, Goshen College; MA, Ball State Teachers College; EdD, Indiana University.
- FEE, JAMES A. (1957), Assistant Professor of Education
BS, Northeastern State College (Oklahoma); MA, Stanford University; EdD, University of Oklahoma.
- FEUCHES, CONRAD (1946), Associate Professor of Industrial Arts (On sabbatical leave, spring)
BA, Fresno State College; MS, Oregon State College.

- FIKES, JAMES A. (1955), Associate Professor of Health Education
BS, Central State College (Oklahoma); MPH, MEd, PhD, Oklahoma University.
- FISHER, M. BRUCE (1941), Professor of Psychology
BA, University of California; PhD, Yale University; Certified Psychologist.
- FISK, McKEE (1948), Professor of Business Administration; Head, Business Division
BA, Oklahoma City University; MA, University of Southern California; PhD, Yale University.
- FOIN, OWEN F., JR. (1942), Associate Professor of Engineering
BA, Fresno State College; Registered Electrical Engineer.
- FRICKER, HENRY F. (1952), Associate Professor of Health Education and Education; Chairman, Health Education Department
BA, Marshall College; MA, EdD, Stanford University.
- GAYLORD, EDWARD H. (1957), Assistant Professor of Engineering
BS in EE, Colorado State University; MS in EE, University of Colorado; Registered Electrical Engineer.
- GERARD, MARIAN M. (1949), Laboratory School Teacher
BA, Mills College; MA, Fresno State College.
- GILBERT, WILLIAM R. (1955), Associate Professor of Education
BS, BS, MS, University of Illinois; PhD, University of Washington.
- GLEASON, KENNETH C. (1946), Associate Professor of Physical Education
BA, Fresno State College; MS, University of Southern California.
- GONSER, MARTIN E. (1958), Assistant Professor of Industrial Arts
BS, MS, Kansas State Teachers College.
- GRAHAM, GAYLORD O. (1957), Assistant Professor of Speech
BA, MA, State University of Iowa.
- GRAHAM, HERMAN D. (1947), Professor of Economics
BEd, Illinois State Normal University; MA, PhD, University of Illinois.
- GREENE, ELEANORE R. (1960), Assistant Professor of Nursing
BA, Cornell University; MA, Columbia University; Registered Nurse.
- GRIFFITHS, I. ACE (1959), Assistant Professor of Education
BS, University of Idaho; MS, University of Arizona; EdD, Colorado State College; Certified Psychologist.
- GRIVAS, THEODORE (1957), Assistant Professor of History
BA, MA, PhD, University of Southern California.
- GROSSE, MARION A. (1930), Professor of Industrial Arts; Head, Applied Arts Division; Chairman, Industrial Arts Department
BA, Fresno State College; MA, Stanford University.
- GYMER, ROGER G. (1960), Assistant Professor of Chemistry
BS, Western Reserve University; MS, University of Minnesota; PhD, Case Institute of Technology.
- HADSALL, LEO F. (1932), Professor of Biology
BA, MA, Bucknell University; PhD, Cornell University.
- HAIMBACH, DAVID (1959), Associate Professor of Education; Principal, Laboratory School
BSEd, EdM, Temple University; EdD, University of Florida.
- HAIRABEDIAN, ARA (1953), Associate Professor of Physical Education
BS, University of Southern California; MEd, Pennsylvania State College.
- HALL, LLOYD A. (1960), Physician
BA, MD, Stanford University.

- HALPER, DONALD G. (1955), Associate Professor of Marketing (On sabbatical leave, fall)
BA, MS, University of Illinois; PhD, Stanford University.
- HAMPTON, ROBERT E. (1956), Assistant Professor of Marketing
BBA, Golden Gate College; MA, Chico State College; EdD, Stanford University.
- HANNER, J. FLINT (1925), Professor of Physical Education
BA, MA, Stanford University.
- HARLAN, RONALD J. (1956), Librarian II
BA, Fresno State College; MLS, University of California.
- HARRISON, ROBERT D. (1954), Intermediate Vocational Instructor in Agriculture
BS, University of Michigan; MS, Michigan State College.
- HARTER, JOHN E. (1961), Registrar
BS, MS, Kansas State Teachers College.
- HARTON, JOHN J. (1941), Professor of Education
BA, Hendrix College; MA, George Peabody College; PhD, Duke University; Certified Psychologist.
- HAWBECKER, ALBERT C. (1946), Professor of Biology
BA, Fresno State College; MA, University of California; PhD, Oregon State College.
- HAWKINS, JOAN C. (1953), Librarian II
BA, Barnard College; BLS, University of California.
- HAWORTH, FLOYD B. (Spring 1961), Associate Professor of Economics
BA, MA, PhD, University of Iowa. (Deceased January 27, 1962)
- HENDERSON, WALLACE D. (1958), Associate Professor of Political Science
BA, Fresno State College.
- HENFLING, PHYLLIS B. (1940; 1952), Assistant Professor of Education
BA, MA, Fresno State College.
- HERBERT, JOHN ED (1928), Professor of Art; Department Chairman (On sabbatical leave, spring)
BEd, University of California at Los Angeles; MA, Columbia University.
- HIGGINS, FRANCIS V. (1958), Assistant Professor of Engineering
BS, MS, Indiana State Teachers College; MS, University of Michigan; M.S., Case Institute of Technology.
- HILLMAN, STEPHANIE (1958), Librarian II
BA, University of California at Los Angeles; MLS, University of California.
- HIKSON, FLOYD M. (1951), Principal Vocational Instructor in Agriculture
BS, Oklahoma State University; MS, PhD, Kansas State University.
- HOLDER, WAYNE B. (1955), Associate Professor of Psychology
BA, MA, New Mexico State University; PhD, University of Missouri.
- HOWES, VERNON E. (1956), Assistant Professor of Mathematics (On leave)
BS, Pomona College; DU, University of Paris.
- HOWLAND, RUSSELL S. (1948), Professor of Music
BM, MMus, University of Illinois.
- HUNT, MAURICE P. (1948), Professor of Education
BS, MA, PhD, Ohio State University.
- HUNTER, THOMAS O. (1958), Laboratory School Teacher
BA, Fresno State College.
- HUPPRICH, MABEL (1944), Associate Professor of Physical Education
BS, MS, University of Wisconsin.

- ILG, GEORGE F. (1949), Farm Manager; Principal Vocational Instructor in Agriculture
BS, University of California; MS, Ohio State University.
- INGLES, LLOYD G. (1945), Professor of Zoology; Head, Life Science Division; Chairman, Biology Department
BA, Redlands University; MA, Claremont Colleges; PhD, University of California.
- JACOBSEN, ERLAND L. (1959), Librarian II
BA, Stanford University; MLS, University of California.
- JARRETT, McRAE (1957), Assistant Professor of Engineering
BS in EE, MS, University of Tennessee.
- JARVIS, HELEN W. (1959), Assistant Professor of Home Economics
BA, University of California; MS, Oregon State College.
- JASUTYTE, CORDELIA (1959), Assistant Professor of Foreign Languages
Lic-es-Let, University of Paris; MA, PhD, State University of Iowa.
- JENSEN, CLARENCE D. (1947), Principal Vocational Instructor in Agriculture; Chairman, Agricultural Mechanics Department
BA, Chico State College; MS, Oregon State College.
- JEPSEN, VICTOR L. (1946), Professor of Business Administration
BA, MA, University of Oregon; EdD, Stanford University.
- JOHNSON, BIRGER L. (1955), Associate Professor of Physical Education
BA, North Dakota State Teachers College; MS, University of Oregon; PhD, University of Southern California.
- JONES, HAROLD D. (1957), Director of Placement
B.S., Northern State Teachers College (South Dakota); MEd, University of Colorado; EdD, University of Denver.
- JONES, HARRY E. (1957), Associate Dean of Students (Admissions-Records)
BA, San Diego State College; MA, PhD, Claremont Colleges.
- JULIANA, JOSEPH R. (1958) Assistant Professor of Physical Education and Recreation
B.S., Temple University; MEd, University of Pittsburgh.
- KALLO, ROBERT M. (1950), Professor of Chemistry
BS, PhD, University of California.
- KAUFFMAN, GEORGE B. (1956), Associate Professor of Chemistry
BA, University of Pennsylvania; PhD, University of Florida.
- KAUFMAN, ALVIN S. (1956), Assistant Professor of Speech
BA, Ohio Wesleyan University; MA, University of Washington.
- KECK, HOWARD (1952), Intermediate Vocational Instructor in Agriculture
BS, MS, University of California.
- KELLOGG, GARY B. (1961), Librarian II
BA, University of Colorado; MA, University of Denver.
- KIMBERLY, MAX E. (1958), Assistant Professor of Health Education
BS, MS, Montana State College; MA, EdD, Stanford University.
- KIPPS, THOMAS C. (1956), Assistant Professor of Mathematics
BA, MA, PhD, University of California.
- KREMEN, BENJAMIN G. (1950), Professor of Education; Chairman, Guidance and Special Education Department
BS, Johns Hopkins; MA, University of Maryland; PhD, Michigan State College.
- KULHAN, EDWARD F. (1956) Assistant Professor of Engineering
BS, University of Nevada; MS, Pennsylvania State University; Registered Land Surveyor.

- KYLBERG, BESSIE N. (1947), Librarian III
BA, University of California.
- LABARRE, ANTHONY E., JR. (1961), Professor of Mathematics; Department
Chairman
BE, MS, Tulane University; PhD, University of Oklahoma.
- LAMBERT, HAZEL M. (1955), Associate Professor of Education
BA, College of St. Scholastica; BEd, Superior State College; MA, University
of Minnesota; PhD, University of North Carolina.
- LANDRUM, ELIZABETH A. (1932), Librarian III
BA, Fresno State College; MA, University of California.
- LARRABEE, CARLTON H. (1947), Professor of English
BA, Clark University; MA, Harvard University; EdD, New York University.
- LARSEN, LELAND M. (1961), Intermediate Vocational Instructor in Agriculture
BS, Fresno State College; MS, PhD, Oregon State University.
- LATIMER, HOWARD L. (1958), Assistant Professor of Biology
BS, MS, State College of Washington; PhD, Claremont Colleges.
- LAURY, FRANK B. (1959) Assistant Professor of Art
BA, Iowa State Teachers College; MA, Stanford University.
- LAWTON, ROBERT G. (1959), Assistant Professor of Engineering
BS, MS, University of California.
- LEAVENWORTH, RUSSELL E. (1955), Assistant Professor of English
BA, Hanover College; MA, PhD, University of Colorado.
- LEAVITT, GEORGE S. (1955), Associate Professor of Psychology
BA, Macalester College; MA, PhD, University of California; Certified Psy-
chologist.
- LEERHOFF, RUTH E. (1960), Librarian I
BA, Iowa State Teachers College; MA, University of Denver.
- LESLIE, GLENN F. (1958), Associate Professor of Education; Chairman, Ele-
mentary Education Department
BS, Central Missouri State College; MEd, EdD, University of Missouri.
- LE VALLEY, W. I. LOUIS (1954), Intermediate Vocational Instructor in Agri-
culture
BA, Eugene Bible University; BS, MEd, University of California (Davis).
- LEVIN, CARL (1942), Business Manager
BA, Fresno State College.
- LEVINE, PHILIP (1958), Assistant Professor of English
BA, MA, Wayne University; MFA, State University of Iowa.
- LEWIS, KENNETH E. (1956), Counselor (Veterans, Foreign Students, Scholar-
ships—Loans)
BA, MA, Fresno State College.
- LINDLY, EDITH R. (1948), Professor of Health Education
BS, MS, Oklahoma State University; MPH, University of Michigan; EdD,
Oklahoma State University.
- LINDQUIST, STANLEY E. (1953), Professor of Psychology (On sabbatical
leave)
BA, Fresno State College; PhD, University of Chicago; Certified Psychologist.
- LIST, EDGAR A. (1961), Assistant Professor of Foreign Languages
BA, Carroll College; MA, PhD, Yale University.
- LOGAN, BARRY L. (1961), Assistant Professor of English
BA, MA, Syracuse University; PhD, Yale University.

- LOMBARD, EDWIN H. (1947), Professor of Speech
BA, Oberlin College; MA, Columbia University; MA, PhD, Cornell University.
- LONG, WILLIAM J. (1961), Instructor in English
BA, Baylor University.
- LORING, JANET (1957), Assistant Professor of Speech
BS, Northwestern University; MA, University of Kansas City; PhD, State University of Iowa.
- LOWE, HERBERT F. (Spring 1957), Assistant Professor of Engineering
BS, California State Polytechnic College; MS, Stanford University; Registered Civil Engineer.
- LUCAS, EARL R. JR. (1954), Assistant Professor of Art (On leave)
BA, Colorado College of Education; MA, Teachers College, Columbia University.
- LUNDBERG, JAMES B. (1960), Assistant Professor of Education
BS, North Texas State College; MA, Michigan State University.
- LUNDKVIST, LYLIS D. (1939), Professor of Music
BM, MA, University of Washington.
- LYLE, JACK W. (1961), Librarian I
BA, DePauw University; MA, Indiana University.
- LYON, EARL D. (1938), Professor of English; Department Chairman
BA, University of California at Los Angeles; MA, PhD, University of California.
- MACH, LELAND E. (1958), Assistant Professor of Education
BA, Colorado State College of Education; MA, Northwestern University; EdD, College of the Pacific; Certified Psychologist.
- MACK, SEYMOUR (1957), Assistant Professor of Geology
BS, College of the City of New York; MS, PhD, Syracuse University.
- MADDEN, HARRISON E. (1956), Assistant Professor of Psychology
BS, MA, MA, PhD, University of Kansas, Certified Psychologist.
- MADDEN, HENRY M. (1949), College Librarian
BA, Stanford University; BLS, University of California; MA, PhD, Columbia University.
- MANNING, JOHN CHORLTON (1960), Assistant Professor of Education
BA, Providence College; EdM, Bridgewater State College; EdD, Boston University.
- MARGOSIAN, ARTHUR H. (1956; 1961), Assistant Professor of Journalism;
Public Information Officer
BA, MA, Fresno State College.
- MARTIN, JOHN E. (1959), Assistant Professor of Education
BA, Central State College (Oklahoma); MEd, EdD, University of Oklahoma.
- MASON, R. ELAINE (1956), Assistant Professor of Physical Education
BA, Fresno State College; MA, Stanford University.
- MATHERS, ROBERT L. (1959), Assistant Professor of Philosophy
BA, University of California at Santa Barbara; PhD, University of California at Los Angeles.
- MATHWIG, GEAN M. (1961), Assistant Professor of Nursing
BS, Long Beach State College; MA, Columbia University; Registered Nurse.
- MATTHES, MARGARET J. (1961), Assistant Professor of Nursing
BA, Fresno State College; Registered Nurse.

- MATTHEW, VIRGIL L. JR. (1948), Assistant Professor of Social Science
BA, Fresno State College; MA, University of California at Los Angeles.
- McCLINTIC, J. ROBERT (1954), Associate Professor of Biology
BA, San Diego State College; PhD, University of California.
- McCOMAS, WAYNE L. (1953), Associate Professor of Industrial Arts
BA, Santa Barbara College; MA, Stanford University.
- McCORMACK, ETHEL (1961), Assistant Professor of Secretarial Administration
BS, Oregon State College; MA, Columbia University.
- McCOY, RALPH W. (1946), Professor of Biology
BA, MA, PhD, Indiana University.
- McKIM, V. CALVON (1942), Professor of Geography
BA, Nebraska State Teachers College (Wayne); MA, PhD, University of
Nebraska.
- McPHERRAN, ARCHIE L. (1960), Assistant Professor of Education
BA, Nebraska State Teachers College (Wayne); MA, Western Reserve Uni-
versity; EdD, University of Nebraska.
- MEEKER, MURIEL (1950), Laboratory School Teacher
BA, San Francisco State College; MA, Fresno State College.
- MILLER, CARL E. (1961), Assistant Professor of Education
BS, Anderson College (Indiana); MA, Eastern New Mexico University; EdD,
Texas Technological College.
- MILLER, HARRY E. (1960), Associate Professor of Physical Education
BA, Eastern New Mexico University; MA, Colorado Western College.
- MILLER, WILLIAM M. (1956), Assistant Professor of Chemistry
BS, University of Illinois; MS, PhD, State University of Iowa.
- MONTS, ELIZABETH A. (1955), Assistant Professor of Home Economics and
Education
BS, Eastern State College (Illinois); MS, University of Wisconsin.
- MUDGE, LOUIS A. (1939), Professor of Marketing
BS, MS, EdD, University of Southern California.
- MULLENNIX, Grady L. (1958), Associate Professor of Business Administration
BS, MS, North Texas State College; PhD, University of Texas.
- MURPHY, Joseph B. (1949), Professor of Education
BS, Brigham Young University; MS, University of Utah; EdD, Stanford
University.
- MUSSELMAN, DARWIN B. (1953), Associate Professor of Art
BA, Fresno State College; MFA, California College of Arts and Crafts; MA,
University of California.
- NELSEN, CLAIR E. (1950; 1955), Associate Professor of Economics and History
BA, Fresno State College; MA, PhD, Stanford University.
- NEWCOMB, RICHARD F. (Spring 1956), Assistant Professor of Industrial Arts
BA, MA, Fresno State College.
- NEWSOME, RATANA S. (1961), Assistant Professor of Home Economics
BA, Chulalongkorn University (Thailand); MS, PhD, Florida State University.
- NISHIO, KAREN T. (1959), Assistant Professor of Nursing (On leave, fall)
BS, University of Dayton; MS, University of California at Los Angeles; Regis-
tered Nurse.
- NOAKES, GEOFFREY B. (Spring 1947), Professor of Industrial Arts
BA, MA, Fresno State College.
- ODORFER, ELLA M. (1928), Professor of Art
BA, University of North Dakota; MA, Columbia University.

- OLLIKKALA, GEORGE H. (1950), Librarian III
BA, BLS, University of California.
- O'NEIL, ROBERT M. (1957), Instructor in English
BA, MA, Montana State University.
- PAGE, ROBERT C. (1961), Librarian II
BA, University of Maine; MLS, University of Washington.
- PAPE, LAURENCE A. (1951), Professor of Physical Education
BA, MA, Ohio State University; EdD, Columbia University.
- PARKER, LILLIE A. (1951), Librarian III
BA, BLS, University of California.
- PARKER, WILLIAM M. (1950), Associate Professor of Accounting
BS, MBA, University of California; PhD, University of Southern California;
Certified Public Accountant.
- PASSELL, DAN (1961), Instructor in Philosophy
PhB, MA, University of Chicago.
- PETRUCCI, VINCENT E. (1948), Principal Vocational Instructor in Agriculture
(On leave, spring)
BS, MS, University of California (Davis).
- PFLUEGER, CLAYTON C. (1959), Junior Vocational Instructor in Agriculture
BS, South Dakota State College; MS, State College of Washington.
- PHILLIPS, LEONARD W. (1961), Assistant Professor of Education
BA, University of California; MA, Humboldt State College.
- PICCONE, YVONNE (1961), Assistant Professor of Nursing (On military leave)
BS, New Haven State Teachers College; MN, University of Washington; Reg-
istered Nurse.
- PICKFORD, PATRICIA R. (Spring 1957), Assistant Professor of Sociology
BA, Fresno State College; MSW, University of California at Los Angeles.
- PIERSOL, ROBERT J. (1961), Assistant Professor of Business Administration
BS, University of Illinois; MBA, Stanford University.
- PIERSON, ALVIN P. (1941), Professor of Business Administration
BA, University of Nevada; MA, University of Florida; EdD, Stanford Uni-
versity.
- PITT, JACK A. (1957), Assistant Professor of Philosophy
BS, Sir George Williams College (Canada); BA, MA, McGill University
(Canada); PhD, Yale University.
- POLLOCK, WILLIAM G. D. (1960), Admissions Officer
BA, MA, Colorado State College.
- POSS, STANLEY H. (1956), Assistant Professor of English
BA, University of Redlands; MA, Claremont Graduate School; PhD, Univer-
sity of Washington.
- POWELL, ALICE MORSE (1959), Activities Adviser
BA, University of Washington; MEd, Oregon State College.
- POWELL, FRANK V. (1955), Associate Professor of Psychology (On military
leave)
BA, University of Redlands; MS, PhD, University of Wisconsin; Certified
Psychologist.
- PRATT, JEANETTE (1956), Assistant Professor of Speech
BA, University of Maine; MA, University of North Carolina.
- PROVOST, DAVID H. (1958), Assistant Professor of Political Science
BA, Pomona College; PhD, University of Queensland (Australia).

- QUIBELL, CHARLES H. (1927), Professor of Botany
BA, Pomona College; PhD, University of Chicago.
- QUIBELL, EDITH M. (1947), Librarian II
BA, Pomona College.
- RAY, DEAN N. (1959), Assistant Professor of Criminology
BA, Yankton College; MA, Washington State College.
- REA, RALPH C. (1954), Professor of Music; Head, Fine Arts Division; Chairman,
Music Department
BM, Eastman School of Music; MA, PhD, State University of Iowa.
- REA, THELMA M. (1958), Assistant Professor of Education
BS, MS, University of Idaho; EdD, Stanford University.
- REES, BRYANT E. (1947), Professor of Biology
BA, MA, University of Utah; PhD, Stanford University.
- REES, WARREN A. (1961), Assistant Professor of Mathematics
BA, Southwestern University (Texas); MA, University of Texas.
- REIGHARD, EDWARD (Spring, 1960), Assistant Professor of Business Administration
BA, Middlebury College (Vermont); BD, Yale University; MBA, Stanford University.
- RICHARDS, HERBERT D. (1955), Assistant Professor of Engineering
BS, University of California; MS, Stanford University; Registered Civil and Structural Engineer.
- RIPPEY, ANDREW D. (1946), Professor of Education; Field Studies Coordinator
BS, MA, University of Florida; PhD, Ohio State University.
- ROBBINS, EDWARD S. (1957), Assistant Professor of Mathematics
BA, MA, Wichita University.
- ROBINSON, ETIHEL A. (1946; 1950), Assistant Professor of Mathematics
BA, MA, Stanford University.
- ROCKWELL, JAMES H. (1957), Assistant Professor of Industrial Arts
BS, Stout Institute; MS, Bradley University.
- ROHRER, HELEN F. (1933), Professor of Business Education
BA, MA, Stanford University.
- ROJAS, CARLOS A. (1928), Professor of Foreign Languages; Department Chairman
BA, MA, Pomona College; PhD, University of Washington.
- ROSE, CARLENE (1951), Associate Professor of Home Economics
BS, University of Minnesota; MS, Oregon State College.
- ROSSNER, FRANCIS (Fall 1961), Assistant Professor of Marketing
LLB, University of Budapest; MBA, University of North Carolina.
- ROTH, LESTER J. (1956), Associate Professor of Social Science and Education
BS, Kent State University; MA, Western Reserve University; EdD, Stanford University.
- ROUSEK, EDWIN J. (1948), Principal Vocational Instructor in Agriculture; Chairman, Animal Science Department (On military leave)
BS, University of Nebraska; MS, Cornell University.
- SAMPLE, EMILY C. (1934), Associate Professor of Physical Education
BS, MS, University of Southern California.
- SAMPLE, FANNIE L. (1959), Associate Professor of Nursing; Department Chairman
BS, MEd, University of Houston; Registered Nurse.

- SAVILLE, ANTHONY (1961), Assistant Professor of Education
BS, Illinois State Normal University; MED, EdD, University of Missouri.
- SCARBORO, LOIS M. (1961), Librarian II
BA, University of California.
- SCHORLING, HORACE O. (1941), Professor of Industrial Arts
BA, San Jose State College; MS, EdD, Oregon State College.
- SCHROETER, FRANK E. (1949), Associate Professor of Industrial Arts
BS, MS, Stout Institute.
- SCHWARTZ, MARVYN S. (1958), Director of Health Services
BA, Fresno State College; MD, University of California.
- SCOTT, FREDERIC A. (1957), Professor of Physics; Head, Physical Science Division; Chairman, Physics Department
BS, New York State College; MS, Lehigh University; PhD, Rice Institute.
- SEDDOR, DONALD G. (1961), Junior Vocational Instructor in Agriculture
BS, Fresno State College; MS, New Mexico State University.
- SELKIRK, ROBERT J., JR. (1948), Principal Vocational Instructor in Agriculture
BS, MEd, University of California (Davis).
- SHACKLETT, ROBERT L. (1949; 1955), Associate Professor of Physics (On sabbatical leave)
BA, Fresno State College; PhD, California Institute of Technology.
- SHAFER, HELEN (1942), Associate Professor of English
BA, MA, University of California.
- SHEEHAN, PAUL V. (1930), Professor of Journalism; Department Chairman
BA, MA, University of Washington; PhD, University of Southern California.
- SHENFELD, NATHAN (1958), Assistant Professor of Psychology
BS, Illinois Institute of Technology; PhD, University of Buffalo; Certified Psychologist.
- SHEPARD, BERNARD A. (1948), Professor of Journalism
BA, Union College; BS, Columbia University; MS, PhD., Syracuse University.
- SHERMAN, HOBART M. (1947), Assistant Professor of Accounting
BS, State College, Springfield, Mo.; MA, New York University.
- SHOCKLEY, JAMES T. (1951; 1956), Assistant Professor of Physics
BA, MA, Fresno State College; PhD, University of Southern California.
- SHUPE, LEWIS K. (1960), Assistant Professor of Speech
BS, MS, University of Utah.
- SMITH, CHARLENE K. (1960), Assistant Professor of Education
BA, Western College (Ohio); MS, Butler University; EdD, Colorado State College.
- SMITH, DOROTHY E. (1940), Associate Professor of English
BS, Ohio State University; MA, University of Southern California.
- SMITH, JAMES H. (1955), Professor of Engineering
EE, MS, University of Cincinnati; BA, BS, PhD, University of Illinois; Registered Electrical Engineer.
- SMITH, JAMES M. (1959), Instructor in Philosophy
BA, University of Southern California; MA, PhD, Brown University.
- SMITH, PHILIP N. (1958), Assistant Professor of Biology
BA, PhD, University of California.
- SMITH, WALLACE (1948), Professor of Social Science
BA, MA, PhD, University of California.
- SNODGRASS, MARY E. (1961), Librarian I
BA, San Francisco State College; MA, University of Denver.

- SOLLIE, ALICE J. (Spring 1959), Assistant Professor of Home Economics
BS, MS, Oregon State College.
- SPARKS, RICHARD K. (1961), Professor of Education; Division Head; Director
of Teacher Education
BA, University of Washington; BA (Ed), Central Washington College of
Education; MA, EdD, University of California.
- SPENCER, EDWARD M. (1950), Dean of Educational Services and Summer
Sessions
BS, Iowa State College; MA, PhD, State University of Iowa.
- SPRAKER, CHRISTINE (1961), Associate Professor of Home Economics; De-
partment Chairman
BS, Cornell University; MA, Columbia University.
- STAEBLER, ARTHUR E. (1955), Associate Professor of Biology
BS, MS, PhD, University of Michigan.
- STAMBAUGH, EDGAR L., Lt. Col. USAF (1959), Professor of Air Science;
Head, Air Science Division
BS, Indiana University; MBA, University of Chicago.
- STANDING, KEITH M. (1958), Assistant Professor of Biology
BS, MS, Brigham Young University; PhD, Washington State University.
- STANLEY, GEORGE M. (1948), Professor of Geology; Department Chairman
BS, MA, PhD, University of Michigan.
- STOCKING, KENNETH M. (1960), Assistant Professor of Biology
BA, MA, College of the Pacific; PhD, University of Southern California.
- STORLI, VICTOR E. (1928), Professor of Accounting
BA, St. Olaf College; MBA, University of Oregon; Certified Public Accountant.
- STRONG, WINSTON C. (1940), Principal Vocational Instructor in Agriculture
BA, Stanford University; MA, EdD, University of California.
- STULL, S. LOUISE (1959), Librarian II
BA, MA, University of Illinois.
- SUHR, ROBERT L. (1960), Assistant Professor of Mathematics
BA, MS, State University of Iowa.
- SVENSON, KARL A. (1954), Associate Professor of Political Science
BA, University of Wyoming; MA, Indiana University; PhD, State University
of Iowa.
- TAYLOR, CHARLES (1938), Professor of Speech
BA, Fresno State College; MA, PhD, University of Southern California.
- TENNEY, EDWARD V. (1927), Professor of Psychology; Department Chairman
BA, BS, University of California; MA, Pacific School of Religion; PhD, Uni-
versity of California; Certified Psychologist.
- THOMPSON, SHIRLEY M. (1953), Assistant Professor of Physical Education
BS, MS, University of Wisconsin.
- TIDYMAN, CLAYTON R. (1957), Professor of Accounting
BS, MBA, PhD, University of Southern California; Certified Public Accountant.
- TOCCHIO, OCTAVIO J. (1959), Associate Professor of Criminology
BA, Suffolk University; MA, American University.
- TUELLER, DALLAS A. (1946), Dean of the College
BA, San Jose State College; PhD, Stanford University.
- UPHOLD, WILLIAM B., JR. (1954), Associate Professor of English and Phi-
losophy
BA, ThB, Taylor University; BD, Drew University; PhD, University of
Southern California.

- UTTERBACK, ROBERT T. (1956), Librarian IV
BA, William Penn College; MLS, University of California.
- VAN ELSWYK, MARINUS, JR. (1957) Intermediate Vocational Instructor in Agriculture
BS, Fresno State College; MEd, University of California (Davis).
- VERDUGO, WILLIAM R. (1951), Intermediate Vocational Instructor in Agriculture
BS, California State Polytechnic College.
- WALKER, LAWRENCE D. (1961), Instructor in Mathematics
BS, MS, University of California at Los Angeles.
- WALKER, PHILLIP N. (1950), Associate Professor of Speech
BA, MA, University of Washington.
- WANG, CHENG (1950), Professor of Social Science
BA, MA, PhD, Stanford University.
- WARDLE, ORRIN D. (1957), Executive Dean
BS, MS, Utah State College; EdD, University of California.
- WARMERDAM, CORNELIUS A. (1947), Professor of Physical Education
BA, Fresno State College; MA, Stanford University.
- WASSERMAN, BERNARD, Lt. Col., USAF (1958), Assistant Professor of Air Science
BA, Sacramento State College.
- WATERMAN, RUTH D. (1924; 1939), Professor of Physical Education; Department Chairman
BS, University of Missouri; MA, Teachers College, Columbia University.
- WATTS, PHYLLIS W. (1945), Dean of Graduate Studies
BA, Santa Barbara State College; MA, Claremont Colleges; EdD, Stanford University.
- WAYNE, WILLIAM C. (1954), Associate Professor of Business Education
BS, MA, Ball State Teachers College; MS, Indiana University; EdD, University of Southern California.
- WEIHS, FRANK A. (1961), Instructor in English
BA, Portland State College; MA, University of Washington.
- WELCH, MARIE R. (1961), Assistant Professor of Nursing
BS, Simmons College (Massachusetts); MA, University of Michigan; Registered Nurse.
- WEST, VIRGINIA C. (1941), Librarian IV
BA, University of California; BS, MS, University of Southern California.
- WHALEN, MARY M. (1961), Laboratory School Teacher
BA, St. Mary College (Kansas).
- WHEATON, HERBERT H. (1922), Dean of Arts and Sciences; Acting Head, Humanities Division
BS, University of Wisconsin; MS, CE, University of California; Registered Civil Engineer.
- WHEELER, CHARLES L., JR. (1959), Housing Coordinator
BA, Pasadena College; BD, Nazarene Theological Seminary; MA, Fresno State College.
- WIGHT, WILMA F. (1940), Associate Professor of Secretarial Administration
BA, MA, Stanford University.
- WILCOX, ORLEY W. (1959), Associate Professor of Education
BA, Southwestern College (Kansas); MS, Kansas State Teachers College; EdD, University of Colorado.

- WILD, ERNEST S. (1948), Associate Professor of Physical Education
BS, MS, Kansas State College.
- WILEY, FRANCIS A. (1946), Professor of History; Department Chairman
BA, Emory and Henry College; MA, Duke University; PhD, University of California.
- WILLIAMS, F. SUNSHINE (1957), Assistant Professor of Art and Education
BA, MA, Stanford University.
- WILLIAMS, WESLEY M. (1961), Assistant Professor of Art
BA, MA, University of California; EdD, Stanford University.
- WILSON, DONALD M. (1956), Associate Professor of Speech
BA, Western Washington College of Education; MA, PhD, University of Southern California.
- WILSON, GORDON (1947), Associate Dean of Students (Activities—Housing)
BA, Fresno State College; MS, University of Southern California.
- WINTER, JAMES H. (1947), Professor of Music
BA, Carleton College; MMus, Northwestern University; PhD, State University of Iowa.
- WITHROW, MIRIAM F. (1931), Professor of Music
PhB, University of Chicago; MA, University of Iowa.
- WOMACK, ENNIS B. (1947), Professor of Chemistry
BA, MA, Union University; PhD, University of Chicago.
- WOMACK, J PRINTISE (1958), Librarian II
BA, San Francisco State College; MLS, University of California.
- WOOD, RAYMUND F. (1950), Librarian III
BA, St. Mary's University; MA, Gonzaga University; MSLS, University of Southern California; PhD, University of California at Los Angeles.
- WOODWICK, KEITH H. (1955), Assistant Professor of Biology
BS, Jamestown College; MS, University of Washington; PhD, University of Southern California.
- WORM, CARROLL O. (1961), Instructor in Mathematics
BS, Iowa State University.
- WRIGHT, EVELYN H. (1948), Counselor
BA, Cedar Crest College; MA, Syracuse University.
- WRIGHT, JOHN W. (1929), Professor of Speech; Head, Speech Arts Division
BA, MA, University of Washington; EdD, University of California.
- YOUNG, PEARL I. (1961), Assistant Professor of Physics
BA, University of North Dakota.
- YOUNG, WILLIAM W. (1955), Assistant Professor of Political Science
BA, MA, PhD, University of California.
- ZUMWALT, EUGENE E. (1959), Assistant Professor of English
BA, MA, University of Oregon; PhD, University of California.

PART-TIME FACULTY, 1961-62

- BLAND, JEANINE, Instructor in Foreign Languages
- CHAI, EIKO, Physician
MD, Tokyo Women's Special Medical College.
- CLEGG, REED K., Assistant Professor of Criminology
BS, MS, University of Utah; LLB, American Extension School of Law.
- CROOKSHANKS, IVAN R., Professor of Secondary Education
BA, MA, University of Redlands; EdD, University of California.
- DICK, ROLAND J., Assistant Professor of Elementary Education
BA, Fresno State College.
- DOWELL, CHARLES H., Assistant Professor of Journalism
- DUPREY, WILLIAM M., Physician
MD, St. Louis University.
- ECKLUND, LAWRENCE, Assistant Professor of Elementary Education
BA, Fresno State College.
- ELDER, EVERETT W., Assistant Professor of Elementary Education
BS, Wheaton College; MA, Fresno State College.
- ERMOIAN, SARAH M., Instructor in Nursing
Registered Nurse.
- FABER, GAROLD L., Associate Professor of Health Education
BA, University of Denver; BS, University of South Dakota; MD, University of Colorado; MPH, University of California.
- HAM, CECELIA, Assistant Professor of Elementary Education
BA, Fresno State College; MD, Woman's Medical College of Pennsylvania.
- HATAYAMA, EMMA Y., Physician
BA, Fresno State College; MD, Woman's Medical College of Pennsylvania.
- HOGAN, THOMAS, Physician
MD, University of Georgia.
- HOUCK, CARYL B., Assistant Professor of Home Economics
BS, Syracuse University.
- KOONTZ, S. KERMIT, Assistant Professor of Health Education
BA, Fresno State College; MA, Stanford University.
- JENKINS, JACK T., Assistant Professor of Social Science
BS, University of Arkansas; MS, University of Tennessee.
- KNAPP, RAY B., Assistant Professor of Political Science
BA, Los Angeles State College.
- MICHAEL, LESLIE W., Assistant in Chemistry
BA, University of California.
- MIDDLETON, Rita B., Assistant in Biology
BA, Fresno State College.
- MIZOTE, LOUISE S., Assistant in Biology
BA, Fresno State College.
- MORTENSON, HELEN R., Assistant Professor of Health Education
BS, Colorado Agricultural and Mechanical College; MPH, University of California.
- MORTLAND, WILLIAM J., JR., Assistant Professor of Criminology
BA, Fresno State College.
- MOSS, EDWARD M., Physician
BA, MD, Stanford University.

- NAGY, Elemer J., Assistant Professor of Foreign Languages
MA, PhD, P. Pazmany University (Budapest).
- ODORFER, ADOLF, Associate Professor of Art
BA, Fresno State College.
- PEIRSOL, MADGE, Physician
BA, Pomona College; MD, Stanford University.
- PICKFORD, GLENNA R., Instructor in English
BA, MA, Fresno State College.
- PICKFORD, ROLLIN, JR., Assistant Professor of Art
BA, Stanford University.
- PIRL, JOAN, Physician
BS, Miami University (Ohio); MD, Western Reserve University.
- PLAUNT, LOIS, Instructor in Home Economics
BA, Fresno State College.
- POORE, ERNEST A., Associate Professor of Psychology
BA, Fresno State College.
- POTTER, ROBERT W., Physician
BA, Stanford University; MD, New York University.
- POYTHRESS, RANSOM H., Instructor in Foreign Languages
BA, Stanford University.
- RAPP, MYRTLE A., Instructor in Nursing
Registered Nurse.
- REICH, JOSEPH A., Instructor in Health Education
BA, Fresno State College.
- REVILLA, TONI R., Instructor in Foreign Languages
BA, University of California.
- RICH, WALLACE N., Assistant Professor of Social Science
BA, Fresno State College; MSW, Florida State University.
- RUSHTON, DOROTHY W., Instructor in Psychology
BA, MA, Fresno State College.
- SACKS, JOSEPH M., Assistant Professor of Psychology
BS, New York University; MA, University of Pennsylvania; PhD, New York University.
- SHIPMAN, CHARLES R., Assistant in Biology
BA, University of California at Los Angeles.
- SIMONS, JUSTIN F., Assistant Professor of Business Administration
BA, Fresno State College; LLB, LaSalle Extension University; CLU, American College of Life Underwriters.
- SKOFIS, ELIE, Senior Vocational Instructor in Agriculture
BS, University of California.
- SMITH, WILLIAM E., Principal Vocational Instructor in Agriculture
DVM, Kansas State College.
- STAFFORD, MELVIN, Assistant in Industrial Arts
BA, Fresno State College.
- STEGGALL, CLAIR T., Physician
BA, University of California at Los Angeles; MD, University of Southern California.
- TAGA, IRIS A., Instructor in Secretarial Administration
BA, Fresno State College.
- TAYLOR, FRANK E., JR., Assistant Professor of Accounting
BS, MBA, University of California at Los Angeles.

THOREN, MARY V., Instructor in Home Economics
BA, Whittier College.

WILLIAMS, HAROLD, Assistant in Biology
BA, Fresno State College.

WILMER, GILBERT H., Assistant Professor of Social Science
BA, Fresno State College; MSW, University of Southern California.

WINTER, EDNA, Physician
BA, MD, University of California.

YEARY, PATRICIA C., Instructor in Home Economics
BS, University of California at Los Angeles.

ZEIFERT, MARK, Associate Professor of Psychology; Physician
BS, St. Louis University; MS, University of Michigan; MD, St. Louis University.

EMERITI

(Numbers in parentheses indicate years of service at Fresno State College)

- THOMAS, FRANK W. (1917-1948), President Emeritus
BA, Indiana University; MA, University of Illinois; PhD, Stanford University;
LLD, Occidental College.
- ADDINGTON, ARCH R. (1928-1960), Professor Emeritus of Geology
BA, MA, Indiana University.
- ALLINGHAM, GRACE (1918-1944), Associate Professor Emeritus of Home-
making
BS, Kansas State Agricultural College; BS, MA, Columbia University.
- BAKER, MARY C. (1927-1948), Dean of Women Emeritus
BA, Stanford University.
- BAKER, RANNIE B. (1942-1956), Professor Emeritus of English
BS, Northwestern University; MA, Rollins College; PhD, Syracuse University.
- BELL, ALICE K. (1925-1957), Professor Emeritus of Mathematics
BA, Ottawa University; MA, University of Michigan.
- BILLARD, GERTRUDE S. (1938-1957), Professor Emeritus of English
BA, Mt. Holyoke College; MA, PhD, Cornell University.
- BORLESKE, STANLEY E. (1929-1958), Associate Professor Emeritus of Engi-
neering
BS, University of Michigan; BA, Fresno State College; MA, University of
California.
- BRADFORD, LILAH C. (1928-1958), Associate Professor Emeritus of Secretarial
Administration
BA, University of Oregon; MA, Stanford University.
- BRIGGS, MITCHELL P. (1928-1954), Dean of Instruction Emeritus
BA, Morningside College; MA, University of Wisconsin; PhD, Stanford Uni-
versity.
- BUGGE, HILDA HENDRICKSON (1931-1956), Associate Professor Emeritus of
Speech
BA, MA, University of Wisconsin.
- BURBRIDGE, HARRY C. (1921-1954), Professor Emeritus of Physics
BA, PhD, Stanford University.
- CANFIELD, JAMES W. (1927-1957), Associate Professor Emeritus of Education
BS, University of Utah; MA, University of California.
- COLBURN, GUY B. (1922-1952), Professor Emeritus of Foreign Languages
BA, MA, Brown University; PhD, University of Wisconsin.
- COLEMAN, EARL H. (1929-1954), Professor Emeritus of Biology and Health
Education
BA, Stanford University; MD, University of California.
- CULBERTSON, ALEXANDER E. (1925-1956), Professor Emeritus of Biology
BA, Emporia College; BA, Yale University; MA, Kansas University.
- GALE, JANE G. (1935-1959), Associate Professor Emeritus of Art
BS, MA, Columbia University.
- GURLEY, RALPH R. (1947-1960), Professor Emeritus of Engineering
BS, United States Naval Academy; MS, Columbia University; Registered Me-
chanical Engineer.
- HENDERSON, BETTY A. (1941-1961), Professor Emeritus of Home Economics
BA, Fresno State College; MA, University of California at Los Angeles.

- HOAG, ALEXANDRA BRADSHAW (1917-1948), Professor Emeritus of Fine Arts
BA, Stanford University.
- JACK, RALPH A. (1930-1956), Professor Emeritus of Physics
BA, Pacific University; MA, University of California; Registered Electrical Engineer.
- KELLEY, ELIZABETH (1946-1957), Professor Emeritus of Health Education
BA, University of Wisconsin; MA, New York University; EdD, Stanford University.
- KING, HENRY J. (1918-1953), Associate Professor Emeritus of Chemistry
Bpd, MPd, BS, Kirksville Teachers College; BA, MA, University of Missouri.
- LANG, ALBERT R. (1927-1955), Executive Dean Emeritus
BA, Wesleyan University; MA, University of Nebraska; PhD, Stanford University.
- McGREW, J. FRED (1932-1958), Associate Professor Emeritus of Speech
BA, Willamette University; MA, University of Wisconsin.
- MIKESELL, WILBUR B. (1926-1946), Associate Professor Emeritus of Commerce
BA, Ohio State University; MA, University of California.
- PHILLIPS, HUBERT (1923-1955), Professor Emeritus of Social Science
BA, University of Chattanooga; MA, PhD, Columbia University.
- PYMM, J. DONALD (1930-1961), Professor Emeritus of Economics
BA, MA, University of California.
- RATCLIFFE, EMORY (1915-1948), Professor Emeritus of Social Science
BA, Earlham College; MA, University of Wisconsin.
- ST. JOHN, WILLIAM E. (1923-1956), Professor Emeritus of English
BA, University of Oregon; MA, Stanford University; PhD, University of Southern California.
- SMITH, FRANCIS F. (1925-1960), Professor Emeritus of Education
BA, Brigham Young University; MA, PhD, University of California.
- TIDYMAN, WILLARD F. (1924-1958), Professor Emeritus of Education
BA, Baker University; MA, Columbia University; PedD, New York University.
- WAHLBERG, ARTHUR G. (1911-1943), Professor Emeritus of Music
MMus, DM, Mendelssohn Conservatory of Music.
- WIGHT, EARL H. (1924-1957), Professor Emeritus of Physical Education
BL, MA, University of California.

BAKERSFIELD CENTER**FULL-TIME FACULTY, 1961-62**

- CHANEY, HOMER C., JR. (1959), Assistant Professor of Social Science
BA, Dartmouth College; MA, PhD, Stanford University.
- EDWARDS, NATHAN A. (1956), Associate Professor of Education
BS, Iowa State College; MS, Drake University; PhD, State University of Iowa;
Certified Psychologist.
- FOSTER, E. MERLE (1959), Assistant Professor of Education
BA, MA, Colorado State College; PhD, State University of Iowa.
- GIBSON, DALE (1960), Assistant Professor of Education
BS in Ed, BS in Arts, MEd, Kent State University.
- HUGHES, JOAN D. (1958), Assistant Professor of Education
BA, San Jose State College; MA, Stanford University; EdD, University of
California.
- LIENARD, MARGUERITE M. (1959), Assistant Professor of Art
BA, Western Washington College of Education; MA, PhD, University of
Washington.
- OGDEN, LOWELL K. (1958), Assistant Professor of Education
BS, Arkansas State Teachers College; MA, University of Wyoming.
- SASMAN, ERWIN H. (1960), Assistant Professor of Education
BS, Northwestern University; MA, PhD, Teachers College, Columbia Uni-
versity.
- VARNER, LEO P. (1956), Director, Bakersfield Center; Professor of Education
BA, Howard Payne College; MS, EdD, University of Southern California.
- WALTHALL, HARRY R. (1960), Librarian II
BA, Ottawa University (Kansas); MS, Kansas State Teachers College.
- WEST, LORRAINE W. (1957), Assistant Professor of Education
BA, Fresno State College; MA, Stanford University.

PART-TIME FACULTY, 1961-62

- BOSONETTO, THEODORE, Medical Officer
MD, University of Southern California.
- BOYD, WILLIAM H., Assistant Professor of Political Science
BA, MA, PhD, University of California.
- CORBIN, CHARLES E., Assistant Professor of Music
BSM, Howard University (Washington, DC); MA, Boston University.
- EASTER, D. DALE, Assistant Professor of Industrial Arts
BA, Chico State College; MS, University of Southern California.
- JONES, CHARLES W., Assistant Professor of Music
BMus, MMus, University of Redlands.
- LIEBERMAN, LEONARD, Assistant Professor of Sociology
BA, MA, University of California.
- MANNING, JOHN CRAIGE, Professor of Geology
BS, University of Idaho; PhD, Stanford University.
- NYSTROM, DANIEL R., Assistant Professor of Biology
BA, MA, University of California.
- OSBORN, KEITH, Assistant Professor of Health Education
BS, MEd, Oregon State College.
- THOMAS, NORMAN, Assistant Professor of Philosophy
BA, MA, University of California.
- WILLIS, HULON S., Assistant Professor of English
BA, MA, PhD, University of California at Los Angeles.
- ZIMMERMAN, JOHN, JR., Assistant Professor of Geology
BA, San Jose State College; MA, Stanford University.

SUDAN EDUCATIONAL PROJECT FACULTY

- AUSTIN, DAVID E. (1961), Assistant Professor of Elementary Education
BA, MA, Eastern Washington College; EdD, Colorado State College.
- BALL, WILBUR P. (1958), Intermediate Vocational Instructor in Agriculture and
Assistant Professor of Education
BS, MEd, Colorado State University; PhD, Iowa State College.
- BISHOP, HENRY F. (1961), Associate Professor of Elementary Education
BA, Fresno State College; MA, Stanford University.
- CALDWELL, GLEN A. (1961), Senior Vocational Instructor in Agriculture
B.S., University of California.
- CARTER, HENRY H. (1961), Senior Vocational Instructor in Agriculture
BS, University of California at Davis.
- EDGAR, MILDRED D. (1957), Assistant Professor of Elementary Education
BE, National College of Education (Illinois); MS, Syracuse University.
- GLIM, ROBERT J. (1948), Principal Vocational Instructor in Agriculture
BS, MEd, University of California at Davis.
- HARRISON, RAYMOND H. (1955), Professor of School Administration; Chief
of Party
BS, Central State College; MS, Oklahoma State University; EdD, University of
Denver.
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Central Union High School District: Rena Durbahn, Nancy Sciacqua

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Fowler Union High School District: Wilma Holt

Sanger Union High School District: Erma Crider

Sierra Joint Union High School District: Robert McColaugh, Kenneth Olson

Washington Union High School District: Harry Bartsch

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